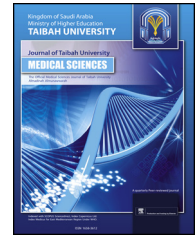Taibah University

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Original Article

Psychometric properties of the mentor behaviour scale in a sample of Malaysian medical students

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الملخص

أهداف البحث: لتحديد الخصائص النفسية لمقياس سلوك المرشد،١٥عنصرا مخزونا لتقييم أربع سلوكيات دعم المرشد، من حيث صلاحية البناء والاتساق الداخلي.

طرق البحث: تم إجراء دراسة مستعرضة على عينة من طلبة الطب من السنة النهائية في جامعة ساينز ماليزيا. كما عمل تحليل العوامل التأكيدي باستخدام AMOS 22 لتقييم صلاحية البناء. وعمل تحليل المصداقية باستخدام SPSS 22 لتقييم الاتساق الداخلي.

النتائج: تم مشاركة ١٥٩من طلبة الطب بالسنة النهائية. وأظهر تحليل العوامل التأكيدي أن نموذج العوامل الأربعة الأصلية مع ١٥عنصرا حقق قيم مقبولة لأفضل المؤشرات المناسبة، مما يشير إلى أنه نموذج صالح جيد. وكانت قيم كرونباخ ألفا لإرشاد هيكل العلاقة، والمشاركة، ومجالات دعم الكفاءة ٠.٩٦، ٠.٩٠ و٠.٨٨ على التوالي. لدعم الحكم الذاتي، كانت قيم كرونباخ ألفا ٠.٦٢.

الاستنتاجات: أظهر مقياس سلوك المرشد مستوى مرض لصلاحية البناء ومستوى عال من الاتساق الداخلي لقياس سلوكيات دعم المرشد في كلية الطب. وتقترح هذه النتائج أن مقياس سلوك المرشد يمكن استخدامه كأداة تقييم الإرشاد لردود الفعل في سياق المدرسة الطبية الماليزية.

الكلمات المفتاحية: سلوكيات المرشد؛ صلاحية البناء؛ الاتساق الداخلي؛ الصلاحية؛ المصداقية

Abstract

Objectives: To determine the psychometric properties of the Mentor Behaviour Scale (MBS), a 15-item inventory that evaluates four supportive mentor behaviours in terms of construct validity and internal consistency.

Method: A cross-sectional study was carried out on a sample of medical students in their final year at Universiti Sains Malaysia. Confirmatory factor analysis (CFA) was performed using AMOS 22 to assess construct validity. Reliability analysis was performed using SPSS 22 to assess internal consistency.

Results: A total of 159 final year medical students participated. CFA showed that the original four-factor model with 15 items achieved acceptable values for the goodness of fit indices, suggesting a good model fit ($X^2 = 198.295$, ChiSq/df = 2.418, RMSEA = 0.095, GFI = 0.867, CFI = 0.953, NFI = 0.923, TLI = 0.940). The Cronbach's alpha values of the mentoring relationship structure, engagement, and competency support domains were 0.96, 0.90 and 0.88, respectively. For autonomy support, the Cronbach's alpha value was 0.62.

Conclusion: MBS demonstrates a satisfactory level of construct validity and a high level of internal consistency in measuring supportive mentor behaviours in a medical school setting. This result suggests that MBS can be used as a mentorship evaluation tool for feedback in the context of a Malaysian medical school.

Keywords: Construct validity; Internal consistency; Mentor behaviours; Reliability; Validity

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Introduction

Mentoring is a two-way dynamic, a symbiotic and complex relationship between mentor and mentee resulting in career advancement and satisfaction.[1,2] It should be an intentional, nurturing, protective and supportive process that involves acting as a role model.[3,4] Generally, it aims to help, support and enhance performance of mentees during learning and training, and thus prevent problematic behaviours during the training.[5,6] Since mentoring is a symbiotic mutual relationship between two parties, one of the important factors is the mentor's behaviours towards the mentees during the relationship. In a medical setting, mentorship is one of the keys to a successful career pathway[7–9] and having a mentor helps to increase academic commitment and focus, professionalism and wellbeing during medical training.[10–12]

From the literature, there is a potential tool to measure mentor behaviour which is the Mentor Behaviour Scale (MBS).[13] It was developed to measure supportive mentor behaviours including mentoring relationship structure, engagement, autonomy support, and competency support.[13] It is a simple, practical and concise tool for measuring attributes of the supportive mentor behaviour and was reported to have good validity and reliability for measuring the mentoring behaviours.[13] Validity is described as the ability of a tool to measure the attributes that are intended to be measured, and reliability is the consistency or reproducibility of measurements over time or on different occasions.[14,15] The MBS developer found that it has high reliability, as three domains (mentoring relationship structure, engagement and competency support) attained Cronbach's alpha coefficient values of more than 0.7, while the autonomy support domain attained a satisfactory coefficient value.[13] With respect to validity, post-exploratory factor analysis and confirmatory factor analysis showed that the 15 items of MBS achieved acceptable results for goodness of fit indices, thus supporting its construct validity.[13] Despite its potential for research, training and evaluation of mentoring behaviours, there is only one study that provided data on its validity.[13] Therefore, further validation studies are required to establish its psychometric properties in other settings.

Validity can be assessed by content (i.e., content validity), response process (i.e., face validity), internal structure (i.e., construct validity and internal consistency), relations to other variables (i.e., predictive validity) and consequences (i.e., impact of the measurement, e.g., pass and fail).[16,17] This study aimed to evaluate the construct validity and internal consistency of MBS among medical students in a Malaysian medical school.

Materials and Methods

Study design and ethical clearance

A cross-sectional study was carried out on 159 medical students at a public Malaysian medical school. They responded to the inventory voluntarily. Ethical clearance was sought from the Human Ethics Committee Universiti Sains Malaysia (USM/JEPeM/15070250).

Sample size and sampling method

The sample size was estimated based on a recommended ratio of 5–10 subjects per item[18]; suggesting that 75 to 150 subjects would be sufficient for testing the internal structure of a 15-item scale (i.e., reliability and construct validity). Purposive sampling was performed to select participants and consent was sought from them before the study. All fifth year medical students were called to a face-to-face session in a hall and they were given a short briefing (less than 5 min) on MBS. The English version of MBS was used in this study. Those who agreed to be part of the study were required to fill out the questionnaire and asked to return it immediately upon completion.

The mentor behaviour scale (MBS)

The MBS is a 15-item scale that was developed and validated by Brodeur et al.[13] Written permission was sought from the developer through e-mail before the study. It is a self-reporting questionnaire that measures the mentee's perceptions on four domains of mentor behaviours, including mentoring relationship structure, engagement, autonomy support and competency support. The tool uses a 5-Likert scale ranging from 1 (does not apply at all to my situation) to 5 (applies very well to my situation). Items 11 and 12 were negative items, requiring reverse scoring prior to data analysis. Mentoring relationship structure is measured in items 1 to 8, which ask about supportive mentor behaviours related to giving feedback, organizing meetings and discussing goals with the mentee. Engagement is measured in items 9 and 10, which ask about the ways the mentor established rapport and bonding, spent quality time and listened attentively to their mentees during mentoring sessions. Autonomy support is measured in items 11 and 12, which ask about the types of assistance provided by mentors to mentees in the decision making process. Competency support is measured in items 13 to 15, which ask about the positive supports mentors provided to mentees in any other situations.

Data analysis

The internal structure of MBS was evaluated by confirmatory factor analysis (CFA) using Analysis of Moment Structure software version 22 (AMOS 22). The goodness of fit indices were assessed to signify the latent constructs of MBS. Relevant indices for goodness of fit were summarized in Table 1 [adopted from Yusoff & Arifin[19]] and the model fit is achieved if it attains the acceptance level.

The contributions of observed variables (i.e., the items of MBS) to respective latent variables (i.e., the four domains) were approximated by the standardized factor loadings (SFL) − high loadings indicate high contribution of items to the domain.[20] Modification indices (MI) estimate correlations between variables and reduction of chi-square values are expected if these correlations contribute to the model fitness.[20] Therefore, items were retained in the model if they met the acceptable values of SFL (more than 0.5) and MI (more than 15).[20] Even so, removal of any items should be based on literature review or have a theoretical basis.[21–23]