RES MILITARIS
REVUE EUROPEENNE D ETUDES EUROPEAN JOURNAL OF MILITARY STUDIES
Social Science Journal

Relationship Between Mentoring Support, Mentees' Self-Efficacy And Mentees' Academic Achievement: A Case Of Malaysia

By

Azman Ismail
Suleyman Demirel University, Turkiye

Ishak Abdul Rahman
Universiti Kebangsaan

Tuğba Erhan
Suleyman Demirel University, Turkiye

Hasan Hüseyin Uzunbacak
Suleyman Demirel University, Turkiye

Tahsin Akçakanat
Suleyman Demirel University, Turkiye

Abstract

Some findings from the higher education learning studies circulated in the 21st century disclose that how well mentoring support is done it will not be able to upgrade mentees' academic achievement if mentees have low self-efficacy. Although this relationship has extensively been examined, the mediating effect of mentees' self-efficacy is largely ignored in the higher education mentoring literature. Thus, this study aims to examine the relationship between mentoring support, mentees' self-efficacy, and academic achievement. Survey questionnaires are adapted from higher education mentoring literature used to collect data from undergraduate students at public universities in the state of Sarawak, Malaysia. The validity and reliability of survey data and research hypotheses have been analyzed using the SmartPLS. Structural equation modeling results have indicated that mentoring support is vital in determining mentees' self-efficacy, while mentees' self-efficacy has mediated the relationship between mentoring support and mentees' academic achievement. In addition, the study has figured out a few methodological and conceptual constraints and offered possible suggestions to strengthen future research. The research results may be used to guide practitioners in understanding diverse paradigms of mentees' self-efficacy construct and formulate interactive mentoring action plans to maintain and enhance the academic excellence of higher education institutions.

Keywords: 1. mentoring support, 2. mentees' self-efficacy, 3. academic achievement, 4. higher educational institution, 5. SmartPLS

Introduction

Higher education mentoring is very important to smoothly facilitate an effective transition of high school students to adulthood (Ismail et al., 2021; Sefotho & Onyishi, 2021). Two stakeholders are involved in this process: mentors and mentees (Ismail et al., 2021; Etzkorn & Braddock, 2020). Mentoring will inspire, facilitate and guide mentees to understand and tackle general and specific problematic situations which are faced by mentees (Popova, 2021). This effort may lead to enhanced mentee outcomes, by promoting their academic

performance, psychosocial and personal development, and career prospects (Berinšterová, 2020; Wang, Gill & Lee, 2022).In a higher education environment, mentoring programs are normally implemented in two major forms: informal and formal mentoring relationships. In a formal mentoring relationship, the interrelationship between mentors and mentees is normally maintained at the institutional level, and characterized by specific objectives, a well-structured program, scheduled meetings, formative evaluation, precise and anticipated actions, with a number of mentees officially assigned to each mentor. Conversely, an informal mentoring relationship is characterized by spontaneous, voluntary meetings between mentors and mentees, lacking proper evaluation and without a well-structured program (Ismail et al., 2021; Stan, 2020). These practices may help to build and strengthen mentees' friendships, enhance personal and professional credibility, adjust to a new environment, improve academic performance, prepare students for further social integration, and fulfill the industrial needs and demands of society (Okolie et al., 2020; Ismail, et al., 2021; Wang, Gill & Lee, 2022). A bulk of past studies on higher education mentoring posit that significant antecedents of mentoring program effectiveness are mentoring support rather than mentees' traits (e.g., intellectual ability, adaptability with new environments) **(Arslantas & Kocagoz, 2021; Salas, Aragon, Alandejani & Timpson, 2014),** and faculty environment (e.g., learning method, instructional materials, education technology, and mentoring types) **(Crisp, 2016; Tinoco-Giraldo, Sánchez & García-Peñalvo, 2020; Tominaga & Kogo, 2018)**. These mentoring program effectiveness antecedents are widely recognized, but only limited recently published studies have investigated the effect of mentoring support in higher education institutions (Hamilton et al., 2019; Malta et al., 2022). The significant roles of mentoring support are specified in some recent higher education mentoring studies, which disclose that despite how well mentoring programs are formulated they still will not be able to accomplish their goals if mentors do not practice effective support in the formal and informal mentoring programs (Boman et al., 2019; Ismail et al., 2015).

Mentoring support is cutting edge where mentors will often help mentees by providing two main support namely emotional (i.e., moral) and instrumental support (i.e., tangible) (Chizhik et al., 2018; Hamilton et al., 2019). The ability of mentors to appropriately implement emotional and instrumental support may enhance positive mentee outcomes, especially self-efficacy (Boman et al., 2019; Chizhik et al., 2018) and academic achievement (Bennett et al., 2021; Thevenin et al., 2016). Further, some latest outcomes from the faculty, school and/or department mentoring students circulated in the 21st century reveal that relationship between mentoring support on mentees' academic achievement is indirectly affected by mentees' self-efficacy (Ismail et al., 2012; Reed, 2016). Even though this relationship has widely been researched, the effect size and nature of mentees' self-efficacy as a significant mediating variable is little discussed in the higher educational mentoring literature, in which further exploration of this issue is imperative (Malta et al., 2022; Reed, 2016). To clarify this gap, numerous researchers have revealed some important reasons. Firstly, previous studies have much elaborated the mentoring features, especially conceptual disputes about definitions, aims, types, internal and external influences, and benefits of its implementation in colleges and universities (Andersen & West, 2020; Goldhaber et al., 2020). Secondly, numerous prior studies have used a simple causal model to assess mentoring programs with three criteria: First, the correlation between internal and external factors that influence mentoring programs (Berinšterová, 2020; Wang, Gill & Lee, 2022). Second, the correlation between types of mentoring programs and mentees' self-efficacy (Ismail et al., 2021; Krisi & Nagar, 2021). Third, the correlation between mentees' self-efficacy and mentees' outcomes (Bulfone et al., 2022; Ismail et al., 2021). The outcomes have only displayed the strength and nature of the correlation between the variables studied but the mediating role of mentees' self-efficacy is not

indicated in the model development (Hamilton et al., 2019; Malta et al., 2022). Finally, previous studies have used simple statistical tools (i.e., bivariate and descriptive statistics) to measure simple causal models related to higher education mentoring. Outcomes from the measurement cannot identify the effect size and nature of mentees' self-efficacy as the mediating effect (Ismail et al., 2021; Bennett et al., 2021; Reed, 2016). Thus, the result only produced general findings and this may not provide adequate guidelines to be used by practitioners in understanding the multidimensional views of mentees' self-efficacy concept and setting up social ecology-based mentoring programs to support the performance of higher education institutions in the world ranking universities (Chizhik et al., 2018; Malta et al., 2022). This study addresses three significant contributions to the existing literature. First, it contributes to previous studies by promoting a self-efficacy process that is inspired by mentoring support rather than mentees' traits **(Arslantas & Kocagoz, 2021; Salas, Aragon, Alandejani & Timpson, 2014),** and faculty environment **(Tinoco-Giraldo, Sánchez & García-Peñalvo, 2020; Tominaga & Kogo, 2018),** where mentoring support act as an important determinant of mentees' self-efficacy (Boman et al., 2019; Ismail et al., 2015). Second, this study extends the mentees' academic achievement literature by exploring mentoring support in formal and informal mentoring programs as a major predictor, which has been little discussed thus far. It is important to note that mentoring support may indirectly upgrade mentees' academic achievement through mentees' self-efficacy (Ismail et al., 2012; Reed, 2016). Third, this is the first effort to specifically evaluate the combined effect of mentoring support features on mentees' academic achievement, revealing that mentees' academic achievement is strongly influenced by emotional and instrumental support (Bennett et al., 2021; Malta et al., 2022). Thus, the scholarly discussions stimulate the researcher to fill in the gap by measuring the mediating effect of mentees' self-efficacy between mentoring support and mentees' academic achievement.

Literature Review

Mentoring support

Mentoring support includes emotional and instrumental support (Morelli et al., 2015; Fox et al., 2010). In a higher education mentoring, emotional support is usually done by showing friendliness, providing encouragement, accepting students despite the differences in abilities, creating a sense of belonging and safety among mentees to enhance students' motivation and well-being. Meanwhile, instrumental support is often practiced by listening to mentees' emotional disclosures and providing tangible assistance. This support is very helpful in increasing students' motivation, academic performance, and stress resistance (Morelli et al., 2015; Rameson et al., 2012). Recent studies have identified mentoring as a learning tool designed to increase the intrinsic motivation for achievements (Garifullina, 2021) and acknowledged that both types of mentoring support may act as a significant determinant of positive attitudinal and behavioral outcomes, especially mentees' self-efficacy (Ismail et al., 2015; Hamilton et al., 2019) and mentees' academic achievement (Thevenin et al., 2016; Malta et al., 2022).

Mentees' self-efficacy

Mentees' self-efficacy generally refers to one's beliefs and capabilities in producing specific level of performance using motivational, affective, cognitive, and selective processes (Bandura, 1994). Self-efficacy is usually affected by five salient factors, namely past performance, vicarious performance, verbal persuasion, imaginal performance, and physiological and emotional states (Bandura, 1977, 2006). The aforementioned factors will determine the level of self-efficacy of a person and this condition may affect his/her motivation,

well-being, and personal accomplishment. For example, in higher educational institutions high self-efficacy will lead mentees to accomplish challenging tasks as well as to an understanding of the necessity of new competencies development and academic performance improvement (Lejonberg & Tiplic, 2016; Van Dinther et al., 2011). Conversely, low self-efficacy will not inspire mentees to handle challenging tasks, feel those tasks given are harder than they really are, avoid the opportunity to develop new skills and competencies and neglect their academic responsibilities (Bandura, 1993; Pajares & Schunk, 2005; Rayle et al., 2006).

Mentees' Academic Performance

Mentees' academic performance is widely interpreted as students' persistence and graduation rates; and grade point average (GPA) obtained by students for every semester (Ismail & Khian Jui, 2014; Kumar et al., 2021; York et al., 2015). In higher educational institutions, academic achievement is frequently assessed by formative and summative evaluations (Guill & Lintorf, 2019; Kumar, Agarwal & Agarwal, 2021). Mentoring relationships are often used as a significant social integration that may help students to cope with their progress from high school to university or college, adjust to new academic environment, build new social networks and relationships, develop various soft skills, as well as establish closer contact within the education environment and beyond it (Chan Lin, 2016; Tinoco-Giraldo et al., 2018, 2020). Past studies recognized that mentees' academic achievement is a significant outcome of mentoring support (Thevenin et al., 2016; Tinoco-Giraldo et al., 2020), and may act as a significant mediating variable between mentoring support and mentees' self-efficacy (Ismail et al., 2012; Reed, 2016).

Mentoring Support and Mentees' Success

Influence of mentoring support on mentees' success is consistent with the notion of adult learning theory. For example, Chickering's (1969) Vector Theory of Identity Development explains that emotional and instrumental support provided by intelligent and experienced people may contribute to the development of the positive identity of young adults, namely managing emotions, becoming autonomous, setting goals, and developing competence, interpersonal relationships, and integrity. Meanwhile, Levinson's (1978) Adult Transition Learning Model suggests that emotional and instrumental support provided by intelligent and experienced people may decrease the number of dysfunctional conflicts during the transition of a person from childhood to adulthood. In higher education institutions young adults need such kind of support provided by mentors in order to assist them in managing their own learning process, fulfilling their potential, developing their skills, improving their academic performance, and gaining confidence to handle their new lifestyle (Johnson, 2015; Levinson, 1978). The theories display that the concept of intelligent and experienced people's support is often interpreted as mentoring support (Hamilton et al., 2019; Malta et al., 2022).Previous research reveals that mentoring support is an essential predictor of mentees' self-efficacy development. For instance, a survey of 136 business students was carried out at a Malaysian research university, highlighting the importance of mentors' ability to provide emotional and instrumental support in informal and/or formal mentoring relationships thereby enhancing mentees' self-efficacy (Ismail et al., 2015). Research involving 58 student-teachers in a shared mentoring SMILE model with the traditional model of field-placement support at a public university in California indicated the willingness of mentors to offer emotional and instrumental support in formal and/or informal mentoring relationships resulted in positive mentees' self-efficacy (Chizhik et al., 2018). Additionally, a Formal University Mentorship Program was implemented at the University of Canada with 163 and 84 undergraduate students responding to "Time 1" and "Time 2" questionnaires respectively. The readiness of mentors in providing emotional support and instrumental support enhanced mentees' self-efficacy

(Boman et al., 2019).

Past studies recognize that mentoring support is a significant determinant of mentees' academic achievement. Thevenin et al., (2016) surveyed 679 construction management undergraduates at three Midwest universities in US that found mentors' ability to implement emotional and instrumental support led to improved academic achievement. Meanwhile, Bennett et al., (2021) found that students involved in support service programs had vast opportunities to gain support from their supervisors. Consequently, leading to improved academic achievement (GPAs), retention and graduation rates. Malta et al., (2022) found that mentors providing emotional and instrumental support connect distance students in mentoring meetings, enhancing academic performance.

Mentoring Support, Mentees' Self-Efficacy and Mentees' Success

Relationship between mentoring support and mentees' success is indirectly affected by mentees' self-efficacy has supported the essence of Bandura's (1986, 1997) Self-Efficacy Theory, which posits that persons with high self-efficacy may trigger positive actions when they handle challenging and difficult tasks (Bandura, 1986, 1997; Pajares & Schunk, 2005). The latest empirical studies that are conducted based on an indirect effects model emphasize that mentees' self-efficacy is a significant mediating variable between mentoring support and mentees' academic achievement. This concurs with the study involving 527 female undergraduates in Southwestern University (Rayle et al., 2006). Ismail et al. (2012) conducted a pilot study involving 196 university students in Kuching City, East Malaysia. These studies acknowledged that a high level of mentees' self-efficacy may lead to enhanced mentees' academic achievement in higher educational institutions. Further, (Reed, 2016) used semi-structured interviews with 10 first-generation and second-generation status students at a technical college in US. This study found that student-institution integration encouraged lecturers to fulfill the duties of mentors: providing emotional and instrumental support. This practice strongly invoked students' self-efficacy which could lead to improved academic achievement.

Method

Research Model

The literature has been used as the platform for establishing a conceptual framework. It explains that relationship between mentoring support and mentees' academic performance is indirectly affected by mentees' self-efficacy as exhibited in Figure 1.

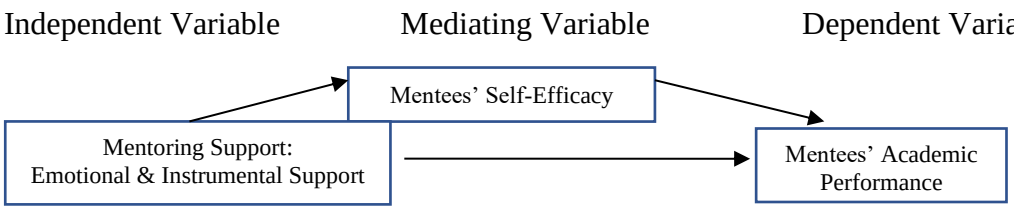

Figure 1 *Conceptual Framework*

Based on the framework, hypotheses are formulated as follow:

H1a: Mentoring emotional support has a positive correlation with mentees' self-efficacy

H1b: Mentoring instrumental support has a positive correlation to mentees' self-

efficacy

H2a: Mentoring emotional support has a positive correlation with mentees' academic achievement

H2b: Mentoring instrumental support has a positive correlation with mentees' academic achievement

H3a: Mentees' self-efficacy mediates the relationship between mentoring emotional support and mentees' academic achievement

H3b: Mentees' self-efficacy mediates the relationship between mentoring instrumental support and mentees' academic achievement

Research design

The study used a survey method as the research strategy, where it allows the use of cross-sectional research design to collect survey questionnaires to assess the direct effects model and mediating model using the SmartPLS package. This data collection procedure may help to gather relevant data, decrease data bias and increase data quality **(**Sekaran & Bougie, 2016). Mentoring programs are implemented in the universities based on the five to ten years of the Education Development Plan (Higher Education) set up by the Ministry of Higher Education Malaysia. As a new delivery learning mode, mentoring programs are used to produce balanced and holistic graduates with an entrepreneurial mindset, able to become job creators and cultivate lifelong learning that meets the 21st century of global market challenges (**Kementerian Pendidikan Malaysia, 2015)**. In the context of this study, the university leadership gives autonomy and empowerment to academic responsibility centers, such as faculties, schools, and/or departments to plan and administer mentoring programs' objectives, content, implementation modes, and procedures in order to achieve their strategies and goals (**Abdullah, Ismail, Abd Latif & Omar, 2015).** These academic responsibility centers have highly encouraged mentors to provide emotional aid (e.g., advice, inspiration, encouragement, and empathy) and instrumental aid (e.g., teaching guidelines and assignments) to develop mentees' self-efficacy through several mentoring types, namely one-to-one, group and distance meetings. The majority of mentees perceived that their self-efficacy levels (e.g., self-confidence and sense of responsibility) are high and this efficacy may enhance their effort to achieve what they want to be, namely academic achievement (e.g., not give up in study, and improve performance in tests and assignments). Even though this relationship is interesting, the role of mentees' self-efficacy as a link between mentoring support and mentees' academic achievement has not been empirically tested in the universities. Thus, the limited empirical evidence published in Malaysia stimulates the researcher to extend the literature by examining the mediating effect of mentees' self-efficacy in the relationship between mentoring support and mentee success.

Sample

The study respondents are 684 (45.6%) undergraduate students of teaching universities owned by the Malaysian federal government in East Malaysia. The majority of respondents are females (71.3%), aged between 22-24 years old (52.8%), higher school certificate holders (42.0%), third-year students (38.3%), CGPA holders from 2.51 to 3.00 (38.5%), bachelor program students (69.8%), and male mentors (38.9%). The adequacy of the sample is measured

based on the rule of thumb, that is the highest number of formative indicators in the survey questionnaire should have more than 10 times, and items for measurement models have outer loading higher than the standard threshold of 0.70 (Hair et al., 2017). The study sample exceeds the minimum sample size of at least 80 respondents as required by the rule. Hence, the response bias is determined based on Harman's single factor test, where the value of variance percentage for all items is 39.902 (Podsakoff et al., 2003), showing that response bias does not appear in the survey questionnaire data.

Research instrument

The survey questionnaire was prepared based on higher education mentoring literature employing a back-to-back translation technique (Lomand, 2016). In the survey questionnaire, mentoring support consists of two dimensions: mentoring emotional support (MTREMT) has 5 items, and mentoring instrumental support (MTRISN) has 5 items adapted from the higher education mentoring literature (Ismail et al., 2012; Levesque et al., 2005; Langhout et al., 2014). Besides, mentees' self-efficacy (MENEFY) has 8 items adapted from the higher education students' self-efficacy literature (Ismail et al., 2021; Bandura, 1993, 1997; Santiago & Einarson, 1998). Further, mentees' academic achievement has 8 items adapted from the higher education students' academic achievement literature (Campbell & Campbell, 1997; Ismail & Khian Jui, 2014; Rayle et al., 2006). All items employed a seven-item Likert scale ranging from "strongly disagree/dissatisfied" (1) to "strongly agree/satisfied" (7). Respondents' features are used as controlling constructs as this study evaluates student attitudes.

Data analysis

The survey questionnaire data are analyzed using the SmartPLS because it can produce latent variable scores, deal with minor sample size issues, estimate simple and complex models, and handle stringent assumptions about the distribution of variables and error terms in reflective and formative measurement models **(Henseler et al., 2009).** In the first step of data analysis, the measurement model (the relationship between variables and their indicators) is assessed using confirmatory factor analysis, and hence, the structural model is tested using structural equation modelling (the relationship between the variables of interest) (Hair et al., 2018).

Findings

Measurement Model

Table 1 displays that the loadings for all constructs are greater than 0.70, and the values of average variance extracted (AVE) for all constructs are higher than 0.50 (Henseler et al., 2009), showing that they have satisfied the criteria of convergent validity analysis. While, the values of composite reliability for all constructs are higher than 0.80 (Nunally & Bernstein, 1994), showing that the measurement scale has high internal consistency.

Table 1 *The Outcomes of Convergent Validity Analysis*

Construct	Factor Loading	AVE	Composite Reliability
MTREMT		0.635	0.897
Encourages me to practice the study skills that I have learnt	0.845		
Motivates me to improve my academic performance.	0.847		
Motivates me to improve my interpersonal communication skills.	0.831		
Always gives me positive comments.	0.704		
Praises me when I perform well in my studies.	0.749		
MTRISN		0.663	0.908
Is willing to provide assistance when requested.	0.786		
Always listens to my suggestions.	0.815		
Helps me in understanding the implications of any actions taken.	0.800		
Always listens to my problems.	0.846		
Tolerates with my mistakes.	0.825		
MENEFY		0.627	0.931
Managing failures.	0.758		
Handling adverse learning environments.	0.778		
Setting learning objectives.	0.805		
Adapting myself in learning.	0.828		
Producing assignments effectively.	0.811		
Answering well in tests/exams.	0.785		
Managing study time systematically.	0.794		
Involving actively in class discussions.	0.774		
MENACD		0.659	0.939
Achieve higher CGPA.	0.770		
Complete more than the required credit hours in each semester.	0.759		
Identify effective study method.	0.846		
Produce good assignments.	0.850		
Use the appropriate methods to complete my assignments.	0.844		
Improve my answering skills in tests/exams with systematic method.	0.827		
Perform any responsibility to be a good student.	0.811		
Accomplish any given tasks on time.	0.778		

Table 2 depicts values of Heterotrait-monotrait (HTMT) ratio of correlation for all constructs were less than 0.90, and the values of confidential interval for all constructs shown in the parenthesis were less than 1.0 (Hair et al., 2017), proving that the constructs have satisfied the criteria of discriminant validity analysis.

Table 2 *The Outcomes of Discriminant Validity Analyses*

Construct	HTMT	
	MENEFY	**MENACD**
MTREMT	0.666 (0.350, 0.544)	0.493 (0.013, 0.242)
MTRISN	0.581 (0.099, 0.298)	0.423 (0.051, 0156)
MENACD	0.611 (0.369. 0.547)	

Note: *The values in the parenthesis are the values of confidential interval at 2.5% and 97.5%*

Table 3 displays that the means for all constructs are between 5.2696 and 5.6451, showing that the majority of participants view levels of MTREMT, MTRISN, MENTEFY and MENACD are from high (4) to the highest level (7). Besides, the values of variance inflation factor for the relationship between the variables of interest are smaller than 5.0, showing that the collinearity problem is not present in such relationships (Hair et al., 2017).

Table 3 *The Outcomes of Variance Inflation Factor and Descriptive Statistics*

Construct	Mean	Standard Deviation	Variance Inflation Factor			
			MTREMT	MENISN	MENEFY	MENACD
MTREMT	5.5254	.87516			2.206	2.521
MENISN	5.2696	.96252			2.206	2.265
MENEFY	5.4717	.83295				1.585
MENACD	5.6451	.76916				

Structural Model

The outcomes of the structural model show the direct effects model and mediating model. First, the results of the model fit test display that the value of the standardized root means square residual is 0.055, which is smaller than 0.1 (Hair et al., 2017). This result demonstrates that this model has a good fit. Second, the results of the model strength test (R^2) present that MTREMT has explained 35 percent of the variance in MENEFY, which is bigger than 0.26 (Cohen, 1988), indicating that this model has a substantial effect. MTRISN has explained 27 percent of the variance in MENEFY, which is bigger than 0.26 (Cohen, 1988), indicating that this model has a substantial effect. MTREMT has explained 19 percent of the variance in MENACD, which is bigger than 0.13 and smaller than 0.26 (Cohen, 1988), indicating that this model has a moderate effect (Cohen, 1988). MTRISN has explained 27 percent of the variance in MENACD, which is bigger than 0.26 (Cohen, 1988), indicating that this model has a substantial effect. MENEFY has explained 32 percent of the variance in MENACD, which is bigger than 0.26 (Cohen, 1988), indicating that this model has a substantial effect.

Third, the results of effect size test reveal that the relationship between MTREMT and MENEFY has an f^2 value of 0.146, which is higher than 0.02 and smaller than 0.15 (Hair et al., 2017), showing that it has a small effect on MENEFY. The relationship between MTREMT and MENACD has an f^2 value of 0.010, which is smaller than 0.02 (Hair et al., 2017), showing that it has a weak effect on MENACD. The relationship between MTRISN and MENEFY has an f^2 value of 0.027, which is higher than 0.02 and smaller than 0.15 (Hair et al., 2017), showing that it has a small effect on MENEFY. The relationship between MTRISN and MENACD has an f^2 value of 0.001, which is smaller than 0.02 (Hair et al., 2017), showing that it has a weak effect on MENACD.

Fourth, the results of predictive relevance test (Q^2) disclose that MENFY has a Q^2 value of 0.229, and MENACD has a Q^2 value of 0.219, showing that it has predictive relevance (Hair et al., 2017). Finally, the results of predictive performance test (Q2-predict) show that the Q2-predict values for all items in the PLS-SEM (0. 0.830 to 0. 0.995) and LM RMSE (0. 0.836 to 0. 0.998) are bigger than zero, illustrating the prediction errors are distributed symmetrically. Most PLS-SEM values (-0.01 to -0.013) have lower prediction errors than LM RMSE values (0.005 to 0.013) indicating that this model has a medium predictive power (Shmueli et al., 2019).

Outcomes of Hypothesis Test

Table 4 shows the results of testing the research hypotheses: 1. MTREMT is positively and significantly correlated with MENEFY (β=0.594; t=17.949), therefore H1a is accepted. 2. MTRISN is positively and significantly correlated with MENEFY (β=0.527; t=15.077), therefore H1b is accepted. 3. MTREMT is positively and significantly correlated with MENACD (β=0.439; t=12.905), therefore H2a is accepted. 4. MTRISN is positively and significantly correlated with MENACD (β=0.387; t=11.100), therefore H2b is accepted. 5. The relationship between MTREMT and MENEFY is significantly correlated with MENACD (β=0.567; t=18.368), therefore H3a is accepted. 6. The relationship between MTRISN and MENEFY is significantly correlated with MENACD (β=0.503; t=12.235), therefore H3b is accepted. This result confirms that mentees' self-efficacy and academic achievement are important outcomes of mentoring emotional and instrumental support. Hence, the relationship between mentoring emotional and instrumental support on mentees' academic achievement is mediated by mentees' self-efficacy. In sum, the type of mediating effect for MENEFY is partial mediation in the hypothesized model. This is due to the direct effects model and the indirect effects model being significant and pointing in the same direction (Zhao et al., 2010).

Table 4 *Outcomes of Testing the Hypotheses 1a, 1b, 2a, 2b, 3a and 3b*

Hypothesis	Beta Value	T Statistics	R^2	Decision
H1a: MTREMT→MENEFY	0.594	17.949	0.352	Substantial effect
H1b: MTRISN→MENEFY	0.527	15.077	0.277	Substantial effect
H2a: MTREMT→MENACD	0.439	12.905	0.193	Moderate effect
H2b: MTRISN→MENACD	0.387	11.100	0.331	Substantial effect
H3a: MTREMT→MENEFY →MENACD	0.567	18.368	0.321	Substantial effect
H3b: MTRISN →MENEFY→MENACD	0.503	12.235		

Note: *Significant at *t statistics > 1.96 (two-tail test)*

Table 5 shows the IPMA's results. MENEFY is the most important (0.603) and the best performance (70.730). While MENACD is the least important (0.444) and the least performance (68.376). Hence, MENACD should be prioritized in enhancing mentoring support effectiveness.

Table 5 *IPMA results*

Construct	User Reactions	
	Important (Total of Effect)	Performance (Index Value)
MENEFY	0.603	70.730
MENACD	0.444	68.376

Discussion and Conclusion

The results of this study show that all hypotheses for the mediating and direct effects models are accepted. The description of the hypotheses test is elaborated as follows: First, emotional and instrumental support has a significant direct effect on mentees' self-efficacy and academic achievement. The result is consistent with the essence of adult learning theory. First, Vector Theory of Identity Development offered by (Chickering (1969) specifically emphasizes that undergraduate students need support from mentors to develop their identities and competence, manage their emotions, become autonomous, develop interpersonal relationships and integrity, establish identity, and set objectives. Moreover, Levinson's (1978) Adult

Transition Learning Model suggests that young adults need support to develop and enhance their skills, fulfill potential, enhance academic performance, decrease dysfunctional conflicts, and gain confidence to handle new lifestyles. The essence of the theories is supported by studies conducted in Western and Asian countries, which reveal that the construct of mentoring support consists of two crucial elements: emotional and instrumental support. Implementation of this support may lead to higher outcomes, especially self-efficacy (Ismail et al., 2015; Chizhik et al., 2018; Hamilton et al., 2019), and mentees' academic achievement (Thevenin et al., 2016; Bennett et al., 2021; Malta et al., 2022).

Second, mentees' self-efficacy has mediated the relationship between mentoring support and mentees' academic achievement. The result has supported the principal meaning of Bandura's (1997) Self-Efficacy Theory, which suggests that self-efficacy can serve as a significant agent that triggers the ability of a person to regulate his/her emotion (relaxation and comfort), effort, perseverance, and resilience in handling difficult and challenging tasks in organizations. This principal meaning is consistent with higher education mentoring studies mostly circulated in Western and Asian countries, which acknowledge that the ability of mentors to provide emotional support (e.g., encouragement and empathy) and instrumental support (e.g., explanation of study guidelines, teach-learning techniques, and lending money) will strongly evoke mentees' self-efficacy. As a result, a high level of self-efficacy may lead to higher mentees' academic achievement (Rayle et al., 2006; Ismail et al., 2012; Reed, 2016). The self-report questionnaires used in this study have met the acceptable standards of the validity and reliability analyses. Hence, regarding a practical contribution, the outcomes of IPMA (see Table 5) displays that MENACD is a crucial problem that should be improved to enhance academic excellence in higher educational institutions. To support this aim, management should pay attention to the following issues. Firstly, mentoring training methods and content should be revisited to assist mentors in improving their interactions with different mentees' capabilities. For example, present mentoring training content should give a priority to upgrading mentors' knowledge, skills, and behavior about young adult psychology. In order to implement this training content effectively, mentors should be properly trained to teach and assist mentees through various face-to-face and online methods, such as blended learning, active learning, problem-based learning, and transformative learning using face-to-face and online media. In a mentoring relationship, mentors need to choose learning methods that meet particular mentees' needs and capabilities in improving careers, academic and psychosocial. Secondly, faculties and departments should arrange a formal mentoring meeting that involves mentors and mentees at least two times within a year. In this meeting, mentors and mentees have opportunities to understand the mentoring benefits and objectives, rapport building between mentors and mentees, and encouraging sharing of positive experiences in handling personal and academic affairs in campus. This relationship may inspire mentors and mentees to commit to the mentoring programs. Next, various mentoring methods, such as one-on-one mentoring, distance mentoring, group mentoring, and peer mentoring should be executed to give an equal chance to mentees who study in different educational modes to obtain useful knowledge, skills, good moral values and other useful guidance from their mentors. This helps stimulate mentees to achieve their intended objectives. Fourthly, mentees who have low academic achievements can be grouped together for mentors to provide asssitance on techniques that may stimulate them to improve academic performance. Finally, informal mentoring programs should be promoted as formal mentoring program time is limited. Informal mentoring can be done in flexible modes, such as free discussion of any topic or beneficial activities either one-on-one or group discussions after office hours within or outside the campus. This mentoring type may reduce communication gap allowing information exchanges between mentors and mentees.

Conclusion

The hypothesized model used in this study has generally met the model fit requirements. The study findings proved that mentees' self-efficacy and academic achievement are significant outcomes of emotional and instrumental support. While the relationship between mentoring support and mentees' academic achievement has been mediated by mentees' self-efficacy. Further, current research and practice suggest that mentees' self-efficacy should be considered a critical component of mentoring programs. The ability of mentors to appropriately implement emotional and instrumental support in formal and informal mentoring programs will strongly stimulate mentees' self-efficacy. Consequently, this efficacy may lead to maintaining and upgrading the competitiveness and performance of higher educational institutions.

Acknowledgment

The authors express gratitude to the Ministry of Higher Education Malaysia (FRGS/05(14)/669/2007(34), National University of Malaysia, Suleyman Demirel University, and Siberian Federal University for supporting the research and article writing.

References

Andersen, C. L., & West, R. E. (2020). Improving Mentoring in Higher Education in Undergraduate Education and Exploring Implications for Online Learning. *Revista de Educación a Distancia*, *64*(20), 18-25.

Arslantas, T.K. & Kocagoz, O.E. 2021. Examining the Mentoring Process in Collaborative Project-based Learning of Preservice Instructional Technology Teachers. Education Reform Journal, 6(1), 47 – 61.

Crisp, G. 2016. Promising practices and programs: Current efforts and future directions. New Dir. Commun. Coll., 103–110.

Bandura, A. (1986). Social foundations of thought and action. *Englewood Cliffs, NJ: Prentice-Hall.*

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, *28*(2), 117-148.

Bandura, A. (1994). Self-efficacy. *In V. S. Ramachaudran (Ed.), Encyclopedia of human behavior*, v. 4, 71-81. Bandura, A. (1997). Self-Efficacy: The Exercise of Control. *New York: Freeman.*

Bennett, C. A., Hsiao, E. L., Dees, D .C., Kim, D., & Bochenko, M .J. (2021). The impact of TRIO Student Support Services on academic performance of non-traditional students at a public state college in Georgia. *Journal of Adult and Continuing Education*, *27*(2), 157-174.

Berinšterová, M. (2020). Mentoring of university students: functions and important characteristics. *Človek a spoločnosť [Individual and Society], 23*(4), 1-17.

Bulfone, G., Iovino, P., Mazzotta, R., Sebastian, M., Macale, L., Sili, A., Vellone, E., & Alvaro, R. (2022). Self- efficacy, burnout and academic success in nursing students: A counterfactual mediation analysis. *J Adv Nurs.*,1-8.

Campbell, T. A., & Campbell, D. E. (1997). Faculty / student mentor program: Effects on academic performance and retention. *Research in Higher Education*, *38*(6), 727-742.

ChanLin, L. J. (2016). Students' involvement and community support for service engagement in online tutoring. *J. Educ. Med. Libr. Sci.*, *53*, 245-268.

Chizhik, E. W., Chizhik, A. W., Close, C., & Gallego, M. (2018). Developing student teachers'

teaching self-efficacy through Shared Mentoring in Learning Environments (SMILE). *International Journal of Mentoring and Coaching in Education, 7(*1), 35-53.

Cohen, J. (1988). Statistical power analysis for the behavioral sciences. *Routledge.* Cohen-1988-Statistical-Power-273-406.pdf

Etzkorn, K. B., & Braddock, A. (2020). Are you my mentor? A study of faculty mentoring relationships in US higher education and the implications for tenure. *International Journal of Mentoring and Coaching in Education*, 2046-6854.

Garifullina, A. M. (2021). Mentoring - a tool for the system of higher pedagogical education of the Russian federation. *Problems of modern pedagogical education, 71*(1), 100-103.

Goldhaber, D., Krieg, J. M., & Theobald, R. (2020). Exploring the impact of student teaching apprenticeships on student achievement and mentor teachers. *Journal of Research on Educational Effectiveness*, *13*(2), 213-234.

Hair Jr, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM).* Sage publications.

Hair, J. F., Sarstedt, M., Ringle, C. M., & Gudergan, S. P. (2018). Advanced Issue in Partial Least Squares Structural Equation Modelling (PLS-SEM), *Thousand Oaks, CA: Sage.*

Hamilton, L.K., Boman, J., Rubin, H., & Sahota, B. K. (2019). Examining the impact of a university mentorship program on student outcomes. *International Journal of Mentoring and Coaching in Education*, *8*,(1), 19-36.

Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. *In New challenges to international marketing.* 277-319.

Ismail, A., Abdullah, N., Zaiedy, N.I., Ab Gani, A., & Omar, N. (2015). Mentoring Program as an Instrument of Enhancing Mentees' SelfEfficacy. *Acta unıversıtatıs danubıus, 9*(1), 14-32.

Ismail, A., Ibrahim, N., & Keliwon, K. B. (2021). Mentor-Mentee Interaction and Mentees' Psychosocial Development: The Mediating Effect of Mentees' Self-Efficacy. *Eurasian Journal of Educational Research*, *94*, 79-100.

Ismail, A. Abdullah, N. Ridzwan, A. A., Wan Ibrahim, W. N. A., & Ismail, Y. (2015). Effect of Mentorship Program on Mentees' Psychosocial Development. *International Letters of Social and Humanistic Sciences, 49*, 53-65.

Ismail, A., & Khian Jui, M. K. (2014). The Role of Mentoring Program in Enhancing Mentees' Academic Performance. *Journal of Education and Learning, 8*(1), 13-22.

Ismail, A., Mohd Shariff, M .N., Khian Jui, M .K. & Sahol Hamid, N. (2012). Linking Mentoring Program to Self-Efficacy as a Predictor of Mentee Outcomes. *International Business Management, 6*, 131-139.

Ismail, A., Omar, N., & Ismail, K. (2014). Relationship between mentoring program and mentees' study performance. *Jurnal Personalia Pelajar, 17*, 99-107.

Johnson, W. B. (2015). On being a mentor: A guide for higher education faculty. *Routledge.*

Kementerian Pendidikan Malaysia. 2015. Pelan Pembangunan Pendidikan (Pendidikan Tinggi) 2015-2025. Kerajaan Malaysia: Putrajaya.

Krisi, M., & Nagar, R. (2021). The Effect of Peer Mentoring on Mentors Themselves: A Case Study of College Students. *Internatıonal journal of dısabılıty, development and educatıon*, 1-13.

Kumar, S. Agarwal, M., & Agarwal, N. (2021). Defining And Measuring Academic Performance of Hei Students: A Critical Review. *Turkish Journal of Computer and Mathematics Education, 2*(6), 3091-3105.

Langhout, R. D., Rhodes, J. E., & Osborne, L. N. (2014). An exploratory study of youth mentoring in an urban context: Adolescents' perceptions of relationship styles. *Journal of Youth and Adolescence, 33*(4), 293-306.

Lejonberg, E., & Tiplic, D. (2016). Clear Mentoring: Contributing to Mentees' Professional Self-confidence and Intention to Stay in their Job. *Mentoring and Tutoring, 24*(4), 1-16.

Levesque, L. L., O'Neill, R. M., Nelson, T., & Dumas, C. (2005). Sex differences in the perceived importance of mentoring functions. *Career Development International, 10*(6/7), 429-443.

Levinson, D. J. (1978). *The seasons of a man's life.* New York: Knopf.

Lomand, T. C. (2016). Social Science Research: A Cross Section of Journal Articles for Discussion & Evaluation. *Routledge.*

Malta, G. D., Bond, J., Conroy, D., Smith, K., & Moller, N. (2022). Distance education students' mental health, connectedness and academic performance during COVID-19: A mixed-methods study. *Distance education, 43*(1), 97-118.

Morelli, S. A., Lee, I. A., Arnn, M. E., & Zaki, J. (2015). Emotional and instrumental support provision interact to predict well-being. *Emotion, 15*(4), 484.

Nunally, J. C., & Bernstein I. H. (1994). Psychometric Theory. *New York: McGraw Hill.*

Okolie, U. C., Nwajiuba, C. A., Binuomote, M. O., Ehiobuche, C., Igu, N. C. N. & Ajoke, O. S. (2020). Career training with mentoring programs in higher education facilitating career development and employability of graduates. *Education & Training, 62*(3), 214-234.

Pajares, F., & Schunk, D. (2005). Self-efficacy and self-concept beliefs. New Frontiers for Self-Research, *March H. Craven R, McInerney D (eds.). Greenwich, CT: IAP.*

Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y., & Podsakoff, N.P. (2003). Common method biases in behavioural research: a critical review of the literature and recommended remedies. *Journal Of Applied Psychology, 88*(5), 879-903**.**

Popova, A. V. (2021). Mentoring as a form of teaching activity in the new digital educational environment. *Cherepovets State University Bulletin, 3*, 199-210.

Rameson, L. T., Morelli, S. A., & Lieberman, M. D. (2012). The neural correlates of empathy: experience, automaticity, and prosocial behavior. *Journal of cognitive neuroscience, 24*(1), 235-245.

Rayle, A. D., Kurpius, S. E. R., & Arredondo, P. (2006). Relationship of self-beliefs, social support, and university comfort with the academic success of freshman college women. J. *College Student Retention, 8*(3), 325-343.

Reed, P. W. (2016). The Impact of Self-Efficacy on Retention in Technical Colleges. Doctoral Study Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Education Walden University: *Walden dissertations and doctoral studies collecton,* 2016.

Rayle, A. D., Kurpius, S. E. R., & Arredondo, P. (2006). Relationship of self-beliefs, social support, and university comfort with the academic success of freshman college women. *J. College Student Retention, 8*(3), 325-343.

Salas, R., Aragon, A., Alandejani, J. & Timpson, W.M.. 2014. Mentoring Experiences and Latina/o University Student Persistence. Journal of Hispanic Higher Education, 13(4), 231–244. DOI: 10.1177/1538192714532814

Santiago, A. M., & Einarson, M. K. (1998). Background characteristics as a predictors of academic self-confidence and academic self-efficacy among graduate science and engineering students. *Research in Higher Education, 39*(2), 163-198.

Sefotho, M.M., & Onyishi, C.N. (2021). Transition to Higher Education for Students with Autism: Challenges and Support Needs. *International Journal of Higher Education, 10*(1), 201-213.

Sekaran, U., & Bougie, R. (2016). Research methods for business: A skill building approach. John Wiley & Sons.

Shmueli, G., Sarstedt, M., Hair, J. F., Cheah, J. H., Ting, H., Vaithilingam, S., & Ringle, C. M. (2019). Predictive Model Assessment in PLS-SEM: Guidelines for Using PLS predict. *European Journal of Marketing*, *53*(11), 2322-2347.

Stan, C. (2020). Formal mentorıng versus ınformal mentorıng ın educatıon. *The European Proceedings of Social and Behavioural Sciences*, 2357-1330.

Thevenin, M. K., Elliott, J. W., & Bigelow, B. F. (2016). Mentors, Role Models, and Observed Differences in Students' Construction Education Self-Efficacy and Motivation. *Internatıonal journal of constructıon educatıon and research, 12(*3), 162-178.

Tominaga, A. & Kogo, C. Attributes of good e-learning mentors according to learners. Univ. J. Educ. Res. 2018, 6, 1777–1783.

Tinoco-Giraldo, H., Sánchez, E.M.T., & García-Peñalvo, F.J. 2020. E-Mentoring in Higher Education: A Structured Literature Review and Implications for Future Research. Sustainability, 12, 4344-4367. Doi:10.3390/su12114344

Tinoco-Giraldo, H., Torrecilla Sánchez, E. M., & García-Peñalvo, F. J. (2018). Utilizing technological ecosystems to support graduate students in their practicum experiences. *TEEM'18 Doctoral Consortium, Proceedings of the TEEM'18: Sixth International Conference on Technological Ecosystems for Enhancing Multiculturality, Salamanca,* 1004-1009.

Tinoco-Giraldo, H., Torrecilla Sánchez, E. M., & García-Peñalvo, F. J. (2020). E-Mentoring in Higher Education: A Structured Literature Review and Implications for Future Research. *Sustainability*, *12*, 4344.

Van Dinther, M., Dochy, F., & Segers, M. (2011). Factors affecting students' self-efficacy in higher education. *Educational research review, 6*(2), 95-108.

Wang, J., Gill, C., & Lee, H. (2022). Effective mentoring in a work-integrated learning (WIL) program. *Journal of teachıng ın travel & tourısm*, 1-19.

Wekam, V., & Vance-Chalcraft, H. D. (2022). Investigating Prior Mentoring Experiences of Medical Students and Its Perceived Benefits. *Journal of Microbiology & Biology Education*, *23(*1), 1-8.

York, T. T., Gibson, C., & Rankin, S. (2015). Defining and measuring academic success. *Practical assessment, research, and evaluation*, *20*(5), 1-20.

Zhao, X., Lynch Jr, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of consumer research*, *37*(2), 197-206.