BIG FIVE PERSONALITY, INTERACTION AND MENTORING EFFECTIVENESS IN HIGHER EDUCATION: A CASE STUDY OF A PRIVATE UNIVERSITY IN MALAYSIA

By

FONG KAH HOONG

A dissertation submitted to the Faculty of Business and Finance,
Universiti Tunku Abdul Rahman,
in partial fulfillment of the requirements for the degree of
Master of Philosophy in April 2025

ABSTRACT

BIG FIVE PERSONALITY, INTERACTION AND MENTORING EFFECTIVENESS IN HIGHER EDUCATION: A CASE STUDY OF A PRIVATE UNIVERSITY IN MALAYSIA

Fong Kah Hoong

Purpose – The purpose of this study is to identify the effect of individual's personality towards mentorship effectiveness under the presence of interaction. Although mentorship is widely recognized as vital in higher education, there remains a lack of understanding regarding how individual personality traits of mentees impact mentorship effectiveness, especially in Malaysian private universities where such programmes are increasingly promoted.

Design/methodology/approach – This study employed a quantitative approach method in analysing the effect of individual's personality through Big Five Personality model towards mentorship effectiveness through Mentorship Effectiveness Scale tool. Data was collected from undergraduate students from private university in Malaysia and analysed under Partial Least Square-Structural Equation Modelling (PLS-SEM) model.

Findings - The results of this study revealed a significant positive correlation between Agreeableness and Extraversion to Mentorship Effectiveness. At the same time, Interaction also showed a significant negative moderating effect on the correlation between Agreeableness and Mentorship Effectiveness.

Research limitations/implications – This study focuses on which of the mentee's personality would have significant impact towards mentorship effectiveness. Thus, the findings do not allow institution to identify the best

match of mentor and mentee through matching of mentor's and mentee's personality.

Practical implications - The findings from this study provide a valid and reliable framework and tools for institutions and researchers to measure individual's personality and its effect on mentorship effectiveness with the presence of interaction.

Originality/value – This study contributes to the theoretical and practical insights and by introducing a framework to evaluate the relationship between mentee's personality, mentorship effectiveness and interaction among mentors and mentees.

Keyword - Mentoring, Interaction, Big Five Personality, Mentorship Effectiveness, Agreeableness, Conscientiousness, Extraversion, Openness, Neuroticism, Higher Education

Subject Area – LB1028–1050 Educational psychology, mentoring, and guidance

ACKNOWLEDGEMENT

I would like to express my special thanks to my supervisor, Dr Chen I-Chi for her continuous guidance and support to project. Without her supervision, this project would not be as smooth and successful as it is.

Besides that, I would like to thank my co-supervisor, Dr Ng Lee Peng for her advise on my project. I would also like to express my sincere appreciation to Dr Leong Lai Ying, Head of Postgraduate Programme, Universiti Tunku Abdul Rahman for the advice that she has given me for the project.

I am also grateful to Universiti Tunku Abdul Rahman for the opportunities given to further my Master studies in such reputable university and the support that the university has given me.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION

1.0 Introduction

This chapter present the overall outline of this research. This research aimed to explore the relationship between personalities, interaction and mentorship effectiveness towards Malaysian undergraduates. In sequence, this chapter will present an outline of background of the study, followed by problem statement, research objectives, research questions, significance of the study, scope of study and finally a chapter summary to end this chapter.

1.1 Background of the Study

1.1.1 Origin of Mentoring

Bell and Clawson's study (as cited in Russell & Adams, 1997) stated that the term 'mentor' originated from a book titled 'The Odyssey' written by Homer which is about Greek mythology. In the book, the mentor was a tutor who was responsible for taking care of Odysseus' son named Telemachus. This responsibility was bestowed upon mentor when Odysseus set out to fight for the Trojan War. In the book, mentor was described as someone who provides wise and sensitive counsel to Telemachus which aimed to prepare him to become King. According to Russell and Adams (1997), Wickman mentioned that the roots of mentoring can be seen from Sophocles' words 'The reasonable thing is to learn from those who can teach'. He also mentioned that mentoring was a commonly accepted way to educate young people from Renaissance period.

1.1.2 Early Introduction of Mentoring

In the late 1900s, more definition on mentorship emerged in the literature. Levinson and McKeen (1978) defined mentor as a person with the role of 'teacher, advisor or sponsor'. Thus, allowing readers to relate the concept to either personal or professional point of view. Meanwhile, other researchers tend to define mentor as someone who is helping in the professional life. Ragins (1997) described mentor as an individual with better knowledge and experience and at the same time willing to provide support and upward mobility to their mentees career development. In line of relating mentor to a professional development, Sands et al. (1991) also relate nurturing in this concept where they define mentor as "professional guide who nurtures and promotes the learning and success of his or her protégé". As such, mentoring does not only encompass an individual career progress but also their psychosocial development in adulthood.

On the other hand, Kram (1985) has differentiated these elements in an important way. Even though a mentor might serve as a role model for their protégé, they can still provide purely functional assistance with no emotional attachment or affective components within the relationship. Mentoring occurs in a diverse context from adolescents to adults such as at community-based organizations, publicly or privately funded programs, postsecondary educational institutions, public educational institutions, work organizations and professional associations (Berk et al., 2005; Crisp & Cruz, 2009; Morgan & Rochford, 2017).

1.1.3 Mentoring in Higher Education

Peer mentoring has shown to have several benefits for students in higher education. Mentoring programs can help promote social belonging and increase student engagement and satisfaction, particularly among minority and underrepresented groups in physical therapy and nursing programs (Altonji et al., 2019: Colvin & Ashman, 2010). Additionally, peer mentoring can enhance graduate students' sense of belonging and academic success by providing a supportive and collaborative learning environment. Besides of that, virtual peer mentoring is essential for this generation where organizations have witnessed a 30% rise in mentoring initiatives during the pandemic period (LHH, 2021). Virtual peer-to-peer mentoring programs offer a valuable platform for education, social interaction, and professional development by breaking down geographical barriers and enabling individuals to connect and collaborate regardless of location. This flexibility allows for more convenient scheduling, making it easier for students to participate and engage at their own pace. Highlighting virtual mentoring is essential, particularly in light of challenges like the COVID-19 pandemic, which accelerated the need for remote learning solutions. As a result, virtual peer mentoring has emerged as a crucial tool for promoting student success and retention in higher education, ensuring that connections, guidance, and support can continue uninterrupted. (Collier, 2021; Krause & Moore, 2021; Liu et al., 2022; Naidoo et al., 2022).

Among colleges and universities, planned mentoring plays an important role in retention and graduation rates among undergraduate students, faculties and

administrators (Terrion & Leonard, 2007; Markle et al., 2022; Tinoco-Giraldo et al., 2020).

1.1.4 Benefits and Challenges of Mentoring

Additionally, mentoring can have a positive impact on psychosocial outcomes, including self-esteem, self-efficacy, and career decision-making. The study also found that the quality of the mentoring relationship, including factors such as communication, feedback, and support, is an important predictor of the outcomes of mentoring. Overall, the study suggests that mentoring can be a valuable tool for promoting positive career and psychosocial outcomes for students, particularly when the mentoring relationship is of high quality (Eby et al., 2013).

For instance, participation in mentoring programs significantly boosts career advancement opportunities for both mentors and mentees. Mentees and mentors were about 20% more likely to receive a raise compared to non-participants, with 25% of mentees and 28% of mentors receiving raises versus just 5% of non-mentoring managers. Additionally, employees with mentors were promoted five times more often, while mentors were six times more likely to be promoted to higher roles (Quast, 2012).

Mentorship plays a significant role in enhancing workers' careers and job satisfaction, as revealed by the CNBC/SurveyMonkey Workplace Happiness Survey. Employees with mentors are more likely to feel well-compensated and valued by colleagues. In contrast, over 40% of workers without a mentor have considered quitting their job within the past three months, highlighting the

importance of mentorship in employee retention and workplace morale (Wronski & Cohen, 2019).

Mentoring programs have a profound impact on workplace productivity, profitability, retention, and employee satisfaction. About 70% of businesses reported increased productivity, and 55% noted a positive impact on profits due to mentoring. Employees with mentors are significantly more likely to see opportunities for career advancement (71% vs. 47%) and have higher retention rates (72% for mentees and 69% for mentors) compared to 49% for non-participants. Additionally, companies offering mentorship see a 50% higher retention rate overall. Workers without mentors are more likely to feel overlooked and consider quitting, with over 40% having contemplated leaving in the past three months. Furthermore, 94% of employees would stay longer if provided growth opportunities, underlining the value of mentorship in fostering leadership development and retaining talent (Pursell, 2023).

Due to the huge impact which these peers have on one and another, many attempts have been conducted over the years to leverage this influence. On record, since 1700s colleges and universities' undergraduate students have been assisting their peers (Colvin & Ashman, 2010). In recent years, numerous overseas universities have increasingly adapted mentoring programs into their education systems to support student development and success. According to Gannon and Maher (2012), universities in the UK have integrated mentoring programs to enhance students' personal and professional growth, offering a structured environment where experienced students or professionals guide their less experienced peers. This

approach has been recognized as an effective way to prepare students for future career challenges. Similarly, Terrion and Leonard (2007) highlight that mentoring programs have gained traction globally, with universities implementing them as a strategy to improve student engagement, retention, and academic success. Peer mentoring is a widely employed strategy in higher education, and recent research highlights its efficacy in supporting student development, especially during the initial phase of academic studies. A systematic review found that peer mentoring fosters social and academic integration, enhances emotional well-being, reduces dropout intentions, and strengthens a sense of belonging to the university. While digital mentoring also showed effectiveness, students reported slightly lower social support compared to traditional formats. Both individual and group-based programs were explored, but no significant outcome differences were identified. Peer mentoring remains a valuable tool for supporting first-year students in adjusting to university life (Gehreke et al., 2024). These programs enable students to form meaningful relationships, fostering a supportive learning environment that extends beyond traditional classroom settings. On the other hand, University of Western Australia has implemented a program named UniMentor which aims to assist students to cope with university life. A research conducted under this program has shown several benefits which includes improved academic performance, enhanced retention rates and strengthen social networks among students (Boyd et al., 2019).

1.1.5 Mentoring in Malaysia Higher Education Institution

Several studies on mentorship have been conducted within the educational context in Malaysia. Ismail et al. (2011) has studied the relationship between genders

towards the mentees' career advancement and mentees' psychosocial development where the participants from this study are working adults in an education institution. Besides that, many studies were conducted among medical schools in Malaysia as the mentorship program in the particular field is very common in Malaysia (Enrico, 2011; Tackett et al., 2015). Study was also conducted among undergraduate students from public and private universities in Malaysia where the relationship between 'communication and support from mentorship program' and 'mentees' psychosocial development' (Ismail et al., 2015).

At the same time, several private higher education institutions in Malaysia have embraced peer mentoring programs aimed in providing assistance to the junior students by the senior students. Such institutions are such as Universiti Tunku Abdul Rahman, University of Nottingham Malaysia and Monash University Malaysia ("Peer Mentoring Programme," n.d.; "Peer Mentoring," n.d.; "Becoming a mentor," n.d.). In one peer mentoring research done by a university in Malaysia, Universiti Tenaga Nasional (UNITEN), a group of researchers identify the effect of personality (Big Five Personality) of peer mentoring module have on the personality of peer mentors. Finding of the research indicates that it is important to identify the right personality of peer mentors in order to leverage from the mentoring relationship (Taha et al., 2014).

1.1.6 Personality Traits in Mentoring

The Big Five Personality model, also known as the Five-Factor Model, is a widely accepted framework for understanding human personality. It consists of five dimensions: openness to experience, conscientiousness, extraversion,

agreeableness, and neuroticism (McCrae & John, 1992). Openness refers to an individual's creativity and curiosity, while conscientiousness reflects their organization and responsibility. Extraversion measures sociability and enthusiasm, agreeableness encompasses traits like kindness and cooperation, and neuroticism relates to emotional stability and resilience. This model has been extensively applied in various fields, including mentoring, where traits such as extraversion and agreeableness have been found to significantly influence the quality and effectiveness of mentoring relationships (Bozionelos, 2004; Eby et al., 2013).

Recognizing the impact of individual differences on mentoring effectiveness, institutions have begun studying how personality traits affect mentoring outcomes. By understanding and considering these individual differences, institutions can enhance the effectiveness of their mentoring programs, leading to improved personal and professional development outcomes for participants.

1.1.7 Background of Universiti Tunku Abdul Rahman

Universiti Tunku Abdul Rahman (UTAR) is a private research university in Malaysia, established in 2002 by the UTAR Education Foundation. It offers a wide range of academic programs, including foundation studies, bachelor's degrees, and postgraduate programs across various faculties such as Arts and Social Science, Business and Finance, Engineering, and Medicine. The university has two campuses: Kampar Campus in Perak, which spans 1,300 acres, and Sungai Long Campus in Selangor, strategically located within the Klang Valley. As of 2023, UTAR has over 20,000 students. UTAR is ranked in various global and regional university rankings, including the QS World University Rankings (801-850) and

the Times Higher Education World University Rankings (1001-1200). The university is known for its commitment to academic excellence, producing notable alumni who have contributed significantly to various fields (UTAR, n.d.).

1.2 Problem Statement

Mentoring has shown a great impact on the development of an individual and the concept has been well adapted by many institutions in both the education and business sectors (Allen et al., 2004). For instance, 84% of Fortune 500 companies and 100% of Fortune 50 companies have mentoring programs (Cantalupo, 2024). However, 76% of employees see the importance of mentorship but only 37% have one (Comaford, 2019).

Despite all the benefits, institutions are still facing difficulties in identifying the suitable mentor and mentee to leverage the best possible outcome due to the lack of research and review on the effects of personality on the mentorship effectiveness (Ragins & Kram, 2007).

Meanwhile, there are few questions remain unanswered about the conditions and types of interventions required to maximize the benefits and effectiveness for young people as these criteria such as individual difference (gender, race, age, education and personality) which is used to evaluate the mentorship effectiveness are rarely recorded (Berk et al., 2005; Dubois et al., 2011; Nkrumah & Scott, 2022; Ragins & Kram, 2007).

Among colleges and universities, planned mentoring plays an important role in retention and graduation rates among undergraduate students (Markle et al., 2022;

Terrion & Leonard, 2007; Tinoco-Giraldo et al., 2020). Research also found that mentoring can have a positive impact on mentee's career outcomes, including job satisfaction, career commitment and career success. Additionally, mentoring can have a positive impact on psychosocial outcomes, including self-esteem, self-efficacy and career decision-making (Eby et al., 2013).

Although review has been done between individual differences and mentoring outcomes, it is prominent that individual personality was not being examined together under the research of mentoring (Ragins & Kram, 2007). At the same time, the Big Five Personality assessment is one the most validated and cost-effective instruments as compared to other personality tools which may incur cost such as the MBTI personality assessment (Furnham, 2022). Moreover, previous researches conducted in Malaysia also highlighted the validity and reliability of the Big Five Personality scale especially in the education context in Malaysia (Bazkiaei, 2020; Bhagat et al., 2019; Karim et al., 2009).

Curran et al. (2017) emphasized that an individual's personality significantly influences mentoring outcomes which also highlight the importance of using the Big Five Personality model to predict mentoring effectiveness. Recent studies also show that certain personality traits based on the Big 5 Personality, play a significant role in influencing mentoring quality and mentees' job satisfaction (Kumari et al., 2022). However, while research has acknowledged these relationships, there is still a gap in establishing a comprehensive framework that links personality traits to mentorship outcomes using reliable measurement tools, such as the Mentorship Effectiveness Scale. Therefore, this study aims to address this gap by providing a

valid framework that institutions and researchers can leverage for a better understanding of mentorship effectiveness.

Previous researches have found that one of the most important characteristics of a successful mentorship programme is interaction as it will affect the academic accomplishment and psychological development correspondingly (Dubois et al., 2011; Hernandez et al., 2016; Mullen & Klimaitis, 2019; Terrion & Leonard 2007).

While much of the existing research on mentoring focuses on the dynamics between mentors and mentees or the traits of mentors, the role of the mentee's personality remains underexplored. Mentee personality traits, such as openness to experience, conscientiousness, and emotional stability, directly influence their engagement, receptiveness to advice, and long-term developmental outcomes (Curran et al., 2017). In culturally diverse contexts like Malaysian private higher education, where students display a range of personality profiles, this gap in research limits the ability to optimize mentoring effectiveness. Nevertheless, empirical studies on the function of interaction between the Big Five personality traits and mentorship effectiveness remain scant, particularly in the context of Malaysian private higher education institutions. Addressing this gap is critical for designing targeted strategies that foster the growth and success of mentees, regardless of their background or personality type.

1.3 Research Objectives

RO1: To examine the relationship between the Big Five Personality traits (Agreeableness, Conscientiousness, Extraversion, Neuroticism, and Openness) of undergraduate mentees and their perceived mentorship effectiveness in a university setting.

RO2: To evaluate the moderating role of interaction on the relationship between mentees' Big Five Personality traits and mentorship effectiveness.

1.4 Research Questions:

RQ1: How do undergraduate mentees with different personality traits (Big Five Personality: Agreeableness, Conscientiousness, Extraversion, Neuroticism, and Openness) influence mentorship effectiveness in a university setting?

RQ2: How does interaction moderate the relationship between the Big Five Personality traits (Agreeableness, Conscientiousness, Extraversion, Neuroticism, and Openness) of undergraduate mentees and mentorship effectiveness in a university setting?

1.5 Significance of Study

The findings of this study will benefit to the society in academic field as the concept of mentoring is often being used in the education fields. It is important that this study to be carried out as it will explore a more in-depth study on mentoring and the independent variables that will maximize the outcome of all mentoring relationships.

Mentoring programme in education would play a role in helping student to cope with their physiological supports as well as academic development (Goldner, 2015; Nora & Crisp, 2007). Assigning mentee among students according to their personalities may bring upon a better experience in their mentoring relationship (Curran et al., 2017). As students with different personalities would have varying impacts on the mentoring relationship, academic institutions may use the findings from this study to identify students who possess the right personality traits to undergo mentoring programs, ensuring that the relationship achieves the best possible outcomes. For students whose personality traits may not align with the mentoring program's requirements, institutions could consider alternative interventions or tailored programs designed to support their development in other meaningful ways. This approach ensures inclusivity while maximizing the potential benefits of mentoring for suitable candidates.

This study establishes a framework that lays the groundwork for future research into the relationship between personality differences and mentoring outcomes. Unlike previous studies that often focused on general personality traits or specific aspects of the mentor-mentee relationship, this research uniquely applies the Big Five Personality model to examine its direct impact on mentorship effectiveness. By providing insights into how individual personality traits influence mentoring outcomes, the study offers a more nuanced and comprehensive perspective compared to earlier research.

Additionally, this research explores the moderating role of interaction in shaping the relationship between mentee personality traits and mentorship effectiveness,

contributing a novel dimension to the literature. By emphasizing the Big Five Personality traits as a validated and cost-effective framework, the study addresses a critical gap in understanding mentee dynamics within mentorship contexts.

The findings aim to equip educators and administrators in Malaysian private higher education, and beyond, with actionable strategies to enhance mentorship programs. These insights can foster the personal and professional growth of students across diverse disciplines, settings, and professional fields, while also serving as a foundation for tailored and effective mentorship practices.

1.6 Scope of Study

The scope of study in this research takes the undergraduate students in Malaysia as the context. Besides that, undergraduate students who are undertaking service learning and at the same time involved in mentoring through group activities are selected as the sample of the study. This is because with combining service learning and mentoring, it is found that the effectiveness of mentoring would be higher (Well & Grabert, 2004). Besides that, service learning would also improve the engagement and participation of college student taking part in mentoring (Schmidt et al., 2004).

Based on statistic, there are only 48 private universities in Malaysia and only four in Perak state ("Senarai Daftar dan Statistik IPTS", 2018). Additionally, this study is rarely explored in the context Malaysia, due to the above limited accessibility to the mentioned universities, thus Universiti Tunku Abdul Rahman, Kampar Campus has been chosen for this study.

Therefore, students of Universiti Tunku Abdul Rahman who are undertaking service learning would also be specifically chosen to take part in this study.

1.7 Chapter Summary

There have been many institutions who have been implementing mentoring programme which aimed in assisting and developing their students. These programmes can be used as a form of orientation for new students, retention for current students or for development purposes.

Thus, in order to understand how mentee's personalities (Big Five Personality) affect mentorship effectiveness, this study aimed to examine the factor of personality which affect mentorship effectiveness of the programme. Among many personality models that are available, the study has chosen Big Five Personality model as it is more reputable and commonly practised compared to other models. At the same time, as previous similar studies also use the Big Five Personality model in their study, it adds credibility and reliability to the modelling of this study.

Besides that, the study will also identify the influence of interaction as a moderating variable on the relationship between individual's personalities (Big Five Personality) and mentorship effectiveness.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

In the previous chapter, the author briefly discussed on the background and issues about mentorship programme. For this chapter, a more in-depth literature review on the topic is formed by using past researches about the independent variables (Big Five Personality), moderating variables (Interaction) and dependent variable (Mentorship Effectiveness). Then, a new conceptual framework and hypotheses development will be proposed and followed by a conclusion to complete this chapter.

2.1 Underpinning Theory

Trait Activation Theory (TAT) is a conceptual framework rooted in a particular model of job performance, serving as an expanded perspective on the concept of personality-job fit. TAT explains how an individual manifest their personality traits when exposed to situation cues which as associated with the traits. These cues would have the potential to activate specific personality traits which are relevant to demands of job tasks and organizational expectations, ultimately influencing job performance (Christiansen & Tett, 2013). For instance, mentees who possess the traits of openness to experience would also lead to a better job performance in an organization (Nieß & Zacher, 2015). Besides that, during the process of mentoring, proactive personality traits of a mentee may affect the perception of their mentor on the mentee thus leading to greater mentoring support (Birtch et al., 2023). Furthermore, a key implication of TAT is that individuals are likely to seek

employment in environments where the organization provides abundant opportunities for interaction, allowing them to express their inherent traits (traits activation per se) (Christiansen & Tett, 2013). Thus, this underpinning theory lays the foundation for the theoretical framework of study where an individual's personality would have an influence on mentorship effectiveness under the moderating effect of interaction.

2.2 The Concept of Mentoring

Since mid-1970s, there are many definitions on this mentoring concept which appeared. During that time, many people thought they had a consensus on what mentoring was. However, after much closer examination, it was discovered that the definition of mentoring actually had a wide variation (Berk et al., 2005; Mullen & Klimaitis, 2019; Nkrumah & Scott, 2022). Although the concept has been introduced since a long time ago, this concept was not popular until Kram published significant research on mentoring in 1985. In his research, Kram designed a model which then illustrates on the movement of mentorship through several phases which are initiation, cultivation, separation and redefinition (Russell & Adams, 1997; Allen et al., 2004; Chao et al., 2006).

Mentoring is often defined as a concept of matching a novice with a person with much more experience of the same role (Kram, 1983; Solansky, 2010; Memon et al., 2015; Nkrumah & Scott, 2022). Meanwhile, the concept of mentoring has been benefiting to individuals and organizations (Allen et al., 2004). The mentor-mentee relationship is said to be significantly effective in enhancing the development of an individual in their early adulthood and in the midcareer level (Kram, 1983).

Traditional mentorships which also known as classical or primary mentorships are long and intense developmental relationships where mentee will receive career and psychosocial support specifically from one senior mentor (Kram, 1983; Levinson & McKeen, 1978; Mullen & Klimaitis, 2019; Whitely et al., 1991). However, as time passes together with the changes in the workplace such as international competition, labor-market supply, organizational downsizing and technological changes, organizations are forced to start embracing secondary development relationships (Whitely et al., 1991). Secondary mentoring is usually less intensive, shorter, less inclusive developmental process involving multiple relationships where each of the relationship will offer specialized developmental functions (Phillips-Jones, 1982; Whitely et al., 1991). Rather than focusing on psychosocial development functions like primary mentorships, secondary mentorships focus on external, career progress-oriented functions (Kram, 1985).

Mentoring is different compared to other forms of support such as teaching or coaching. This is because mentors would usually put mentees' interest as the entire priority and not just a part of priorities (Gibson, 2005). However, there are also researchers who uses the term coaching as mentoring interchangeably (Angelique et al., 2002; Morris, 2017) and there are also researchers who argue that there are differences between the two terms (Gabay et al., 2019; Morgan & Rochford, 2017).

Kram (1983) identified two main functions of mentoring in a study by interviewing managers. Those two main functions were career and psychosocial functions. Career functions set to improve and facilitate the career advancement of the mentee through multiple support such as sponsorship, coaching, exposure and visibility,

protection and challenging assignments. Meanwhile, psychosocial functions set to enhance the competence and identity of the mentee through friendship, acceptance and confirmation role-modelling and counselling (Kram, 1985).

Although mentoring is often related to business or workplace, the concept of mentoring is also practised in various forms such as helping youth with problems (Memon et al., 2015). Mentoring can also be viewed as an intervention for noting young people needs such as adult support and guidance throughout their development (Dubois et al., 2011).

These mentoring relationship does not only benefit certain groups of people as the benefit from these relationships are apparent from early childhood to adults (Goldner, 2015; Murphy, 2011). Besides that, although these programmes are commonly designed to cultivate one-to-one relationships, people who uses these programmes on group design also shows a significant level of effectiveness. Thus, these findings show the flexibility and the wide application of the programme for supporting positive youth development (Dubois et al., 2011).

2.2.1 Formal and Informal Mentorship

Traditional forms of mentoring are often categorized as formal or informal relationships. The basic distinction between the two relationships is that informal relationships are relationships that occurs spontaneously without any interference of the organization where else formal relationships are relationships which are managed and sanctioned by the organization (Bozionelos, 2004; Morris, 2017). Informal mentorship may be formed from informal relationships or interactions

between members in an organization. In informal mentorship, mentors are more willing to develop and give attention to mentors to those mentees who the mentors believe are more worthy than the others (Niehoff, 2006). Meanwhile, formal mentorships are often formed due to specific assignment by the organization thus compared to informal mentorship, mentors might not see mentee as someone who are worthy of their support and attention (Chao et al., 2006).

A study by Russell and Adams (1997) highlights the distinction between formal and informal mentoring, with formal mentoring programs being more structured and informal mentoring relationships being more spontaneous. The study also discusses the shift towards more peer mentoring and the use of technology to facilitate mentoring relationships. The study emphasizes the importance of mentoring in organizations, as it can lead to increased job satisfaction, career advancement, and organizational commitment. The study suggests that organizations should consider implementing both formal and informal mentoring programs, as well as peer mentoring and technology-based mentoring, to meet the diverse needs of their employees.

With the benefits of mentorship being visible in the later date, formal mentoring programme were introduced in many other different contexts which include both education and corporate settings where in either of these settings, the role of mentor are assigned by the organization to an employee with higher seniority to a new student or employee (Allen et al., 2004). The formation of the relationship usually shapes the distinct difference between formal and informal relationship where informal relationships are not structured, managed or formally recognized by the

organization. These are relationships which were formed spontaneously without any external influence from the organizations while formal mentorships are monitored and managed by the organization (Chao et al., 2006; Eby et al., 2013; Morgan & Rochford, 2017; Mullen & Klimaitis, 2019).

2.2.2 Peer Mentoring in Education Context

Many institutions have established formal and informal mentoring programs and met with mixed results. Although traditional mentoring methods shows some results from previous studies, this method could be at the same time problematic to the system (Morgan & Rochford, 2017; Murrell et al., 2021). Thus, some higher education institutions have introduced peer mentoring program which involves students of roughly similar age, experience, rank and/or position within their institution (Angelique et al., 2002; Taha et al., 2014; Mullen & Klimaitis, 2019).

Study shows the impact of cooperation among undergraduates where the participants who participated in service-learning and community service shows a better academic achievement and psychosocial development. Students who participated in these activities shows a positive effect on their academic achievement such as Grade Point Average (GPA) and writing skills and also psychosocial development such as critical thinking skills, self-efficacy, leadership skill and more (Astin et al., 2000; Hong et al., 2024; Robinson & Harkins, 2018).

Research on mentoring in academic field often assume that relationship is informal although some mentoring relationships are developed in a formal nature (Eby et al., 2013). However, those in informal relationships often perceived greater career and

psychosocial support with a better relationship quality as the mentor may be more committed and willing to spend more energy and time to nurture the mentee (Liu et al., 2022; Morris, 2017).

Peer mentoring is said to be able to promote career advancement and psychosocial well-being same as traditional mentoring (Campbell et al., 2000; Mullen & Klimaitis, 2019). Although peer mentoring might limit knowledge gained as participants are bound by roughly similar experience and perspective, they tend to compensate by more readily to offer confirmation, personal feedbacks, emotional support and friendship compared to those in a traditional mentorship setting. This is due to the peer immediate experiences; thus, they will be able to show empathetic emotional support rather than sympathetic support (Collings et al., 2016; Morgan & Rochford, 2017; Terrion & Leonard, 2007). Besides that, as they are not bound by the hierarchical position in the institution, they will not be constrained to discuss matter beyond their jobs. Rather, they might be in the similar position concerning family's responsibilities and personal relationships, thus peer may be able to offer a much-related feedback to each other (Angelique et al., 2002; Morris, 2017).

Meanwhile, a study was conducted on peer mentoring programme in a university in Malaysia, Universiti Malaysia Sarawak. Based on the study, it is found that undergraduate students would prefer peer mentoring programme compared to other form of mentoring. Besides that, it also reported that the students who undertake the programme shown better academic performance (Cheah et al., 2015).

Many formal and informal mentoring relationships have been formed in colleges and institutions. For some cases, there are even books which describe the guidelines

on how to foster such a programme. However, criteria and requirement to measure the effectiveness of the programme was not reported or somehow unquantifiable (Berk et al., 2005; Eby et al., 2013). Studies also noted that although studies support the usage of peer mentoring in higher education institution aiming to reduce student attrition and improve academic performance, very few researches have studied on the type of peer who best fulfil these functions (Colvin & Ashman, 2010; Terrion & Leonard, 2017).

Besides that, evidence from the research shows that mentee from these formal mentoring programs usually does not receive the same benefits as those in informal mentoring relationships. One explanation to this phenomenon is that the lack of beneficial aspects of social attraction during the formation of mentoring pairs (Baugh & Fagenson-Eland, 2008; Morris, 2017). Thus, in order to provide a model of understanding to effectively identify the right employees in formal mentoring program, this calls for an extensive understanding of what individual differences would contribute towards the success of a mentoring relationships (Ragins & Kram, 2007).

2.2.3 Virtual Mentoring

While most of the mentoring programs involved physical interactions between the mentor and mentee, the concept of virtual mentoring has been introduced and practiced by many institutions for the past few decades. Virtual mentoring refers to the relationship between an experienced person (mentor) and novice (mentee) that established through the usage of technology such as social media application, emails, short message service (SMS) and any other electronic platform to improve

the experience of mentor and mentee (Agyemang & Haggerty, 2020; Welch, 2017). According to Tisdell & Shekhawat (2019), virtual mentoring is also known as e-mentoring, online-mentoring, cyber-mentoring, and tele-mentoring due to its nature of using electronic communication as a fundamental element in establishing mentor-mentee relationship.

With the onset of Covid-19 pandemic that imposed a great deal of restrictions on physical mentoring, there is a growing popularity of virtual mentoring among the society nowadays (Agyemang & Haggerty, 2020; Goodrich, 2021). Putting this into the context of education system, virtual mentoring has become ubiquitous with the distance learning as it provides all-day access for mentoring process, whether it is between educators and students or students and their peers (Tinoco-Giraldo et al., 2020). Virtual mentoring has an apparent advantage over the traditional mentoring method that is carried out on the basis of physical interaction as the parties involved need not to travel and conduct physical meet-up session but communicate via virtual platform (Althobaiti, 2020; Kaufman, 2017; Tisdell & Shekhawat, 2019). Therefore, virtual mentoring could be an ideal and feasible alternative to the traditional mentoring model since it offers higher accessibility to the qualified mentors regardless of the geographical distance and time constraint (Gregg et al., 2017; Iqbal, 2020; Tisdell & Shekhawat, 2019). Due to the high flexibility of virtual mentoring, it allows the vulnerable and minority population such as youth with physical disabilities or chronic illnesses to engage in mentoring programme (Agyemang & Haggerty, 2020; Kaufman, 2017).

Many studies suggested that virtual mentoring facilitates the teaching and learning process, which subsequently improves the students' academic performance (Agyemang & Haggerty, 2020; Tinoco-Giraldo et al., 2020). Since virtual mentoring service offered by higher learning institution could provide additional resources, answer questions from students or even conduct virtual meeting with mentoring staff, it could help students in overcoming their weaknesses (Farooq et al., 2022). Other than that, virtual mentoring is effective in developing leadership traits and communication skills (Agyemang & Haggerty, 2020), determining the strategies for mentees to achieve their learning and career goals (Iqbal, 2020) as well as evaluating the essential competences of modern learners such as research and analytics skills (Tinaco-Giraldo et al., 2020).

To implement a successful virtual mentoring session, it is crucial that both mentors and mentees possess adequate knowledge and skills regarding Information and Communication Technology (ICT) and have access to electronic devices such as smartphones and computers. In connection to this, education institutions should offer training program for both mentors and mentees to equip them with necessary ICT skills as well as provide sufficient technical and financial support to facilitate virtual mentoring session (Iqbal, 2020; Kaufman, 2017).

Similar with the traditional mentoring model, two ways communication is important to achieve the objectives of virtual mentoring (Agyemang & Haggerty, 2020). Both mentors and mentees should communicate with one another regularly and provide adequate response to maintain the relationship (Iqbal, 2020). It was also suggested that an apparent positive result could be obtained if the virtual

mentoring session conducted for an average duration of 16 to 20 months (Agyemang & Haggerty, 2020).

2.3 Mentorship Effectiveness

2.3.1 The Concept of Mentorship Effectiveness

Mentorship effectiveness is defined as ability of a mentor to provide guidance, feedback, and support to the mentee, which would bring many positive outcomes for the mentee leading to the mentee's career-related and psychosocial support (Bozionelos, 2004; Dubois et al., 2002; Ragins, 2007; Wanberg et al., 2003). Besides that, an effective mentorship would also bring along positive outcomes such as improved self-confidence, personal satisfaction and enthusiasm (Eby et al., 2013; Morgan & Rochford, 2017).

An effective mentoring program can be further enhanced by ensuring it is well-structured and includes clear delivery modes such as discussions, reflections, reading materials, and feedback on performance. Mentorship effectiveness is also tied to relevant, applicable, and workable mentoring components, such as attention to specific needs and providing routine and discipline. Programs built on these principles result in positive impacts for mentees, fostering classroom management skills and personal growth (Hairon et al., 2019).

An effective mentoring program would lead to several benefits especially in the education context such as retention and enrichment strategy for undergraduate students (Collings et al., 2016; Jacobi, 1991, Murrell et al., 2021). However, tools

that measure the effectiveness of a mentoring program often lack inconsistencies in definition and a generic set of functions (Berk et al., 2005; Nkrumah & Scott, 2022).

2.3.2 The Development and Measurement of Mentorship Effectiveness

Due to the critique on the previous mentorship instruments, Berk et al. (2005) designed the 'Mentorship Effectiveness Scale', a formal rating scale measuring the mentorship experience and the effectiveness of the mentor. The scale was designed into a 12 items questionnaire from derivation of desirable or positive traits and responsibilities of mentors to assess mentorship effectiveness. The derivation was also written in the form of statement where it can be assessed through a scale structure.

The 'Mentorship Effectiveness Scale' was later adapted by Turkish researchers and translated to Turkish language for a validity and reliability test. Outcome of the test shows that the 'Mentorship Effectiveness Scale' is a valid and reliable test (Yirci et al., 2016).

Besides that, the 'Mentorship Effectiveness Scale' was later adapted by several other researchers in their studies. From those studies, it has shown that the scale is a valid and reliable tool which could be used in measuring the effectiveness of mentorship (Altonji et al., 2019; Braun et al., 2017; McBride et al., 2019)

Table 1

Summary of Previous Studies on Adapting/Adopting 'Mentorship Effectiveness Scale'

No	Reference (authors)	Title of Study	Context of Study	Findings
1	Yirci et al., 2016	Turkish adaptation of the mentorship effectiveness scale: A validity and reliability study.	University's science students in Turkey	The 'Mentorship Effectiveness Scale' was fully adopted and the Cronbach Alpha coefficient for the scale is 0.936. Thus, it shows that Mentoring Relationship Effectiveness Scale is reliable and valid in the context.
2	Altonji et al., 2019	Perceived benefits of a peer mentoring program for first-year medical students.	First year medical students in USA	The 'Mentorship Effectiveness Scale' was fully adopted and the Cronbach Alpha coefficient for the scale is 0.96. Thus, it shows that Mentoring Relationship Effectiveness Scale is reliable and valid in the context.
3	Braun et al., 2017	The deaf mentoring survey: A community cultural wealth framework for	Deaf individuals from different	The 'Mentorship Effectiveness Scale' was adapted on a four factors model and the Cronbach Alpha coefficient for the scale are 0.89, 0.86, 0.80

		measuring mentoring effectiveness with underrepresented students.	demographic backgrounds	and 0.91. Thus, it shows that Mentoring Relationship Effectiveness Scale is reliable and valid in the context.
4	Mcbride et al., 2017	Building a mentoring network.	Nurse from universities	The 'Mentorship Effectiveness Scale' was fully adopted as the only instrument used in the study but the reliability was not discussed in the article.
5	Mcbride et al., 2019	Does having been mentored affect subsequent mentoring?	Scholars in the Robert Wood Johnson Foundation's Nurse Faculty Scholars (NFS) program	The 'Mentorship Effectiveness Scale' was adapted as one of the instruments used in the study but the reliability was not discussed in the article.
6	Flexman & Gelb, 2011	Mentorship in anesthesia	Academic medicine	The authors provided a review on mentorship in academic medicine and proposed future research by using the 'Mentorship Effectiveness Scale' as one

	of the instruments in the study.

*Note***.** This table summarizes studies that have utilized the Mentorship Effectiveness Scale (MES) in various contexts. The studies listed include adaptations and validations of the MES across different cultural and professional settings, with some providing reliability coefficients (Cronbach Alpha) and others using the scale as one of the instruments without specific discussion of its reliability.

2.4 Big Five Personality

The Big Five Personality is also commonly known as the Five-Factor Model (FFM). The key personality in this model includes Agreeableness, Conscientiousness. Extraversion, Neuroticism and Openness. Big Five Personality is often adapted by other research in evaluating various outcomes such as job performance, academic achievement and mentoring relationships (Costa & McCrae, 2012; Jones et al., 2014, Sosik et al., 2004; Terrion & Leonard, 2007).

Agreeableness refers to being helpful, cooperative and sympathetic towards others (Costa & McCrae, 2012). Higher levels of agreeableness often result in stronger mentorship relationships and increased mentee satisfaction (Eby et al., 2013) Individuals with a high degree of agreeability appear to be actively looking for intimacy and are more unselfish. Such people do very easily overcome disputes and enjoy mutual learning (Judge & Cable, 1997).

Conscientiousness is exemplified by being disciplined, organized and achievement-oriented (Costa & McCrae, 2012). A study by Judge and Bono (2001)

highlighted that conscientiousness contributes to transformational leadership behaviors, enhancing team dynamics and outcomes. Certain traits which are rooted from the domain of conscientiousness such as locus of control and upward striving affect the willingness of mentor in forming a mentoring relationship with mentee (Allen et al., 1997).

Extraversion is manifested in greater sociability, assertiveness, talkativeness and self-confidence (Costa & McCrae, 2012). Individuals who are more people oriented, a characteristic of extraversion are often a reason that cause mentee become more attractive to the mentor (Allen et al., 1997).

Neuroticism refers to the degree of emotional instability, anxiety, depression and anger (Costa & McCrae, 2012). The world is often viewed in either positive or negative point of view by individuals with neuroticism. Emotional instability was found to be negatively linked to the expectation and quality of mentoring relationship (Arora, 2016; Goldner, 2016).

Openness is reflected in intellect and the extent of cultural interests, fantasy and creativity (Costa & McCrae, 2012). Based on Allen et al.'s (1997) research, mentors reported that they are more likely to be drawn to mentees who embody characteristics such as 'openness to learn' and 'openness to accept constructive feedback'.

Furthermore, studies have shown that individuals with higher trait such as extraversion tend to be more comfortable and proactive in social settings, making them more likely to take on mentoring roles. At the same time, individuals with

high level of conscientiousness are often more organized and responsible where these attributes would be beneficial in a mentoring context. Lastly, openness to experience promotes creativity and a willingness to explore new ideas, which may enhance the mentoring process (Niehoff, 2006; Yu et al., 2024).

2.5 Interaction

Interactions between mentor and mentee would play as a platform for feedback among each other where for example, mentor could give constructive feedback or to motivate mentee during these interactions. Thus, these would help to improve mentee's performance (Bradley et al., 2013; Dahling et al., 2015).

Interaction would consist of all kinds of interaction whether it is formal or informal between mentor and mentee. An increase of the interaction frequency would lead to enhanced mentoring functions for the mentee and on the other hand, a decreased in the duration of interaction would decrease the willingness of mentee to take part in the relationship thus affecting mentoring functions (Huang et al., 2016). A higher frequency of involvement in the connection is required for the mentee to experience an enhanced mentoring function. On the other hand, a reduction in frequency of interaction would only lower the willingness of mentee to be engaged in a mentor-mentee relationship thus reducing mentoring functions (Dubois et al., 2008; Murphy, 2011).

Aside from the quantity of interactions, the quality of interactions would also be important in mentoring. For instance, working competency and career satisfaction of a mentee is said to be increased with the presence of positive interaction

(Beecroft et al., 2006; Polikoff et al., 2015). The quality of interaction in a mentoring program is crucial for its success and effectiveness as it ensure that both mentors and mentees understand their roles and responsibilities (Younginer & Elledge, 2021). In summary, the quality of interaction and frequency in mentorship plays a pivotal role in shaping the effectiveness of the relationship.

2.6 Hypothesis Development

2.6.1 The Relationship Between Big Five Personality and Mentorship Effectiveness

Studies have shown that not all individuals are equally suited to formal mentoring, and not all benefit equally from mentoring relationships (Rhodes & DuBois, 2006). This emphasizes the need to identify the traits that are best suited for effective mentoring programs (Eby et al., 2013).

Personality reflects an individual's tendency to think, feel, and behave in a consistent way (Shiner & Caspi, 2003). Over time, researchers have reached a consensus on the Big Five Personality dimensions, a general taxonomy that integrates various personality assessment systems into a common framework (John & Srivastava, 1999). These dimensions—Agreeableness, Conscientiousness, Extraversion, Neuroticism, and Openness—have been extensively studied in relation to mentorship effectiveness.

Empirical studies suggest that mentees with certain personality traits benefit more from mentoring relationships. For example, openness, conscientiousness, extraversion, and agreeableness have been positively correlated with mentees'

expectations of mentoring outcomes, while neuroticism negatively impacts the mentoring relationship (Bozionelos, 2004; Goldner, 2015).

2.6.1.1 Agreeableness and Mentorship Effectiveness

Agreeableness refers to an individual's tendency to be cooperative, compassionate, and trusting (John & Srivastava, 1999). Mentees with high agreeableness are likely to exhibit positive interpersonal skills, making them more receptive to advice and support from mentors. Studies show that agreeableness correlates positively with mentoring outcomes, enhancing match quality in low-conflict relationships (Cavell et al., 2020). Additionally, agreeable mentees are more likely to form strong bonds with mentors, which can improve mentorship effectiveness (Schuster et al., 2017). Furthermore, mentors with high agreeableness foster a supportive and positive mentoring environment, which in turn contributes to the mentee's job satisfaction and performance (Kumari et al., 2022).

Moreover, mentoring plays a critical role in influencing proactive behaviors in new employees. According to Yang et al. (2024), mentoring enhances proactive behavior by providing career and psychological support, as well as role modeling. Mentees with high levels of agreeableness benefit more from this mentorship, as they are more likely to engage in proactive actions that contribute to their career success. This suggests that personality traits, especially agreeableness, enhance the effectiveness of mentoring by fostering a proactive approach to work and development.

2.6.1.2 Conscientiousness and Mentorship Effectiveness

Conscientiousness is characterized by traits such as self-discipline, organization, and goal orientation. Mentees high in conscientiousness often take responsibility for their learning, making them ideal candidates for mentoring programs. Research has consistently demonstrated that conscientiousness positively influences mentoring effectiveness by fostering proactive engagement and better alignment with mentoring goals (Bozionelos, 2004; Niehoff, 2006). Additionally, mentors with conscientiousness contribute to a clear and structured mentoring approach, providing more effective guidance that enhances mentee job satisfaction and performance (Kumari et al., 2022).

2.6.1.3 Extraversion and Mentorship Effectiveness

Extraversion refers to an individual's level of sociability, energy, and assertiveness. Extraverted mentees are more likely to seek out and maintain mentoring relationships due to their outgoing nature. Studies have found significant positive correlations between extraversion and perceived mentoring effectiveness, as extraverted mentees are better at engaging in meaningful interactions with mentors (Curran et al., 2017; Jones et al., 2014). Moreover, extraverted mentees tend to demonstrate higher levels of proactive behavior and enthusiasm, which enhances the effectiveness of mentoring, leading to improved job performance (Kumari et al., 2022).

2.6.1.4 Neuroticism and Mentorship Effectiveness

Neuroticism is associated with emotional instability and a tendency to experience negative emotions such as anxiety and insecurity. High levels of neuroticism in mentees may hinder their ability to benefit from mentoring relationships. Research indicates that neuroticism negatively affects mentoring effectiveness by creating barriers to trust and open communication between mentors and mentees (Bozionelos, 2004; Goldner, 2015). Mentors working with mentees who score high in neuroticism may need to adopt more emotionally stable and supportive approaches to counteract negative emotional responses, thereby improving the mentoring outcome.

2.6.1.5 Openness and Mentorship Effectiveness

Openness reflects an individual's willingness to experience new ideas and engage in creative thinking. Mentees with high levels of openness are more likely to embrace feedback and adapt to new challenges, which positively influences mentoring outcomes. Studies have shown that openness is a key predictor of mentoring effectiveness, fostering a dynamic and innovative mentoring relationship (Kumari et al., 2022; Schuster et al., 2017).

In summary, each dimension of the Big Five Personality traits has a unique impact on mentorship effectiveness. Understanding these traits allows institutions to design more targeted mentoring programs that optimize outcomes for both mentors and mentees. By leveraging robust tools such as the Big Five Personality Inventory and the Mentorship Effectiveness Scale, researchers and practitioners can further

explore these relationships and enhance the mentoring process (Curran et al., 2017). Furthermore, understanding how specific traits such as agreeableness, conscientiousness, extraversion, and openness influence mentoring effectiveness provides insights that can be used to improve job satisfaction, job performance, and proactive behavior of mentees, particularly in professional settings (Kumari et al., 2022).

Table 2

Summary of Previous Studies on Relationship Between Big Five Personality and Mentorship

No	Reference (authors)	Title of Study	Context of Study	Findings
1	Jones et al., 2014	The influence of the Five Factor Model of personality on the perceived effectiveness of executive coaching	Post graduate students	Study shows significant positive relationship between extraversion and perceived coaching effectiveness
2	Cavell et al., 2020	Attachment Tendencies, Big 5 Personality Traits, and Self-Efficacy as Predictors of Mentors' Relationships	College students and elementary school children	Study shows in cases of low conflict between mentor and mentee, extraversion and agreeableness were found to have positive correlations with match quality. However, at high

		with Aggressive Children		levels of conflict, match quality was positively correlated with openness and conscientiousness, but negatively correlated with agreeableness.
3	Niehoff, 2006	Personality predictors of participation as a mentor	Practicing veterinarians	The study's findings showed that participation as a mentor was positively associated with extraversion, conscientiousness, and openness to experience.
4	Bozionelos et al., 2014	Mentoring receipt and personality: Evidence for non-linear relationships.	Business school's students	Study found that mentors who scored high on openness and agreeableness to experience reported receiving more mentoring, but only up to a certain point. Beyond a certain threshold, further increases in these personality traits were associated with a decrease in mentoring receipt. Low level of extraversion would be negatively associated with mentoring received however high level of

				extraversion would be positively associated with mentoring received. Having high level of conscientiousness and emotional stability would have a positive relationship with mentoring receipt.
5	Schuster et al., 2017	Mentoring in international assignments: A personality traits perspective.	Expatriates	Study found that mentors who scored high on agreeableness, openness, and emotional stability were more effective in mentoring relationships. Mentees who scored high on extraversion and openness were more likely to benefit from mentoring relationships.
6	Younginer & Elledge, 2021	Mentor personality and attachment as correlates of youth mentoring relationship quality within a school-based mentoring intervention: The moderating	College students and elementary school children	With presence of negative interactions between mentor and mentee, agreeableness and openness are significant negatively associated with child-reported relationship quality while extraversion shows significant positive association.

		role of negative interactions		
7	Curran et al., 2017	The effect of personality on mentoring.	Nil	The paper presents a protocol in investigating the effect of personality on mentoring effectiveness. The instrument proposed to measure personalities is the Big Give Personality inventory while Mentorship Effectiveness Scale was proposed to measure the mentoring effectiveness.
8	Kumari et al., 2022	The interplay between leaders' personality traits and mentoring quality and their impact on mentees' job satisfaction and job performance	Academic and non-academic staff of public and private higher education institutions in Pakistan	The study found that leaders with traits such as openness, agreeableness and emotional stability significantly influenced mentees' job satisfaction, while conscientiousness and extraversion have no influence.

Note. This table summarizes studies examining the relationship between personality traits (based on the Five Factor Model) and various mentoring outcomes. The studies include diverse populations and contexts, such as postgraduate students,

college students, veterinarians, and expatriates, and explore factors like coaching effectiveness, mentoring receipt, and relationship quality.

This line of reasoning leads to the following hypothesis:

H1: The trait of agreeableness in an undergraduate mentee positively influences mentorship effectiveness in a university setting.

H2: The trait of conscientiousness in an undergraduate mentee positively influences mentorship effectiveness in a university setting.

H3: The trait of extraversion in an undergraduate mentee positively influences mentorship effectiveness in a university setting.

H4: The trait of neuroticism in an undergraduate mentee negatively influences mentorship effectiveness in a university setting.

H5: The trait of openness in an undergraduate mentee positively influences mentorship effectiveness in a university setting.

2.6.2 Influence of Interaction as Moderating Variable on the Relationship Between Big Five Personality to Mentorship Effectiveness

Only with consistent meetings and after a strong bond is formed then only can both the mentor and mentee continue to pursue to achieve the objectives of the mentoring relationship (Hernandez et al., 2016; Rhodes et al., 2005). Therefore, a mentor should put more effort and spend more time to reach out to their mentee to encourage communication which will cause the mentee to be more likely to share information with the mentor (Solansky, 2010).

Sometimes the difficulties from the mentoring relationship might bring upon some negative aspects which might outweigh or even removing all the positive aspects (Rhodes et al., 2005). However, research has shown that in a stable relationship, positive interactions will occur five times more than the negative interactions. Thus, this ratio shown an implication of a healthy relationship (Murphy, 2011; Rhodes et al., 2005).

Results from a study conducted in Malaysia higher education also shown that peer mentor and mentee who were university students perceived that in order to improve the outcome of peer mentoring, interaction between mentor and mentee must be increased (Cheah et al., 2015). At the same time, it is also suggested that people tend to have more positive interactions with other who they seemed to be similar to them or have similar personality as compared to those who have different experience than them. Besides that, interaction among those individuals who have similar personalities would also reduce uncertainty among them and thus promoting trust among one and another (Menges, 2015).

The interaction which is part of the mentorship program characteristic would serve as a moderating variable which would have potential influence as a catalyst or lead to a positive outcome on mentoring-program effectiveness (Dubois et al., 2011; Dubois et al., 2002; Eby et al., 2013; Shaw et al., 2020).

Ginis et al. (2018) found that there was a positive correlation between mentorship time towards perceived supportiveness of a mentor. As time spent on mentorship increase, the perceived supportiveness of a mentor by the mentee will also increase as well. Besides that, frequency of interaction was also found to have a correlation

towards the development of a mentee's career decision self-efficacy (CDSE) and their satisfaction with the mentoring experience (Ayoobzadeh, 2019).

Interaction frequency between mentor and mentee would also affect how personalities of mentor and mentee are reflected among each other during the interaction. With a higher interaction frequency, mentee could have a better perception on the personalities of their mentor. This is because even with just a one-minute interaction between individuals, they would tend to have a substantial understanding on the personalities of others (Tackett et al., 2016). Mentee with personality such as extraversion will have positive influence on mentoring experience and thus, they tend to be more frequently engaged in interactions with mentors. With interaction, mentor and mentee would be able to form acceptance and confirmation in their relationship thus resulting in promotion of career and psychosocial support (Menges, 2015).

This line of reasoning leads to the following hypothesis:

H6: Interaction will moderate the relationship between the Big Five Personality traits of undergraduate mentees and mentorship effectiveness in a university setting.

H6a: *Interaction will moderate the relationship between agreeableness in undergraduate mentees and mentorship effectiveness in a university setting.*
H6b: *Interaction will moderate the relationship between conscientiousness in undergraduate mentees and mentorship effectiveness in a university setting.*
H6c: *Interaction will moderate the relationship between extraversion in*

undergraduate mentees and mentorship effectiveness in a university setting.

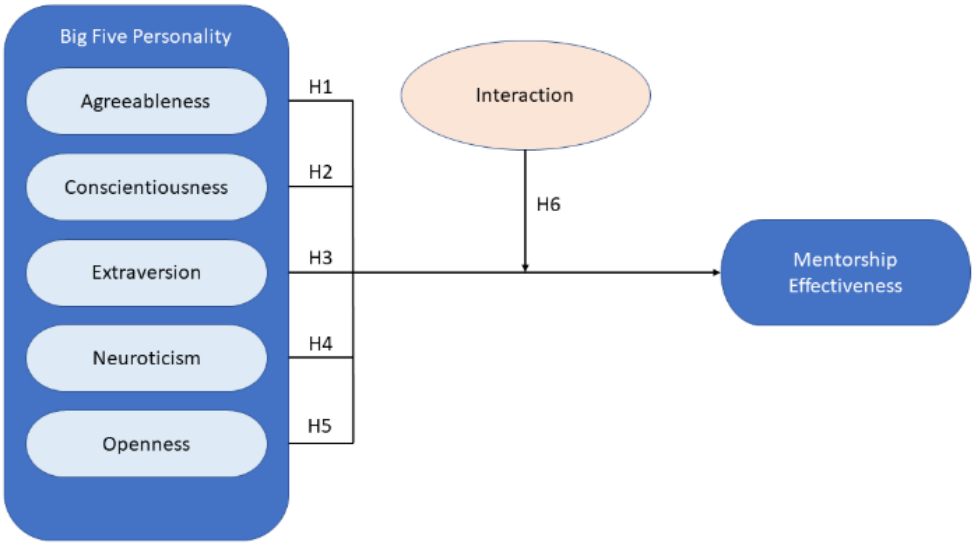
H6d: *Interaction will moderate the relationship between neuroticism in undergraduate mentees and mentorship effectiveness in a university setting.*

H6e: *Interaction will moderate the relationship between openness in undergraduate mentees and mentorship effectiveness in a university setting.*

2.7 Conceptual Framework and Hypothesis of The Study

Figure 1

Conceptual Framework



Note. The conceptual framework illustrates the relationship between the Big Five Personality traits (IV), mentorship effectiveness (DV), and the moderating role of interaction (moderator).

This framework shows an illustration of the relationship between Big Five Personality (IV) and Mentorship Effectiveness (DV) with the presence of

Interaction as the Moderating Variable. Based on the framework of this study, the study will identify the direct relationship of each item in Big Five Personality (IVs: Agreeableness. Conscientiousness, Extraversion, Neuroticism and Openness) to Mentorship Effectiveness (DV). This study also examines the moderating effect of interaction on the relationship between each dimension of the Big Five personality traits (Agreeableness, Conscientiousness, Extraversion, Neuroticism, and Openness) and mentorship effectiveness as the dependent variable.

2.8 Hypothesis Summary

H1: The trait of agreeableness in an undergraduate mentee positively influences mentorship effectiveness in a university setting.

H2: The trait of conscientiousness in an undergraduate mentee positively influences mentorship effectiveness in a university setting.

H3: The trait of extraversion in an undergraduate mentee positively influences mentorship effectiveness in a university setting.

H4: The trait of neuroticism in an undergraduate mentee negatively influences mentorship effectiveness in a university setting.

H5: The trait of openness in an undergraduate mentee positively influences mentorship effectiveness in a university setting.

H6: Interaction will moderate the relationship between the Big Five Personality traits of undergraduate mentees and mentorship effectiveness in a university setting.

H6a: *Interaction will moderate the relationship between agreeableness in undergraduate mentees and mentorship effectiveness in a university setting.*
H6b: *Interaction will moderate the relationship between conscientiousness in undergraduate mentees and mentorship effectiveness in a university setting.*
H6c: *Interaction will moderate the relationship between extraversion in undergraduate mentees and mentorship effectiveness in a university setting.*
H6d: *Interaction will moderate the relationship between neuroticism in undergraduate mentees and mentorship effectiveness in a university setting.*
H6e: *Interaction will moderate the relationship between openness in undergraduate mentees and mentorship effectiveness in a university setting.*

2.9 Chapter Summary

Based on previous researches on this topic, there are several evidences which show that there are positive and negative relationships between factors of the Big Five Personality to mentorship effectiveness. At the same time, researches also supported that with the presence of a better interaction, there will be a significant effect on the later mentoring outcomes. Thus, several hypotheses were formed to further examine the relationship.

CHAPTER 3: RESEARCH METHODOLOGY

3.0 Introduction

This chapter discuss about the research design, sampling design, data collection method. Besides that, development of questionnaire will also be included in this chapter. It further discussed the questionnaire that was used in this study. This chapter also outlined the pilot test as well as statistical analysis.

3.1 Research Design

The main objectives of this research are to (a) study the influence of Big Five Personality of mentee towards mentorship effectiveness, (b) study the influence of Big Five Personality of mentee towards mentorship effectiveness with interaction as a moderator and (c) develop a framework and measurement to explore the influence of individual's personality towards mentorship effectiveness with the presence of interaction as moderating variable, a large amount of data is necessary for the analysis process. Through the analysis of the larger amount of data, only can the result be used as a generalization which represent all (Mccusker & Gunaydin, 2014).

Although the study adopts a quantitative research design, it is conducted within a single institutional context—Universiti Tunku Abdul Rahman (UTAR), Kampar Campus—which serves as the case setting for this research. Hence, the term case study in the title refers to the bounded context of the investigation rather than a qualitative case study methodology. This contextual approach allows the study to

focus specifically on the mentorship dynamics within one higher education institution while employing quantitative data collection and analysis methods.

Data which was used in this research consist of both primary data as well as secondary data where primary data was collected directly from the undergraduates through the form of questionnaire while secondary data from other researchers was used during the discussion of the result.

At the same time, the primary data gathered was analyzed under quantitative analysis. As the data collected will be in a large volume, quantitative analysis enables a more effective approach in analyzing those data compared to qualitative analysis (Mccusker & Gunaydin, 2014). Furthermore, this study uses deductive approach where the hypotheses are derived from the past study and theory (Woiceshyn & Daellenbach, 2018). Besides that, this study employed the method of cross-sectional study to gather data from the respondents at one time (Sedgwick, 2014) and descriptive research design whereby this study described the characteristics of the respondents at the end (Omair, 2015).

3.2 Sampling Design

Sampling design is a way to get a sample size from a population (Sekaran & Bougie, 2013). A suitable sampling design must be drawn out prior the research to prevent limitation caused by a poor sampling design. Thus, a sampling design which include target population, sampling frame and sampling location, sampling technique and sampling size will be drawn out.

3.2.1 Target Population

Target population is a group of people who is being studied in the study to produce related information (Sekaran & Bougie, 2013). In this research, target populations are undergraduate students studying in a private higher education institution, Universiti Tunku Abdul Rahman, Kampar Campus. The reason for choosing the undergraduate students as target population is to provide insight to higher education institutions about the association between Big Five Personality and the effectiveness of mentorship. Therefore, higher education institutions may plan a more effective mentoring programme for their students in future with the finding of this study.

3.2.2 Sampling Technique

Convenience sampling was employed for this research, a non-probability sampling technique where participants are selected based on their accessibility and the researcher's ease of access to the population (Setia, 2016). This method was chosen due to practical considerations, including time constraints, logistical ease, and the availability of participants from the service-learning courses at the university. By leveraging a readily accessible group of undergraduate students, the study ensured efficient data collection while acknowledging the limitations of this approach, such as the absence of randomization.

3.2.3 Sampling Frame and Sampling Location

Sampling frames refer to a group from the selected target population (Turner, 2003). Sampling frame in this study is the complete list of undergraduate students in

Universiti Tunku Abdul Rahman (UTAR), Kampar Campus as they would participate in the study. This study does not have the list of undergraduate students in UTAR, Kampar Campus. However, the numbers of undergraduate students in the private higher education institution UTAR are 17,491 in year 2020 (Quacquarelli Symonds, n.d.). As the complete list of every student is not available, therefore non-probability sampling design, convenient sampling was adopted. Hence, the sampling frame of the study is 17,491. Sampling location is used to enroll target population in the selected venue (Sekaran & Bougie, 2013). In this study, the sampling location is in UTAR Kampar Campus, Malaysia.

3.2.4 Sampling Size

The data from this study were obtained mainly from the undergraduate students at one of the prominent private universities in Malaysia. The suitable sampling size is 172 based on the GPower Protocol with standard criteria of effect size f2 = 0.15, α error probability = 0.05, Power (1-β err prob) = 0.95 and number of predictors (inclusive of the interaction terms) = 10 (Faul et al., 2009).

3.2.5 Sampling Element

The sampling elements of this study include undergraduate students of UTAR who possess the following characteristics: (a) Undergraduate students from all faculties, (b) Undergraduate students who are pursuing Full-Time studies, (c) Undergraduate students from all Year of studies and (d) Undergraduate students who are taking MPU U4 subjects (service-learning subject) within the semester.

3.3 Data Collection Method

At the beginning of the semester, new groups of undergraduate students will be assigned to university service-learning courses. Students enrolled in these disciplines must organise an out-of-classroom activity/project and work in groups with their classmates to complete several assignments, projects and events. A senior student was designated as the group leader, in charge of the other junior pupils. Then, a mentor-mentee connection was developed, with the students' group leader serving as the mentor and the remaining members serving as the mentee.

The mentor and mentees then interacted with each other during the semester and the mentor played a role in providing leadership advice and managing the group's project with the mentees. The questionnaires were distributed to the mentees after 14 weeks, which is at the end of the semester to determine the perception of mentorship effectiveness among mentees.

The survey received ethical clearance from the university's Scientific and Ethical Review Committee before it was distributed. To ensure confidentiality, participants would have to agree to a Personal Data Protection Statement and the response was collected via Google Form.

A total of 644 undergraduate students were approached to take part in the study and a total of 310 valid data from the mentees were obtained. The final response rate for the survey was 48.1%. The data was collected from August 2021 to October 2022 where the undergraduate students are affected by the COVID-19 lockdowns and were undergoing virtual learning in Malaysia.

A preprocessing step helped to remove incomplete or invalid data. The exclusion criteria include: (1) no entire section completed, (2) fewer than half of the items answered, or (3) all items answered the same.

3.4 Research Instrument Development and Measurement

The study utilized a well-validated instrument (as shown in Appendix I) based on existing literature to measure key constructs. This instrument represents a comprehensive questionnaire divided into four sections. The first section captures the demographic profile of participants. Subsequent sections focus on measuring the personality traits of mentees, evaluating interaction dynamics and assessing mentorship effectiveness.

3.4.1 Questionnaire Design

Drawing from the principles of TAT, the questionnaire design aligns with the nuanced understanding of how personality traits, interaction and mentorship effectiveness interconnect. This methodological approach ensures a robust foundation for exploring the influence of individual personality on mentorship effectiveness, with interaction serving as a moderating factor.

The questionnaire design was informed by theoretical and empirical insights. The constructs and variables measured in this study were identified through an extensive review of literature.

Mentorship effectiveness, a critical outcome variable, was based on the framework developed by Berk et al. (2005), which evaluates the mentoring relationship's overall impact on mentees' personal and academic growth.

The Big Five Personality traits were grounded in the theoretical framework developed by John and Srivastava (1999). These traits—agreeableness, conscientiousness, extraversion, neuroticism, and openness—reflect enduring patterns of behavior, thought, and emotion. For example, agreeableness encompasses characteristics such as trust, altruism, and cooperation, serving as a fundamental dimension of interpersonal behavior.

Interaction dynamics were adapted from the work of Buhrmester and Furman (2008), focusing on the quality and frequency of mentor-mentee interactions.

The questionnaire was administered in English, ensuring accessibility and comprehension for all participants, as they were proficient in the language.

3.4.2 Construct Measurement

Construct measurement in this study focuses on defining and operationalizing the abstract concepts necessary to examine the research objectives. Constructs such as the Big Five Personality traits, interaction dynamics, and mentorship effectiveness are theoretical frameworks that require precise measurement tools to evaluate their relationships systematically. The validity and reliability of these constructs are fundamental to ensure accurate data collection and analysis.

Table 3

The Detail and Sources of Measurement Items

No	Construct	Number of Items	Source
1	Mentorship Effectiveness	12	Berk et al. (2005)
2	Big Five Personality	44	John and Srivastava (1999)

3	Interaction	4	Buhrmester and Furman (2008)

Note. This table presents the constructs, the number of items used to measure each construct, and the corresponding sources. Mentorship effectiveness is measured using 12 items based on Berk et al. (2005). The Big Five Personality traits are assessed through 44 items based on John and Srivastava (1999). Interaction is measured using 4 items adapted from Buhrmester and Furman (2008). Each of these constructs captures essential dimensions relevant to the study, such as mentor-mentee interactions, personality traits, and effectiveness of the mentorship process.

3.4.2.1 Mentorship Effectiveness

Mentorship effectiveness was operationalized as mentees' perceptions of their mentoring relationship, encompassing aspects such as support, guidance, and developmental impact. This construct was measured using a 12-item scale developed by Berk et al. (2005). A 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree) was employed to gauge participants' evaluations of the mentoring experience.

3.4.2.2 Big Five Personality Traits

The Big Five Personality traits served as the key independent variables. These traits were operationalized based on the validated framework by John and Srivastava (1999):

- **Agreeableness**: Measured through 9 items reflecting traits like trust, altruism, and cooperation.

- **Conscientiousness**: Measured through 9 items assessing organization, self-discipline, and goal orientation.
- **Extraversion**: Measured through 8 items evaluating sociability, energy, and assertiveness.
- **Neuroticism**: Measured through 8 items examining emotional instability and negative affectivity.
- **Openness**: Measured through 10 items focusing on creativity, curiosity, and adaptability.

A 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree) was used to capture the participants' self-assessments on these traits.

3.4.2.3 Interaction

Interaction was measured as the moderating variable, capturing the quality and frequency of mentor-mentee interactions. This construct was based on the scale developed by Buhrmester and Furman (2008). The scale includes 4 items designed to assess the depth and frequency of interaction, using a 4-point Likert scale ranging from 1 (Little or None) to 4 (The Most). Interaction was positioned as a critical factor influencing the relationship between personality traits and mentorship effectiveness.

3.5 Validity and Reliability

The instruments used in this study are well-established and widely recognized for their validity and reliability. The questionnaire items were pilot-tested to ensure

clarity and appropriateness for the target population. Cronbach's alpha was calculated for each construct to confirm internal consistency. Moreover, construct validity was assessed to ensure that the measures accurately reflect the theoretical constructs they are intended to represent.

By operationalizing constructs with validated tools and ensuring methodological rigor, this study effectively examines the influence of Big Five Personality traits on mentorship effectiveness, with interaction as a moderating factor.

3.6 Pilot Test

Table 4

Construct Reliability and Validity

Construct	Cronbach's Alpha
Agreeableness	0.893
Conscientiousness	0.807
Extraversion	0.717
Neuroticism	0.714
Openness	0.937
Frequency Interaction	0.783
Mentoring Effectiveness	0.924

Note. This table presents the Cronbach's alpha coefficients for each construct used in the study. Cronbach's alpha values indicate the internal consistency of the scales used to measure the constructs.

Pilot Test has been conducted on 50 samples prior to the actual study to ensure the reliability of the survey instrument. The Cronbach's alpha for Big Five Personality

ranged from 0.714 to 0.937, while alpha values reported for interaction is 0.783 and mentoring effectiveness is 0.924. All variables showed a Cronbach's alpha value of > 0.7 (Hair et al., 2020). Thus, the reliability of the scale was established.

3.7 Statistical Analysis

The data from 310 mentees collected in this study was initially entered into IBM-SPSS statistical software for preprocessing and then further analyzed using SmartPLS 4 to test the study's hypotheses. The Partial Least Squares Structural Equation Modeling (PLS-SEM) approach was employed to explore the fundamental relationships between the Big Five Personality traits, interaction, and mentorship effectiveness.

PLS-SEM is particularly suited for this study because it enables the analysis of complex models comprising multiple variables, constructs, and structural paths while being robust to non-normal data distributions. Unlike covariance-based SEM, PLS-SEM adopts a causal-predictive approach, focusing not only on hypothesis testing but also on predictive accuracy. This makes it ideal for uncovering and validating both explanatory and predictive relationships in the proposed model (Hair et al., 2019). Furthermore, PLS-SEM's flexibility in handling smaller sample sizes and its capability to manage formative and reflective measurement models make it a powerful tool for testing the intricate interconnections within this study's framework.

3.7.1 Descriptive Analysis

Descriptive analysis enables to transform the collected data into useful information. It helps to interpret the collected data from the mean, standard deviation and range of data. It transforms the collected data according to the distribution of variables like gender, age, year of study, faculty, big five personality, interaction and mentorship effectiveness.

3.7.2 Assessment of Measurement Model

Assessment of reflective measurement model enable researcher to determine the indicator's capability in predicting the latent variable. Indicator in this study is the item of questionnaire while latent variables are personalities, interaction and mentorship effectiveness. It could be done by analysing the factor analysis of latent variable which it will show the factor loading of the indicator. Hence, it can explain the magnitude and strength of the indicator toward the latent variables (Fan et al., 2016). The factor loading of the indicator should be above the value of .7 and the t-statistic within 1 standard deviation with significant of a two-tailed test at the 5% level. Besides, the internal consistency of latent variable will be analysed with Cronbach's Alpha (A) and the coefficient should be within .7 to .95. Coefficient below .7 indicates the latent variable is not reliable. On the other hand, coefficient above .95 indicates that there are redundant of indicator (Hair et al., 2020). In order to test for the reliability and validity of the model, other test such as Convergent Validity and Discriminant Validity will be performed. In short, these assessments will be checked prior to the analysis of measurement model.

3.7.3 Assessment of Structural Model

Assessment of structural model enable to determine the model's capability in predicting the target construct (Hair et al., 2017). It measures the causal relationship between latent variables based on prior knowledge of theory which are personalities and mentorship effectiveness in this study. Thus, it enables the study to understand the causal relationship between independent latent variable and dependent latent variable. This assessed the multicollinearity between the independent variables. The multicollinearity which was assessed by the bivariate correlation between independent variables should be below .5 and the Variance Inflation factor (VIF) value should be below 3. Then, this study has also assessed the size and significance of the path coefficients. The path coefficients range from +1 to -1 with closer to 0 indicated weaker influence of independent variables on dependent variable while higher to 1 indicated stronger influence of independent variables on dependent variable (Hair et al., 2020). Further finding from SmartPLS 4 software on this model such as R^2 values, F^2 values and Q^2 values for Construct Cross validated Redundancy will be discussed in the later chapter.

3.7.4 Moderation Analysis

Moderation analysis helps to determine whether the relationship between two variables is affected by a third variable. It is used when the homogeneous of the relationship between two variables might be buffered by the third variable. The buffer of third variable in the relationship between two variables may cause the change of magnitude and strength of independent latent variable toward dependent latent variable (Baron & Kenny, 1986). In this study, the moderator is interaction.

The significance value, p of the interaction effect for the moderator and independent variables on dependent variable should be less than .05 in order to report that there is a moderation effect of the moderator.

3.8 Chapter Summary

This is a descriptive and quantitative research which aim to examine the influence of Big Five Personality (IV) to Mentorship Effectiveness (DV) with the presence of Interaction which serve as a moderating variable. This research is aimed in the context of Malaysian undergraduates where primary data was collected for analysis. The results from the data processed will be discussed in the following chapter.

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

This chapter consists of the reports on the descriptive analysis for the study which was illustrated through Table 5. Meanwhile, the assessment of measurement model as well as the structural model were generated from the SmartPLS 4. The data consist of a total of 310 responses from the undergraduate mentee students, which exceed the 172 minimum sample size that are required for this study.

A total of 310 valid and useable samples were collected from 137 male (44.2%) and 173 female (55.8%) undergraduate student mentees age from 18 to 27, Year 1 to Year 5 of study from various faculties such as business, science, IT, arts and etc.

4.1 Descriptive Analysis

Table 5

Demographic Data of Participants

Description	Number/Frequency	Percentage
Mentor/ Mentee Position		
Mentor	70	18.4
Mentee	310	81.6
Gender		
Male	165	43.4
Female	215	56.6
Age		
18	3	0.8

19	127	33.4
20	143	37.6
21	44	11.6
22	36	9.5
23	15	3.9
24	6	1.6
25	5	1.3
26	0	0.0
27	1	0.3
Year of Study		
Year 1 Semester 1	107	28.2
Year 1 Semester 2	53	13.9
Year 1 Semester 3	18	4.7
Year 2 Semester 1	84	22.1
Year 2 Semester 2	50	13.2
Year 2 Semester 3	12	3.2
Year 3 Semester 1	25	6.6
Year 3 Semester 2	5	1.3
Year 3 Semester 3	10	2.6
Year 4 Semester 1	13	3.4
Year 4 Semester 2	2	0.5
Year 4 Semester 3	0	0.0
Year 5 Semester 1	1	0.3
Year 5 Semester 2	0	0.0
Year 5 Semester 3	0	0.0
Faculty/ Institute		

Faculty of Business and Finance	132	34.7
Faculty of Information and Communication Technology	99	26.1
Faculty of Science	81	21.3
Faculty of Engineering and Green Technology	36	9.5
Institute of Chinese Studies	13	3.4
Faculty of Arts and Social Science	12	3.2
Faculty of Accountancy and Management	7	1.8

Note. N = 380 (70 mentors, 310 mentees). Participants were predominantly female (56.6%) and aged 19-20 years (71.0%). The largest group was in Year 1 Semester 1 (28.2%), with the Faculty of Business and Finance representing 34.7%.

4.1.1 Mentor/Mentee Position

The study included a total of 380 participants, of which 310 (81.6%) were mentees and 70 (18.4%) were mentors. This distribution highlights the study's focus on the mentee experience, which aligns with the study's objective of exploring the impact of mentees' personality traits on mentorship effectiveness. The larger proportion of mentees ensures robust data for analyzing their perspectives and outcomes.

4.1.2 Gender

The gender distribution of the participants shows a slight predominance of females, with 215 (56.6%) female participants and 165 (43.4%) male participants. This

indicates a fairly balanced gender representation, allowing for gender-based observations or comparisons if necessary.

4.1.3 Age

Participants' ages ranged from 18 to 27 years, with the majority falling within the 19 to 20-year-old range:

- 19 years: 127 participants (33.4%)
- 20 years: 143 participants (37.6%) This reflects the typical age group of undergraduate students, ensuring relevance to the context of higher education mentorship. Notably, participants aged 18 to 22 years collectively accounted for 93.9% of the sample, emphasizing the study's focus on younger, full-time students.

4.1.4 Year of Study

The distribution of participants across their academic years and semesters indicates that most were in the earlier stages of their studies:

- Year 1 Semester 1 had the highest number of participants at 107 (28.2%), followed by Year 2 Semester 1 with 84 (22.1%).
- A declining trend in participation is observed in the later academic years, with only 1 participant (0.3%) in Year 5 Semester 1 and no participants in Year 4 Semester 3 or Year 5 Semester 2 and 3.

This pattern suggests that the sample was skewed toward students in their initial academic years, possibly due to their active involvement in service-learning courses or greater availability for participation.

4.1.5 Faculty/Institute

The participants represented a diverse range of faculties, with the highest representation from:

- Faculty of Business and Finance: 132 (34.7%)
- Faculty of Information and Communication Technology: 99 (26.1%)
- Faculty of Science: 81 (21.3%)

Other faculties had relatively smaller contributions, such as:

- Faculty of Engineering and Green Technology: 36 (9.5%)
- Institute of Chinese Studies: 13 (3.4%)
- Faculty of Arts and Social Science: 12 (3.2%)
- Faculty of Accountancy and Management: 7 (1.8%)

This demographic data provides a comprehensive foundation for the study, ensuring the representativeness of participants from various academic backgrounds, genders, and levels of study.

4.2 Normality Test

A normality test was performed to test for data normality through skewness and kurtosis analysis. As shown in Table 6, the values of all key variables fall within the range of ± 3 for skewness and meet the criteria of ± 10 for kurtosis (Brown, 2006).

Table 6

Skewness and Kurtosis

Variables	Skewness	Kurtosis
Agreeableness	0.120	0.114
Conscientiousness	-0.498	-0.236
Extraversion	0.008	-0.109
Neuroticism	0.075	-0.316
Openness	-0.830	0.864
Interaction	-0.659	0.058
Mentoring Effectiveness	-0.600	0.439

Note. This table presents the skewness and kurtosis values for each variable in the study.

4.3 Assessment of Measurement Model

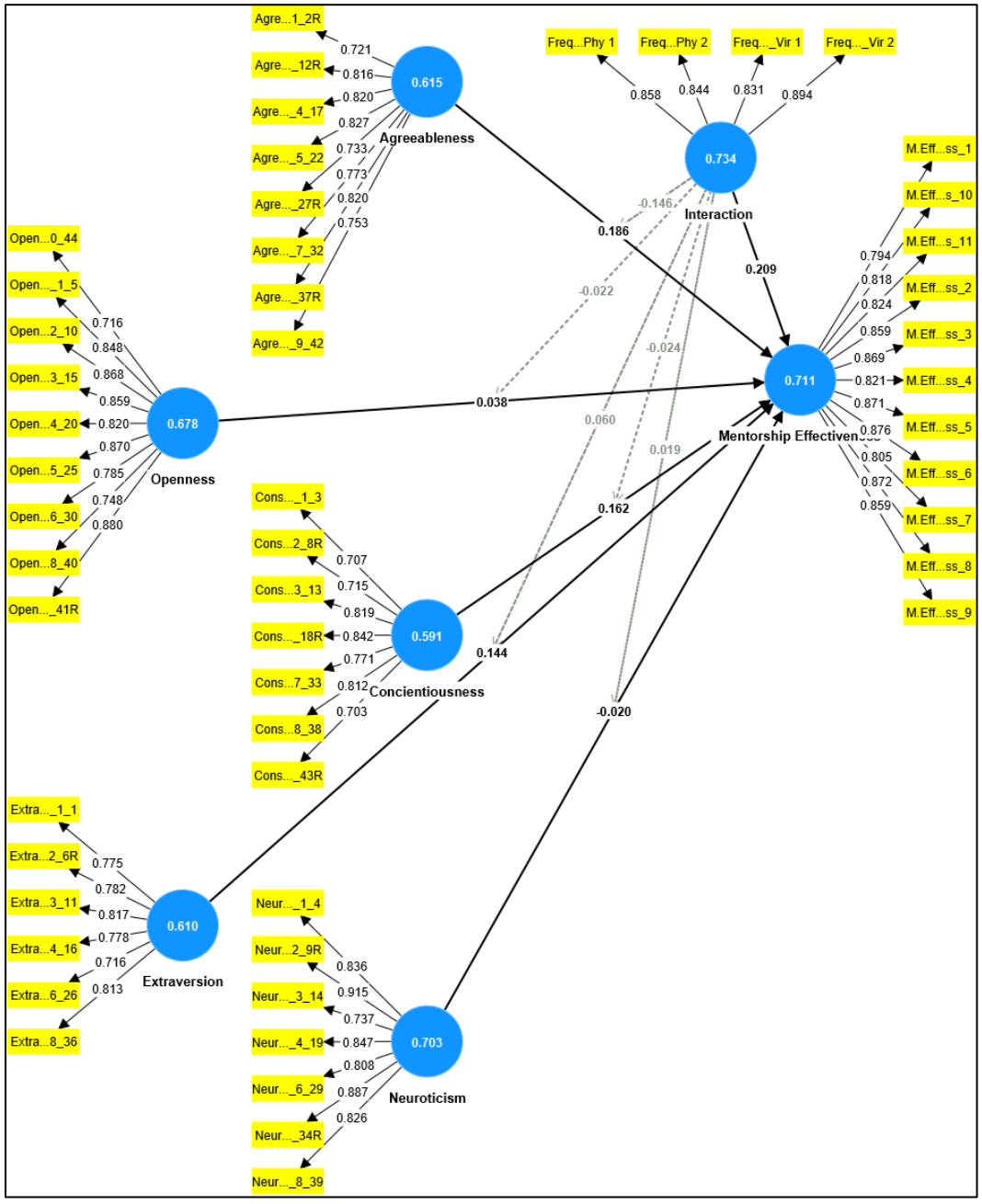
The measurement model was assessed as per the following steps such as estimate of loadings and significance, indicator reliability, composite reliability, average variance extrated and discriminant validity (Hair et al., 2020).

4.3.1 Internal Consistency and Convergent Validity

Hair et al. (2020) stated items loadings must be above 0.7 for individual item reliability to be accepted. The construct ensured that all items' loadings are above 0.7 for individual item reliability to be accepted. All the constructs in Table 7 show that both the Cronbach's Alpha and Composite Reliability values are > 0.7, indicating good reliability (Hair et al., 2020). Thus, these results indicate that the instrument used in this study has great internal consistency. Besides, the AVE values of all the key constructs in this study are above 0.5, thus convergent validity is adequate (Hair et al., 2020).

Figure 2

Measurement Model from SmartPLS Software



Note. This figure illustrates the measurement model generated using SmartPLS software.

Table 7

Reliability Statistics and Validity

Constructs	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Agreeableness	0.911	0.923	0.615
Conscientiousness	0.884	0.890	0.591
Extraversion	0.878	0.897	0.610
Neuroticism	0.932	0.970	0.703
Openness	0.942	0.968	0.678
Interaction	0.879	0.887	0.734
Mentorship	0.959	0.961	0.711
Effectiveness			

Note. This table presents the reliability and validity statistics for each construct, including Cronbach's alpha, composite reliability (CR), and Average Variance Extracted (AVE). Cronbach's alpha indicates internal consistency, CR assesses construct reliability, and AVE measures convergent validity.

4.3.2 Discriminant Validity

Next, the measurement model's discriminant validity was measured. The best approach in assessing the discriminant validity would be by using the heterotrait-monotrait ratio of correlations (HTMT). The accepted cutoff value is 0.9 to interpret the HTMT value where discriminant validity is established when the value of HTMT is below 0.9 (Gold et al., 2001). From the result in Table 8, all HTMT values are lower than 0.9. Thus, discriminant validity is regarded to be established in this construct. The findings from the assessment of measurement model above

represent satisfactory values and thus indicate that the approach has attained a sufficient level of validity and reliability (Hair et al., 2020).

Table 8

HTMT Output

Constructs	Agreeableness	Conscientiousness	Extraversion	Neuroticism	Openness	Interaction
Agreeableness						
Conscientiousness	0.326					
Extraversion	0.077	0.138				
Neuroticism	0.096	0.139	0.387			
Openness	0.145	0.134	0.075	0.049		
Interaction	0.42	0.945	0.074	0.08	0.163	
Mentoring Effectiveness	0.397	0.495	0.209	0.135	0.154	0.536

Note. This table presents the Heterotrait-Monotrait ratio (HTMT) values for the constructs used in the study. The table shows the HTMT values for the relationships between pairs of constructs, with higher values indicating greater similarity between the constructs.

From the result above, all HTMT values are lower than 0.9. Thus, discriminant validity is regarded to be established in this construct.

The findings from the assessment of measurement model above represent satisfactory values and thus indicate that the approach has attained a sufficient level of validity and reliability (Hair et al., 2020).

4.4 Assessment of Structural Model

Once the measurement model's reliability and validity have been established, the structural model must be evaluated (Hair et al., 2020). The hypothesized association between variables will be investigated in the structural model. The structural model was assessed as per the following steps such as evaluating structural model collinearity, examine size and significance of path coefficients, understanding how much the model account for the variance through R^2, identifying how much each variable affect the change in R^2 through f^2 effect size and discover the predictive relevance of model through Q^2 value (Hair et al., 2020).

The model reflect on the relationship between the Big Five Personality (IV) which consists of Agreeableness, Conscientiousness, Extraversion, Neuroticism and Openness to Mentorship Effectiveness (DV) with the presence of Interaction as the Moderating Variable.

Table 9

Path Coefficient, Standard Error, P-Value, f2, Hypotheses Testing, VIF

Hypothesis	Description	Std_Beta	Std_Error	P Values	f^2	Decision	VIF
H1	**Agreeableness -> Mentoring Effectiveness**	**0.186**	**0.051**	**0*** **	**0.045**	**Supported**	1.238
H2	Conscientiousness -> Mentoring Effectiveness	0.162	0.114	0.156	0.011	Not Supported	3.851
H3	**Extraversion -> Mentoring Effectiveness**	**0.144**	**0.048**	**0.003*** **	**0.027**	**Supported**	1.237
H4	Neuroticism -> Mentoring Effectiveness	-0.020	0.052	0.702	0.001	Not Supported	1.197
H5	Openness -> Mentoring Effectiveness	0.038	0.050	0.449	0.002	Not Supported	1.112
H6a	**A x I -> Mentoring Effectiveness**	**-0.146**	**0.060**	**0.015** **	**0.042**	**Supported**	1.439
H6b	C x I -> Mentoring Effectiveness	-0.024	0.050	0.626	0.001	Not Supported	1.698
H6c	E x I -> Mentoring Effectiveness	0.060	0.055	0.276	0.005	Not Supported	1.575
H6d	N x I -> Mentoring Effectiveness	0.019	0.062	0.763	0	Not Supported	1.510
H6e	O x I -> Mentoring Effectiveness	-0.022	0.048	0.645	0.001	Not Supported	1.293

*p<0.1, **p<0.05, ***p<0.01

Note: A=Agreeableness, C=Conscientiousness, E=Extraversion, N=Neuroticism, O=Openness, x F = with inclusion of interacting frequency as moderating variable

4.4.1 Collinearity

Structural model was assessed by performing bootstrapping procedure with 5000 re-sampling. Table 9 shows that all items are below the Variance Inflation Factor (VIF) of 3. If the VIF score is more than 3, there is likely to be significant multicollinearity between the exogenous variables (Hair et al., 2020). Thus, there are no serious multicollinearity issue in this model.

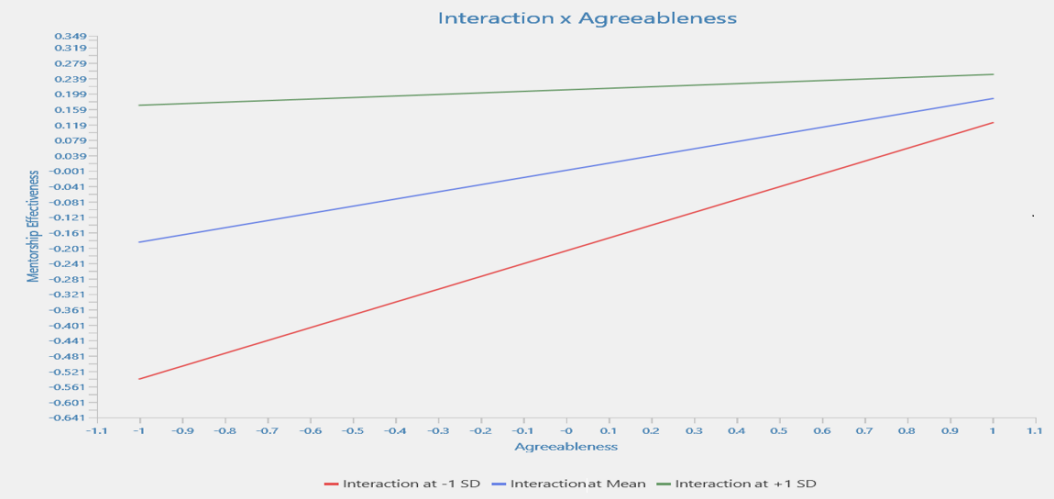
4.4.2 Path Coefficients

Table 9 shows that agreeableness has the most significant positive influence on mentoring effectiveness ($\beta = .186$, $p < .01$). Meanwhile, the trait with the second highest significant positive influence on mentoring effectiveness is extraversion ($\beta = .144$, $p < .01$). Thus, Hypothesis 1 and 3 were supported. However, traits such as conscientiousness ($\beta = .162$, $p > .05$), neuroticism ($\beta = -.02$, $p > .05$) and openness ($\beta = .037$, $p > .05$) show non-significant result. Therefore, Hypothesis 2, 4 and 5 were not supported.

The analysis of the moderating effect, interaction on the relationship between agreeableness ($\beta = -.146$, $p < .05$) and mentorship effectiveness shows significant result suggesting that interaction negatively moderates the relationship between agreeableness and mentorship effectiveness while conscientiousness ($\beta = -.024$, $p > .05$), extraversion ($\beta = .060$, $p > .05$), neuroticism ($\beta = .019$, $p > .05$) and openness ($\beta = -.022$, $p > .05$) show non-significant results. Thus, Hypothesis 6a was supported while Hypothesis 6b to 6e were not supported.

Figure 3

Simple Slope Analysis of Moderating Effect of Variable 'Interaction' on Relation of 'Agreeableness' and 'Mentorship Effectiveness' Constructs.



Note. This figure illustrates the simple slope analysis examining the moderating effect of the variable 'Interaction' on the relationship between 'Agreeableness' and 'Mentorship Effectiveness.' The analysis tests how different levels of interaction (e.g., high vs. low) influence the strength of the relationship between agreeableness and mentorship effectiveness, providing insight into the conditional nature of this relationship.

Figure 3 illustrates the moderating effect of "Interaction" on the relationship between Agreeableness and Mentorship Effectiveness at three levels: -1 SD (low interaction), mean (average interaction) and +1 SD (high interaction). All three lines with positive slope show that higher levels of Agreeableness are associated with increased Mentorship Effectiveness. However, the strength of this positive relationship is influenced by the level of interaction.

The red line, representing -1 SD (low interaction), has the steepest slope, indicating that the relationship between Agreeableness and Mentorship Effectiveness is strongest during low levels of interaction. As interaction increases to the mean level (blue line), the slope becomes less steep, suggesting a weaker relationship. This trend continues at +1 SD (high interaction), where the green line is the flattest, demonstrating that the effect of Agreeableness on Mentorship Effectiveness is further diminished with higher interaction levels.

Besides that, the gap between the lines is widest at lower levels of Agreeableness and narrows as Agreeableness increases. This pattern implies that the moderating effect of interaction is more crucial for individuals with lower Agreeableness, while it diminishes for those with higher Agreeableness.

In a nutshell, although Agreeableness positively influences Mentorship Effectiveness, higher levels of interaction dampen this effect, making the relationship weaker as interaction increases.

4.4.3 Coefficient of Determination (R^2)

Table 10

R^2 Value Before Inclusion of Interaction Terms

Construct	R^2
Mentoring Effectiveness	0.380

Note. This table presents the R^2 value for Mentoring Effectiveness before the inclusion of interaction terms.

Table 10 shows the R^2 value before the inclusion of interacting frequency as moderating variable which the regression model accounts for 38% of the variance.

Table 11

R^2 Value After Inclusion of Interaction Terms

Construct	R^2
Mentoring Effectiveness	0.357

Note. This table presents the R^2 value for Mentoring Effectiveness after the inclusion of interaction terms.

The R^2 value of mentorship effectiveness was 0.357 after the inclusion of interacting as a moderating variable. This shows that the exogenous variables account for 35.7% of the variance in mentorship effectiveness

4.4.4 Assessment of Effect Size (f^2)

The f-Square represents the change in R-Square when an exogenous variable is removed from the model and f-Square is the effect size where (>= 0.02 is small; >= 0.15 is medium; >= 0.35 is large) (Hair et al., 2019). Based on the result from Table 9, only Agreeableness ($f^2 = 0.045$), Extraversion ($f^2 = 0.027$) and the interaction of Agreeableness x Interaction ($f^2 = 0.042$) show significant results. Thus, f^2 values on Agreeableness, Extraversion and Agreeableness x Interaction which are > 0.02 have a small effect on the R^2 value.

4.4.5 Assessment of Model's Predictive Relevance (Q^2)

Table 12

Determination of Predictive Relevance (Q^2)

Construct	Q^2
Mentoring Effectiveness	0.288

Note. This table presents the predictive relevance (Q^2) value for Mentoring Effectiveness.

A Q^2 value of above 0 represents that the model has predictive relevance, while a Q^2value of 0.02 indicate a "small" effect size, 0.15 indicate a "medium" effect size, and 0.35 indicate a "high" effect size (Hair et al., 2019).

Based on the result in Table 12, the $Q^2$of Mentorship Effectiveness (M.E) has a value of 0.288 and thus indicates the model has a medium predictive relevance for this construct.

4.5 Chapter Summary

Result from descriptive analysis was summarized while assessments on measurement model and structural model were performed and results have shown that there are significant relationships between Agreeableness and Extraversion to Mentoring Effectiveness and Agreeableness to Mentoring Effectiveness with the presence of Interaction as moderating variable thus supporting several hypotheses made in the beginning of the study.

Further discussion as well as summary of the research shall be discussed in the following chapter with the recommendation for future research.

CHAPTER 5: DISCUSSION

5.0 Introduction

In the final chapter, summary of all findings from the statistical analysis such as the descriptive analysis, assessment of measurement model and assessment of structural model will be discussed. Furthermore, a discussion in regards of major findings of the research such as implication of study, limitation of study and recommendation for future research will be provided.

5.1 Overview of The Findings

The study has examined both the measurement and structural model and the results were as shown in the previous chapter.

5.1.1 Hypothesis Result

The study has proposed six main hypotheses at the beginning of the study which are:

H1: The trait of agreeableness in an undergraduate mentee positively influences mentorship effectiveness in a university setting.

H2: The trait of conscientiousness in an undergraduate mentee positively influences mentorship effectiveness in a university setting.

H3: The trait of extraversion in an undergraduate mentee positively influences mentorship effectiveness in a university setting.

H4: The trait of neuroticism in an undergraduate mentee negatively influences mentorship effectiveness in a university setting.

H5: The trait of openness in an undergraduate mentee positively influences mentorship effectiveness in a university setting.

H6: Interaction will moderate the relationship between the Big Five Personality traits of undergraduate mentees and mentorship effectiveness in a university setting.

H6a: *Interaction will moderate the relationship between agreeableness in undergraduate mentees and mentorship effectiveness in a university setting.*
H6b: *Interaction will moderate the relationship between conscientiousness in undergraduate mentees and mentorship effectiveness in a university setting.*
H6c: *Interaction will moderate the relationship between extraversion in undergraduate mentees and mentorship effectiveness in a university setting.*
H6d: *Interaction will moderate the relationship between neuroticism in undergraduate mentees and mentorship effectiveness in a university setting.*
H6e: *Interaction will moderate the relationship between openness in undergraduate mentees and mentorship effectiveness in a university setting.*

Thus, as described in Table 9, two out of the six main hypotheses and one out of the five sub-hypotheses were supported. These supported hypotheses are H1, H3 and H6a.

5.2 Discussion on Major Findings

5.2.1 Relationship between Agreeableness to Mentorship Effectiveness

H1: The trait of agreeableness in an undergraduate mentee positively influences mentorship effectiveness in a university setting.

This study found that the trait of agreeableness in a mentee has a significant positive influence on mentorship effectiveness. This result supports previous findings where researchers have discovered that mentees who rated their mentors as high in agreeableness reported higher levels of career-related and psychosocial support from their mentors. This suggests that agreeableness plays a significant role not only in the mentor but also in the mentee, contributing positively to the overall mentoring relationship and its outcomes. Other studies also have similar findings where they found that agreeableness was positively related to mentoring effectiveness and that mentors with higher levels of agreeableness were perceived as more effective by their mentees (Cavell et al., 2020; Kumari et al., 2022; Niehoff, 2006; Schuster et al., 2017; Younginer & Elledge, 2021; Zacher & Frese, 2009).

This study would present a framework to provide insights to institutions wishing to improve the effectiveness of their existing mentorship programme. The findings align with prior research, indicating a positive correlation between agreeableness and mentoring effectiveness. Specifically, individuals with higher levels of agreeableness as mentees are likely to receive more substantial mentoring support (Cavell et al., 2020; Goldner, 2015; Niehoff, 2006; Younginer & Elledge, 2021; Zacher & Frese, 2009).

This study's findings hold significant implications for the design and implementation of mentorship programs. By recognizing the influence of mentee agreeableness on mentorship effectiveness, institutions can adopt targeted strategies to enhance their mentoring outcomes. For instance, incorporating personality assessments during the mentee selection process or providing tailored training to mentees can help foster a more supportive and productive mentoring environment. Additionally, understanding the role of agreeableness may guide mentors in developing more personalized approaches to meet the needs of their mentees, ultimately leading to improved career and psychosocial development.

5.2.2 Relationship between Conscientiousness to Mentorship Effectiveness

H2: The trait of conscientiousness in an undergraduate mentee positively influences mentorship effectiveness in a university setting.

Result from this study shows that the trait of conscientiousness in a mentee has no significant impact on mentorship effectiveness. This result contradicted with several studies which mentioned that conscientious mentors were better at setting clear expectations, providing constructive feedback, and helping their mentees establish career goals. Additionally, mentees reported higher levels of satisfaction with their mentoring relationships when their mentors exhibited conscientiousness (Allen et al., 2004; Bozionelos et al., 2014; Cavell et al., 2020; Niehoff, 2006). Similarly, another study found that mentees who scored high on conscientiousness tended to have more positive mentoring experiences, as rated by both the mentee and mentor. This may be because conscientious individuals are typically more

organized, responsible, and diligent, which can lead to more effective goal setting and progress in a mentoring relationship (Eby et al., 2008).

However, this finding that conscientiousness has no direct significant impact on the mentoring relationship aligns with several studies that suggest conscientiousness, while typically associated with traits like dependability, organization, and persistence, does not necessarily translate to an improved mentoring relationship (Kumari et al., 2022; Schuster et al., 2017; Younginer et al., 2020). Therefore, while conscientious individuals are often effective in structured, task-oriented environments, this trait alone doesn't guarantee a meaningful or effective mentoring connection.

5.2.3 Relationship between Extraversion to Mentorship Effectiveness

H3: The trait of extraversion in an undergraduate mentee positively influences mentorship effectiveness in a university setting.

This study found that mentees who scored higher on extraversion were more effective in providing career-related support to their mentees. They were more likely to provide instrumental support, such as job leads and networking opportunities, and to engage in active listening and empathic responding with their mentees. This led to greater career success for the mentees (Allen et al., 2004; Jones et al., 2014). On the other hand, Ragins and Kram (2007) also found that extraverted mentors were more effective in promoting their protégés' career development than introverted mentors. They suggest that extraverted mentors are more likely to take initiative and build networks that can benefit their protégés. This is also in line with

other studies which mentioned that individuals who scored high on extraversion will tend to benefit more from a mentoring relationship (Bozionelos et al., 2014; Cavell et al., 2020).

The findings of this study underscore the critical role of extraversion in enhancing the effectiveness of mentoring relationships, particularly in career-related support. Institutions and organizations can leverage these insights to optimize their mentorship programs by emphasizing the development of extraverted traits in mentors and mentees, such as active communication and proactive networking. Training programs designed to cultivate such traits could help mentees and mentors engage more effectively, fostering stronger career advancement opportunities and professional growth. By doing so, mentorship initiatives can better equip participants with the tools to navigate their career paths successfully.

5.2.4 Relationship between Neuroticism to Mentorship Effectiveness

H4: The trait of neuroticism in an undergraduate mentee negatively influences mentorship effectiveness in a university setting.

The result of the present study showed that neuroticism has no significant impact on mentorship effectiveness. The findings contradict with the previous research found that neuroticism was negatively associated with mentoring satisfaction and mentoring quality (Judge & Bono, 2001; Kumari et al., 2022). Specifically, the study by Eby et al. (2010) found that mentees who reported higher levels of neuroticism were less satisfied with their mentoring relationships and perceived their mentors as providing lower quality support. Additionally, another research

with similar findings also found that neuroticism was negatively related to mentoring effectiveness, with mentees reporting less perceived career success and job satisfaction when their mentor scored higher in neuroticism (Allen et al., 2004; Schuster et al., 2017).

The finding that neuroticism has no significant influence on mentorship effectiveness aligns with previous studies. For example, a study indicated that neuroticism was not associated with mentoring relationship quality as perceived by either the child or mentor, suggesting that neuroticism does not substantially impact the perception of mentoring quality in youth mentoring relationships (Younginer et al., 2021). Similarly, another study shows that neuroticism did not directly influence mentoring effectiveness in leadership and transformational mentoring, even when interacting with other factors such as mindfulness (Decuypere et al., 2018).

Moreover, this finding also aligns with another study suggesting neuroticism did not significantly predict the quality of mentoring relationships, suggesting that neuroticism might not be as crucial in influencing mentorship outcomes compared to other personality traits (Cavell et al., 2020). These findings collectively reinforce the notion that neuroticism is not a decisive factor in mentorship effectiveness, and other traits may play more pivotal roles in successful mentoring relationships.

5.2.5 Relationship between Openness to Mentorship Effectiveness

H5: The trait of openness in an undergraduate mentee positively influences mentorship effectiveness in a university setting.

This result from this study shows that openness has no significant influence on mentorship effectiveness. The finding contradict with researchers who found that mentees who had high levels of openness to experience reported receiving higher levels of mentoring support, including career development, psychosocial support, and role modeling (Bozionelos et al., 2014; Sosik et al., 2004; Younginer & Elledge, 2021).

However, study also showed similar finding where there is a non-significant result between openness and mentorship effectiveness. Jones et al. (2014) found that openness did not have a significant impact on coaching effectiveness, suggesting that this trait may not be a critical factor in mentoring relationships. Findings such as these suggest that openness may not consistently influence the effectiveness of mentorship, highlighting the variability of its impact across different contexts.

5.2.6 Role of Interaction as A Moderating Variable on The Relationship Between Big Five Personality and Mentorship Effectiveness

H6: Interaction will moderate the relationship between the Big Five Personality traits of undergraduate mentees and mentorship effectiveness in a university setting.

H6a: Interaction will moderate the relationship between agreeableness in undergraduate mentees and mentorship effectiveness in a university setting.

Based on the analysis from this study, there is a significant effect of interaction as a moderating variable on the relationship between agreeableness and mentorship effectiveness. The result from this study shows similarity to a prior study, which

found that when negative interaction was low and mentors were highly agreeable, mentorship quality decreased as individuals who are highly agreeable may fail to express their opinions or make decisions. This situation might result in mentees viewing the relationship less positively (Younginer & Elledge, 2021). These findings highlight that low-quality interactions, especially in virtual settings, may limit the effectiveness of agreeable individuals, as their tendency to avoid confrontation or decision-making could be exacerbated in such contexts.

H6b: Interaction will moderate the relationship between conscientiousness in undergraduate mentees and mentorship effectiveness in a university setting.

Conscientiousness did not show a significant impact on mentorship effectiveness in this study, potentially due to the nature of virtual interactions. Individuals high in conscientiousness may not have had the opportunity to demonstrate their organized and goal-oriented nature effectively in an online environment. Virtual interactions, which reduce the visibility of certain behavioral traits, may have hindered their ability to showcase strengths such as reliability and task-oriented focus, thereby diminishing their perceived mentorship effectiveness.

H6c: Interaction will moderate the relationship between extraversion in undergraduate mentees and mentorship effectiveness in a university setting.

Extraversion also did not show a significant impact on mentorship effectiveness in this study. The lack of physical engagement in virtual interactions might have constrained extraverts' ability to display enthusiasm or active participation in the mentoring relationship. Their tendency to thrive in dynamic, face-to-face

environments may not translate as effectively in virtual settings, where non-verbal cues like body language and physical energy are absent.

H6d: Interaction will moderate the relationship between neuroticism in undergraduate mentees and mentorship effectiveness in a university setting.

Neuroticism, often linked to emotional instability, could have influenced the findings in this study. Individuals high in neuroticism may have experienced increased anxiety or stress in virtual settings, further diminishing the perceived effectiveness of the mentorship. The virtual nature of interactions during the COVID-19 lockdown might have amplified feelings of isolation or inadequacy in neurotic individuals, negatively impacting their contributions to and perceptions of the mentorship relationship.

H6e: Interaction will moderate the relationship between openness in undergraduate mentees and mentorship effectiveness in a university setting.

Openness similarly did not show a significant impact on mentorship effectiveness. Individuals high in openness might have struggled to express their creativity or adaptability in an online environment, which lacks opportunities for spontaneous and innovative exchanges. Additionally, prior research by Younginer & Elledge (2021) suggests that the association between openness and mentorship effectiveness can be influenced by interaction levels, with higher-quality relationships forming at low levels of negative interaction and lower-quality relationships forming at high levels of negative interaction. This variability underscores the complex role of openness in virtual mentoring contexts.

5.3 Implication of Study

5.3.1 Theoretical Implication

From a theoretical perspective, this study's findings revealed that mentees who exhibit extroversion and high agreeableness contribute more to mentoring effectiveness than other personality traits. Additionally, interaction was found to have a significant moderating effect on the relationship between agreeableness and mentorship effectiveness. This supports a key implication of Trait Activation Theory (TAT), which suggests that individuals thrive in environments that provide abundant interaction opportunities to express their inherent traits (Christiansen & Tett, 2013).

Previous studies have shown varying results regarding which personality traits influence mentoring relationships. For example, Bozionelos (2004) and Niehoff (2006) found that openness was the only personality trait that influenced mentoring, while Waters (2004) identified agreeableness, openness, and extraversion as influential traits. Ashton and Lee (2001) highlighted conscientiousness, extraversion, and openness as the key traits affecting mentoring. These variations across studies may be due to differences in sample populations, methodologies, and cultural contexts. National culture likely plays a critical role, as cultural norms and values shape the expression of personality and perceptions of effective mentoring.

The evaluation of personality and mentoring effectiveness might be culturally sensitive, indicating that what is considered effective in one culture may not apply in another. This study, therefore, enriches the literature by refining our

understanding of the relationship between personality and mentorship effectiveness, while also emphasizing the importance of considering cultural differences.

Furthermore, most previous research was conducted in business environments, whereas this study focuses on an academic setting (Bozionelos, 2004; Niehoff, 2006; Turban et al., 2016; Waters, 2004). As a result, the findings here offer a foundational basis for future research in academic contexts.

This study has established a significant relationship between an individual's personality and mentorship effectiveness, echoing findings from previous research (Allen et al., 2008; Bozionelos, 2004; Eby et al., 2008; Haggard et al., 2011; Niehoff, 2006; Ragins & Kram, 2007; Sosik et al., 2004; Zacher & Frese, 2009). Consequently, the framework used in this study, which examines the relationship between personality traits measured by the Big Five Personality model and mentorship effectiveness using the Mentorship Effectiveness Scale, is partially validated as two out of the five personality traits showed a significant influence.

Although previous studies have found openness to be the sole influential trait on mentoring relationships (Bozionelos, 2004; Niehoff, 2006), other studies, such as Waters (2004), highlighted agreeableness, openness, and extraversion, while Ashton and Lee (2001) pointed to conscientiousness, extraversion, and openness.

The difference in findings might be attributed to the varying contexts or environments in which the studies were conducted. This study focuses on an academic setting, specifically a private university in Malaysia, where the mentorship dynamic differs from business or corporate environments explored in

previous studies. These differing priorities in different settings could influence the traits considered essential for mentorship effectiveness. Besides that, this study centers on Malaysian students, whose cultural norms and values may differ from the populations examined in other studies. These cultural differences can shape how personality traits manifest and how mentorship effectiveness is perceived. Lastly, this study was conducted during the pandemic period, which necessitated a hybrid communication approach combining face-to-face and virtual interactions. Hybrid communication could affect mentorship dynamics differently compared to exclusively in-person or fully remote interactions. For example, virtual communication may reduce opportunities for spontaneous interactions and the expression of extroversion, while face-to-face communication might allow for better rapport-building and active engagement.

The findings also highlight the importance of considering how specific interaction modalities influence the expression of personality traits. Interaction was shown to moderate the relationship between agreeableness and mentorship effectiveness, particularly in virtual or hybrid contexts. These insights support the Trait Activation Theory (TAT) by demonstrating that interaction contexts significantly impact the activation and expression of personality traits, especially during a unique period like the pandemic. Additionally, the reduced opportunities for physical interaction in hybrid or virtual settings might constrain the expression of traits such as openness, conscientiousness, and extraversion, limiting their overall influence on mentorship outcomes.

This study also emphasizes the necessity of cultural considerations in evaluating mentorship effectiveness. In Malaysia's collectivist culture, traits like agreeableness may align well with cultural expectations of harmony and collaboration, which could amplify their influence on mentorship outcomes. However, these cultural factors might differ in individualistic cultures, further highlighting the importance of contextualizing theoretical models.

In conclusion, this study offers a comprehensive framework for understanding the influence of personality on mentorship effectiveness. It also emphasizes the cultural sensitivity of this relationship, while providing validated tools that future researchers can use to further explore the impact of personality on mentoring relationships.

5.3.2 Managerial Implication

The findings of this study are valuable for designing more effective mentorship programs that can enhance students' academic performance and provide improved psychosocial support throughout their time at the institution (Astin et al., 2000; Cheah et al., 2015; Colvin & Ashman, 2010; Morris, 2017). As institutions work to develop mentorship programs that maximize benefits for participants, it is essential to identify the factors that contribute to mentorship effectiveness (DeWit et al., 2016; Higley et al., 2014; Kahraman & Kuzu, 2016). While this study found that mentees high in agreeableness and extraversion are more suited for mentorship programs, these results may vary in other contexts due to environmental and social differences. The findings of this study also underscore the importance of creating a mentorship program that aligns with cultural and institutional values. Given that

personality traits and mentoring effectiveness may vary across different cultural contexts, institutions like UTAR should consider integrating cultural sensitivity into their mentorship training programs. For instance, mentees from collectivist cultures, such as Malaysia, may place a higher value on relationships and group harmony, which could amplify the effectiveness of agreeable mentees in mentoring relationships. Conversely, students from more individualistic cultures might benefit from mentorship strategies that emphasize self-directed learning and independence. By tailoring mentorship approaches to the specific cultural and institutional context, academic institutions can ensure that their programs are not only effective but also resonate with the values and expectations of their student populations.

Additionally, the study's findings during the pandemic period highlight the importance of adaptability in mentorship program design. Institutions should be prepared to train mentors and mentees on effective communication strategies for virtual settings, such as maintaining engagement through clear communication and fostering trust despite the lack of physical presence. This preparation could include workshops on virtual communication skills and the use of technology to simulate aspects of physical interaction, such as video conferencing with breakout rooms for one-on-one mentorship sessions. By equipping participants with these skills, institutions can mitigate some of the challenges posed by virtual mentorship and maintain the quality of the mentoring relationship across different formats.

Nonetheless, this research provides insights into how institutions can use personality assessments, particularly the Big Five Personality model, to better understand students and develop successful mentorship programs.

Given the demonstrated validity and reliability of the Big Five Personality assessment tools and the Mentorship Effectiveness Scale, academic institutions can utilize these tools to structure mentorship programs by identifying mentee personalities before the program begins. Personalized mentorship can be provided, catering to individual needs based on personality traits. Institutions can also enhance their mentorship programs by continually evaluating their effectiveness using the Mentorship Effectiveness Scale and making necessary adjustments.

The study also highlighted the moderating role of interaction, particularly in the context of both virtual and physical mentoring. Institutions should recognize that virtual mentoring, while effective in certain circumstances, may lack critical non-verbal communication cues such as body language and tone, which are essential for relationship-building. To improve mentorship programs, institutions could implement a hybrid model that combines physical meetings with virtual sessions, allowing for flexibility while retaining personal engagement. By tailoring these programs based on student feedback and performance, institutions can optimize the mentorship experience. Physical mentoring can offer more personal, immediate support, while virtual mentoring can provide flexibility and accessibility, especially for remote or time-constrained students. Balancing these interaction methods, depending on the context, can lead to more effective mentorship, enhancing both academic and psychosocial outcomes for students.

In the educational context, institutions often use mentorship programs as a promotional tool to attract potential students and provide support for those who might struggle academically or personally, reducing dropout rates (Collier, 2021;

Krause & Moore, 2021; Liu et al., 2022; Naidoo et al., 2022). Thus, educational institutions can leverage the findings from this study to design and implement more effective mentorship programs. With a structured framework, students can achieve better outcomes in mentorship, positively impacting their academic performance and psychosocial support (Astin et al., 2000; Cheah et al., 2015; Colvin & Ashman, 2010; Morris, 2017).

In conclusion, this study offers valuable insights into selecting mentees through personality assessments, developing tailored training programs, employing reliable evaluation tools, and improving the mentorship effectiveness for the mentees. It also enhances institutional mentorship frameworks and can aid in the promotion and retention of students within educational institutions.

5.4 Limitation of The Study

This study primarily focuses on the personality traits of mentees rather than exploring the potential differences in perspectives between mentors and mentees, similar to previous studies that either emphasize mentees (Goldner, 2015; Schuster et al., 2017) or mentors (Cavell et al., 2020; Jones et al., 2014; Niehoff, 2006; Younginer & Elledge, 2021). Future research should examine these differences to gain deeper insights into how mentor-mentee dynamics influence effective mentorship. Additionally, while this study provides insights into how mentee personality traits affect the mentorship process, it does not offer a comprehensive foundation for matching mentors and mentees. Future research could build on this framework by using a dyad approach to identify optimal personality matches that lead to the highest compatibility.

Furthermore, the study was conducted within a single private institution in Malaysia, limiting the generalizability of the findings. Conducting similar research across other higher education institutions could enhance understanding and improve mentorship practices within the education sector.

The research framework examines the relationship between mentee personality traits and mentoring effectiveness, with interaction as a moderating variable. However, the study did not account for potential differences in perspectives between mentors and mentees, analyzing data from both groups together. This could affect the findings, as mentors and mentees may have distinct experiences, perceptions, and expectations. Therefore, the results may not fully capture the views of both groups, which should be considered when interpreting the study's outcomes.

Moreover, the study focuses exclusively on the impact of personality traits on mentorship effectiveness. It does not analyze which mentee personality traits would be most compatible with those of mentors, limiting the findings' utility for matching mentors and mentees. Additional considerations beyond personality traits are necessary when forming mentor-mentee pairs.

The study also did not account for various individual differences, such as age, gender, race, and nationality, which previous research suggests can significantly influence mentorship outcomes (Crisp & Cruz, 2009; Nkrumah & Scott, 2022; Ragins & Kram, 2007; Terrion & Leonard, 2007). Future research that incorporates these variables could provide a more nuanced understanding of mentorship

dynamics and contribute to the development of more effective mentorship programs.

The data for this study was collected from a single private institution in Malaysia, Universiti Tunku Abdul Rahman, using a convenience sampling method. While this approach allowed for ease of access, it limits the generalizability of the findings to a broader population of Malaysian undergraduates.

The use of convenience sampling introduces limitations, as participants were selected based on their availability or willingness to participate. This can lead to a biased sample that is not representative of the target population.

Despite these limitations, the study conducted several tests to verify the reliability and validity of the constructs used, and no significant issues were found in this regard.

5.5 Recommendation for Future Research

To gain a more comprehensive understanding of the effectiveness of mentoring programs, future research could consider exploring the perspectives of mentors and mentees separately. This research did not differentiate between the perspectives of mentors and mentees, potentially leading to a biased result. By conducting separate analyses of mentors and mentees, researchers can obtain a more in-depth understanding of their experiences and the effectiveness of the mentoring program. Additionally, this approach could help to identify areas where the perspectives of mentors and mentees may differ, which can inform strategies to improve mentoring program outcomes. By accounting for the different perspectives of mentors and

mentees, future research can provide a more nuanced and accurate understanding of the impact of mentoring programs.

A potential avenue for future research could involve exploring the correlation between mentor and mentee personalities to identify suitable matches. This could involve using the Big Five Inventory or other personality assessments to gather data on the personality traits of potential mentors and mentees. By analyzing this data, organizations could gain valuable insights into which mentor-mentee pairings are most likely to be successful and could leverage this information to develop more effective mentoring programs. Ultimately, such research could help organizations to maximize the benefits of mentoring, by pairing mentors and mentees who are most compatible and likely to form strong, productive relationships.

Future research may also include and explore factors such as individual differences and their impact on the mentoring process together with the framework provided in this study to provide a more comprehensive understanding of the effectiveness of mentoring programs in various contexts. By identifying these factors, organizations can better tailor their mentoring programs to meet the specific needs and characteristics of their mentees and mentors, ultimately improving the outcomes of the program.

It is recommended that future studies use a more representative sampling method to obtain data from a broader range of institutions in Malaysia. This would help to improve the generalizability of the findings and provide a more comprehensive understanding of the topic being studied.

Future research could consider expanding the scope of the study by collecting data from a more diverse range of institutions or regions. This could involve reaching out to other universities or colleges across the country and recruiting participants from those institutions. Additionally, the researcher could consider using alternative data collection methods such as virtual surveys, focus groups, or interviews, to reach a wider sample of participants.

Moreover, since this study practices convenience sampling, it is also recommended that future researchers would leverage on other potential sampling method such as stratified random sampling, where the population is divided into different strata based on certain characteristics (e.g. region, institution type, program of study) and a random sample is taken from each stratum. This would ensure that the sample is representative of the entire population and reduce the potential for sampling bias.

Besides that, researchers may also consider conducting the study using the similar framework in a business setting to understand how individual's personality would affect mentoring effectiveness in workplace.

Conclusion

In conclusion, mentoring is a common practice in both working and educational environments that aims to provide career and psychosocial support to an individual. The Big Five Personality Traits assessment tools, which are widely recognized has shown that individual's personality may influence mentoring effectiveness measured by using the Mentorship Effectiveness Scale. The findings unveiled a notable positive correlation between Agreeableness and Extraversion with

Mentorship Effectiveness. At the same time, Interaction exhibited a noteworthy negative moderating impact on the correlation between Agreeableness and Mentorship Effectiveness. The researchers hope that findings from this study will contribute to a better understanding of how individual's personality affect the effectiveness of mentoring relationships with the presence of interaction as a moderating factor.

References

Agyemang, E. O., & Haggerty, K. P. (2020). Best practices for virtual mentoring: Six key findings from a literature review. *University of Washington, School of Social Work*. https://pttcnetwork.org/sites/default/files/2020-07/R10%20PTTC%20Best%20Practices%20in%20Virtual%20Mentoring_7.2020.pdf

Allen, T. D., Eby, L. T., Poteet, M. L., Lentz, E., & Lima, L. (2004). Career benefits associated with mentoring for proteges: A meta-analysis. *Journal of Applied Psychology*, *89*(1), 127–136. https://doi.org/10.1037/0021-9010.89.1.127

Allen, T. D., Poteet, M. L., Russell, J. E. A., & Dobbins, G. H. (1997). A field study of factors related to supervisors' willingness to mentor others. *Journal of Vocational Behavior*, *50*(1), 1–22. https://doi.org/10.1006/jvbe.1995.1525

Althobaiti, M. M. (2020). Academic mentoring via an electronic system during Covid-19. *Technology, 11*(11), 633-639.

Altonji, S. J., Baños, J. H., & Harada, C. N. (2019). Perceived benefits of a peer mentoring program for first-year medical students. *Teaching and Learning in Medicine*, *31*(4), 445–452. https://doi.org/10.1080/10401334.2019.1574579

Angelique, H., Kyle, K., & Taylor, E. (2002). Mentors and muses: New strategies for academic success. *Innovative Higher Education, 26*(3), 195–209. https://doi.org/10.1023/a:1017968906264

Arora, R., & Rangnekar, S. (2016). Dispositional traits influence on mentoring relationships. *South Asian Journal of Global Business Research*, *5*(3), 306–322. https://doi.org/10.1108/sajgbr-04-2016-0030

Ashton, M. C., & Lee, K. (2001). A theoretical basis for the major dimensions of personality. *European Journal of Personality*, *15*(5), 327–353. https://doi.org/10.1002/per.417

Astin, A.W., Vogelgesang, L.J., Ikeda, E.K., & Yee, J.A. (2000). How service learning affects students. https://heri.ucla.edu/PDFs/HSLAS/HSLAS.PDF

Ayoobzadeh, M. (2019). The impact of frequency of contact on protégé mentoring outcomes: The moderating effects of protégé general self-efficacy and face-to-face interaction. *Human Resource Development International, 22*(4), 385–404. https://doi.org/10.1080/13678868.2019.1615309

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173-1182. https://www.sesp.org/files/The%20Moderator-Baron.pdf

Baugh, S., & Fagenson-Eland, E. A. (2008). Formal mentoring programs: A "Poor Cousin" to informal relationships? *The Handbook of Mentoring at Work: Theory, Research, and Practice*, 249–272. https://doi.org/10.4135/9781412976619.n10

Bazkiaei, H. A., Heng, L. H., Khan, N. U., Saufi, R. B., & Kasim, R. S. (2020). Do entrepreneurial education and big-five personality traits predict entrepreneurial intention among universities students? *Cogent Business & Management*, *7*(1), 1801217. https://doi.org/10.1080/23311975.2020.1801217

Becoming a mentor. (n.d.). Monash University Malaysia. https://www.monash.edu.my/student-services/international-students/services-for-international-students/becoming-a-mentor

Beecroft, P. C., Santner, S., Lacy, M. L., Kunzman, L., & Dorey, F. (2006). New Graduate Nurses' perceptions of mentoring: Six-Year Programme Evaluation. *Journal of Advanced Nursing*, *55*(6), 736–747. https://doi.org/10.1111/j.1365-2648.2006.03964.x

Berk, R. A., Berg, J., Mortimer, R., Walton-Moss, B., & Yeo, T. P. (2005). Measuring the effectiveness of faculty mentoring relationships. *Academic Medicine*, *80*(1), 66–71. https://doi.org/10.1097/00001888-200501000-00017

Bhagat, V., Shetty, C. K., Husain, R., Mat, K. C., Simbak, N. B., Aung, M. M., & Oo, S. S. (2019). The relationship between big five personality traits and academic performance in medical students. *Research Journal of Pharmacy and Technology*, *12*(9), 4189. https://doi.org/10.5958/0974-360x.2019.00721.2

Birtch, T. A., Cai, Z., & Chiang, F. (2023). Why proactivity matters when you're being mentored by a narcissist: A trait activation perspective. *Academy of Management Proceedings*, *2023*(1). https://doi.org/10.5465/amproc.2023.17937abstract

Boyd, B., Alexander, K., Wallin, M., Lake, W., Cumings, R., & Callahan, R. (2019). Enhancing inclusion, experience, and academic performance: Peer-to-peer mentoring for equity group students in an australian regional university. *Strategies for Facilitating Inclusive Campuses in Higher Education: International Perspectives on Equity and Inclusion (Innovations in Higher Education Teaching and Learning), 17*, 71–86. https://doi.org/10.1108/s2055-364120190000017006

Bozionelos, N. (2004). Mentoring provided: Relation to mentor's career success, personality, and mentoring received. *Journal of Vocational Behavior*, *64*(1), 24–46. https://doi.org/10.1016/s0001-8791(03)00033-2

Bradley, B. H., Baur, J. E., Banford, C. G., & Postlethwaite, B. E. (2013). Team players and collective performance. *Small Group Research*, *44*(6), 680–711. https://doi.org/10.1177/1046496413507609

Braun, D. C., Gormally, C., & Clark, M. D. (2017). The deaf mentoring survey: A community cultural wealth framework for measuring mentoring effectiveness with underrepresented students. *CBE—Life Sciences Education*, *16*(1). https://doi.org/10.1187/cbe.15-07-0155

Brown, T. A. (2006). Confirmatory factor analysis for applied research. Guilford Press.

Buhrmester, D. and Furman, W. (2008). The Network of Relationships Inventory: Relationship Qualities Version. *Unpublished measure, University of Texas at Dallas*.

Buhrmester, D., & Furman, W. (2009). Methods and measures: The network of Relationships Inventory: Behavioral Systems version. *International Journal of Behavioral Development*, 33(5), 470–478. https://doi.org/10.1177/0165025409342634

Cai, D., Liu, S., Liu, J., Yao, L., & Jia, X. (2021). Mentoring and newcomer well-being: A socialization resources perspective. *Journal of Managerial Psychology*, *36*(3), 285–298. https://doi.org/10.1108/jmp-08-2019-0485

Campbell, R., Angelique, H., Bootsmiller, B. J., & Davidson, W. S. (2000). Practicing what we preach. *Journal of Prevention & Intervention in the Community, 19*(2), 33–43. https://doi.org/10.1300/j005v19n02_06

Cantalupo, G. (2024, August 12). *Council post: Does mentoring still matter for fortune 500 companies?*. Forbes. https://www.forbes.com/councils/forbescommunicationscouncil/2022/05/19/does-mentoring-still-matter-for-fortune-500-companies/

Cavell, T. A., Mutignani, L. M., Alfonso, L., & Marie Smith, A. (2020). Attachment tendencies, big 5 personality traits, and self-efficacy as predictors of mentors' relationships with aggressive children. *American Journal of Community Psychology*, *66*(1–2), 130–143. https://doi.org/10.1002/ajcp.12437

Chao, G. T., Walz, P., & Gardner, P. D. (2006). Formal and informal mentorships: A comparison on mentoring functions and contrast with nonmentored counterparts. *Personnel Psychology, 45*(3), 619-636. https://doi.org/10.1111/j.1744-6570.1992.tb00863.x

Cheah, W. L., Hazmi, H., Ching Bing, J. H., Jia Ying, C., Mohd Nazif, N. N., & Mohd Kamil, S. N. (2015). Peer mentoring among undergraduate medical

students: Experience from Universiti Malaysia Sarawak. *Education in Medicine Journal*, *7*(1). https://doi.org/10.5959/eimj.v7i1.331

Christiansen, N. and Tett, R. (2013) Handbook of personality at work. *Taylor & Francis.* http://doi.org/10.13140/2.1.3105.9847

Collier, P. (2021). How peer mentoring can help universities promote student success in a post-covid19 pandemic world. *Metropolitan Universities, 32*(3), 37–54. https://doi.org/10.18060/25222

Collings, R., Swanson, V., & Watkins, R. (2016). Peer mentoring during the transition to university: assessing the usage of a formal scheme within the UK. *Studies in Higher Education, 41*(11), 1995–2010. https://doi.org/10.1080/03075079.2015.1007939

Colvin, J. W., & Ashman, M. (2010). Roles, risks, and benefits of peer mentoring relationships in Higher Education. *Mentoring & Tutoring: Partnership in Learning*, *18*(2), 121–134. https://doi.org/10.1080/13611261003678879

Comaford, C. (2019, July 5). *76% of people think mentors are important, but only 37% have one.* Forbes. https://www.forbes.com/sites/christinecomaford/2019/07/03/new-study-76-of-people-think-mentors-are-important-but-only-37-have-one/#721e56994329

Costa, P. T., & McCrae, R. R. (2012). The five-factor model, five-factor theory, and Interpersonal Psychology. *Handbook of Interpersonal Psychology*, 91–104. https://doi.org/10.1002/9781118001868.ch6

Crisp, G., & Cruz, I. (2009). Mentoring college students: A critical review of the literature between 1990 and 2007. *Research in Higher Education, 50*(6), 525-545. https://doi.org/10.1007/s11162-009-9130-2

Curran, T., Copeland, K., Fale, E., Martin, R., & McIntyre, L. (2017). The effect of personality on mentoring. *The Chronicle of Mentoring & Coaching*, *1*(10), pp. 381-387.

Dahling, J. J., Taylor, S. R., Chau, S. L., & Dwight, S. A. (2015). Does coaching matter? A multilevel model linking managerial coaching skill and frequency to sales goal attainment. *Personnel Psychology*, *69*(4), 863–894. https://doi.org/10.1111/peps.12123

Decuypere, A., Audenaert, M., & Decramer, A. (2018). When mindfulness interacts with neuroticism to enhance transformational leadership: The role of Psychological Need Satisfaction. *Frontiers in Psychology*, *9*. https://doi.org/10.3389/fpsyg.2018.02588

DeWit, D. J., DuBois, D., Erdem, G., Larose, S., Lipman, E. L., & Spencer, R. (2016). Mentoring relationship closures in Big Brothers Big Sisters Community mentoring programs: Patterns and associated risk factors. *American Journal of Community Psychology*, *57*(1–2), 60–72. https://doi.org/10.1002/ajcp.12023

DuBois, D. L., Holloway, B. E., Valentine, J. C., & Cooper, H. (2002). Effectiveness of mentoring programs for youth: A meta-analytic review. *American Journal of Community Psychology*, *30*(2), 157–197. https://doi.org/10.1023/a:1014628810714

DuBois, D. L., Portillo, N., Rhodes, J. E., Silverthorn, N., & Valentine, J. C. (2011). How effective are mentoring programs for youth? A systematic assessment of the evidence. *Psychological Science in the Public Interest*, *12*(2), 57–91. https://doi.org/10.1177/1529100611414806

DuBois, W. E., Blake-Beard, S. D., Murrell, A., & Thomas, D. (2008). Unfinished business: The impact of race on understanding mentoring relationships. *The Handbook of Mentoring at Work: Theory, Research, and Practice*, 223–248. https://doi.org/10.4135/9781412976619.n9

Eby, L. T., Allen, T. D., Evans, S. C., Ng, T., & DuBois, D. L. (2008). Does mentoring matter? A multidisciplinary meta-analysis comparing mentored and non-mentored individuals. *Journal of Vocational Behavior, 72*(2), 254-267. https://doi.org/10.1016/j.jvb.2007.04.005

Eby, L. T., Allen, T. D., Hoffman, B. J., Baranik, L. E., Sauer, J. B., Baldwin, S., Morrison, M. A., Kinkade, K. M., Maher, C. P., Curtis, S., & Evans, S. C. (2013). An interdisciplinary meta-analysis of the potential antecedents, correlates, and consequences of protégé perceptions of mentoring. *Psychological Bulletin*, *139*(2), 441–476. https://doi.org/10.1037/a0029279

Enrico, N. (2011). The lived experiences of mentoring nurses in Malaysia. Nurse Media *Journal of Nursing, 1*(1), 87-104. https://doi.org/10.14710/nmjn.v1i1.749

Fan, Y., Chen, J., Shirkey, G., John, R., Wu, S. R., Park, H., & Shao, C. (2016). Applications of structural equation modeling (SEM) in ecological studies: an updated review. *Ecological Processes, 5*(1), 19. https://doi.org/10.1186/s13717-016-0063-3

Farooq, S., Urooj, S., Ali, R. U., & Khan, W. M. (2022). *Higher education learning experience in post-pandemic scenario: A study conducted on learners' academic performance at University of Karachi* (No. 7778). EasyChair. https://easychair.org/publications/preprint/7778

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical Power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*(4), 1149–1160. https://doi.org/10.3758/brm.41.4.1149

Flexman, A. M., & Gelb, A. W. (2011). Mentorship in Anesthesia. *Current Opinion in Anaesthesiology, 24*(6), 676–681. https://doi.org/10.1097/aco.0b013e32834c1659

Furnham, A. (2022). The Big Five Facets and the MBTI: The relationship between the 30 NEO-PI(R) facets and the four Myers-Briggs Type Indicator (MBTI) scores. *Psychology*, *13*(10), 1504–1516. https://doi.org/10.4236/psych.2022.1310095

Gabay, V., Voyles, S., Algozzini, L., & Batchelor, G. (2019). Using virtual communities of practice to coach and mentor faculty to facilitate engaging critical consciousness. *Innovations in Higher Education Teaching and Learning*, 103–116. https://doi.org/10.1108/s2055-364120190000017007

Gannon, J. M., & Maher, A. (2012). Developing tomorrow's talent: The case of an undergraduate mentoring programme. *Education + Training, 54(6), 440-455*

Gehreke, L., Schilling, H., & Kauffeld, S. (2024). Effectiveness of peer mentoring in the Study Entry Phase: A Systematic Review. *Review of Education, 12*(1). https://doi.org/10.1002/rev3.3462

Gibson, S. K. (2005). Whose best interests are served? the distinction between mentoring and support. *Advances in Developing Human Resources*, *7*(4), 470–488. https://doi.org/10.1177/1523422305279678

Ginis, K. A. M., Shaw, R. B., Stork, M. J., Battalova, A., & Mcbride, C. B. (2018). Pilot study of a training program to enhance transformational leadership in spinal cord injury peer mentors. *Spinal Cord Series and Cases, 4*(1). https://doi.org/10.1038/s41394-018-0065-8

Gold, A. H., Malhotra, A., & Segars, A. H. (2001). Knowledge management: An organizational capabilities perspective. *Journal of Management Information Systems*, *18*(1), 185–214. https://doi.org/10.1080/07421222.2001.11045669

Goldner, L. (2015). Protégés' personality traits, expectations, the quality of the mentoring relationship and adjustment: A big five analysis. *Child & Youth Care Forum*, *45*(1), 85–105. https://doi.org/10.1007/s10566-015-9319-9

Goodrich, A. (2021). Online peer mentoring and remote learning. *Music Education Research, 23*(2), 256–269. https://doi.org/10.1080/14613808.2021.1898575

Gregg, N., Galyardt, A., Wolfe, G., Moon, N., & Todd, R. (2017). Virtual mentoring and persistence in STEM for students with disabilities. *Career Development and Transition for Exceptional Individuals, 40*(4), 205-214. https://doi.org/10.1177%2F2165143416651717

Haggard, D. L., Dougherty, T. W., Turban, D. B., & Wilbanks, J. E. (2011). Who is a mentor? A review of evolving definitions and implications for research. *Journal of Management, 37*(1), 280–304. https://doi.org/10.1177/0149206310386227

Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., & Thiele, K. O. (2017). Mirror, mirror on the wall: A comparative evaluation of composite-based structural equation modeling methods. *Journal of the Academy of Marketing Science, 45*(5), 616-632. https//doi.org/10.1007/s11747-017-0517-x

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, *31*(1), 2–24. https://doi.org/10.1108/ebr-11-2018-0203

Hair, Joe F., Howard, M. C., & Nitzl, C. (2020). Assessing measurement model quality in PLS-SEM using confirmatory composite analysis. *Journal of Business Research*, *109*, 101–110. https://doi.org/10.1016/j.jbusres.2019.11.069

Hairon, S., Loh, S. H., Lim, S. P., Govindani, S. N., Tan, J. K., & Tay, E. C. (2019). Structured mentoring: Principles for effective mentoring. *Educational Research for Policy and Practice*, *19*(2), 105–123. https://doi.org/10.1007/s10671-019-09251-8

Hernandez, P. R., Estrada, M., Woodcock, A., & Schultz, P. W. (2016). Protégé perceptions of high mentorship quality depend on shared values more than on demographic match. *The Journal of Experimental Education*, *85*(3), 450–468. https://doi.org/10.1080/00220973.2016.1246405

Higley, E., Walker, S. C., Bishop, A. S., & Fritz, C. (2014). Achieving high quality and long-lasting matches in youth mentoring programmes: A case study of results mentoring. *Child & Family Social Work*, *21*(2), 240–248. https://doi.org/10.1111/cfs.12141

Hong, L., Chen, K., Zhang, H., & Ju, J. (2024). Impact of academic service-learning on students: An evaluation study of a university-level initiative in China. *Applied Research in Quality of Life*, *19*(3), 1117–1138. https://doi.org/10.1007/s11482-024-10281-5

Huang, C., Weng, R., & Chen, Y. (2016). Investigating the relationship among transformational leadership, interpersonal interaction and mentoring

functions. *Journal of Clinical Nursing*, *25*(15–16), 2144–2155. https://doi.org/10.1111/jocn.13153

Iqbal, H. (2020). E-mentoring: an effective platform for distance learning. *e-mentor, 84*(2), 54-61. https://doi.org/10.15219/em84.1463

Ismail, A., Abdullah, N. A., Ridzwan, A. A., Ibrahim, W. N. A. W., & Ismail, Y. (2015). Effect of mentorship program on mentees' psychosocial development. *International Letters of Social and Humanistic Sciences, 49*, 53–65. https://doi.org/10.18052/www.scipress.com/ilshs.49.53

Jacobi, M. (1991). Mentoring and undergraduate academic success: A literature review. *Review of Educational Research*, *61*(4), 505. https://doi.org/10.2307/1170575

John, O. P. and Srivastava, S. (1999). The Big Five Trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (pp. 102–138). Guilford Press.

Jones, R. J., Woods, S. A., & Hutchinson, E. (2014) The influence of the Five factor model of personality and referral mechanism on the perceived effectiveness of executive coaching. *Cheltenham: University of Gloucestershire*.

Judge, T. A., & Bono, J. E. (2001). Relationship of core self-evaluations traits—self-esteem, generalized self-efficacy, locus of control, and emotional stability—with job satisfaction and job performance: A meta-analysis. *Journal of Applied Psychology*, *86*(1), 80–92. https://doi.org/10.1037/0021-9010.86.1.80

Judge, T. A., & Cable, D. M. (1997). Applicant personality, organizational culture, and organization attraction. *Personnel Psychology*, *50*(2), 359–394. https://doi.org/10.1111/j.1744-6570.1997.tb00912.x

Kahraman, M., & Kuzu, A. (2016). E-mentoring for professional development of pre-service teachers: A case study. *Turkish Online Journal of Distance Education*, *0*(0). https://doi.org/10.17718/tojde.19973

Karim, N. S., Zamzuri, N. H., & Nor, Y. M. (2009). Exploring the relationship between internet ethics in university students and the Big Five Model of personality. *Computers & Education*, *53*(1), 86–93. https://doi.org/10.1016/j.compedu.2009.01.001

Kaufman, M. (2017). E-mentoring. *National Mentoring Resource Center.* http://nationalmentoringresourcecenter.org/images/PDF/E-Mentoring_Model_Review.pdf

Kirby, S. L., Kirby, E. G., & Konopaske, R. (2020). The role of mentoring in the prediction of strategic independence. *Journal of Organizational Psychology, 20*(3). https://doi.org/10.33423/jop.v20i3.2938

Kram, K. E. (1983). Phases of the mentor relationship. *Academy of Management Journal, 26*(4), 608-625. https://doi.org/10.5465/255910

Kram, K. E. (1985). Mentoring at work: Developmental relationships in organizational life. *Administrative Science Quarterly, 30*(3), 454-456. https://doi.org/10.2307/2392687

Krause, A. J., & Moore, S. Y. (2021). Creating an online peer-to-peer mentoring program: Promoting student relationships, engagement, and satisfaction during the era of covid-19. *College Teaching, 70*(3), 296–308. https://doi.org/10.1080/87567555.2021.1925624

Kumari, K., Ali, S. B., Batool, M., Cioca, L.-I., & Abbas, J. (2022). The interplay between leaders' personality traits and mentoring quality and their impact on mentees' job satisfaction and job performance. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.937470

Levinson, D. J., Darrow, D., Klein, E., Levinson, M., & McKee, B. (1978). Seasons of a man's life. *New York: Knopf.*

LHH. (2021, August 20). The State of Coaching & Mentoring in 2021. https://www.lhh.com/us/en/insights/the-state-of-coaching-and-mentoring-in-2021/

Liu, T., Chen, Y. C., Hamilton, M., & Harris, K. (2022). Peer mentoring to enhance graduate students' sense of belonging and academic success. *Kinesiology Review*, *11*(4), 285–296. https://doi.org/10.1123/kr.2022-0019

Maghbouli, N., Moghadas, F., Babaei, L., & Beigy, M. (2017). The association of temperament and character of mentors/mentees with satisfying formal mentoring of first-year medical students. *Thrita, In Press (In Press), 6*(1). https://doi.org/10.5812/thrita.46241

Markle, R. S., Williams, T. M., Williams, K. S., deGravelles, K. H., Bagayoko, D., & Warner, I. M. (2022). Supporting historically underrepresented groups in STEM higher education: The promise of Structured Mentoring Networks. *Frontiers in Education*, *7*. https://doi.org/10.3389/feduc.2022.674669

McBride, A. B., Campbell, J., & Deming, K. (2019). Does having been mentored affect subsequent mentoring? *Journal of Professional Nursing*, *35*(3), 156–161. https://doi.org/10.1016/j.profnurs.2018.11.003

Mcbride, A. B., Campbell, J., Woods, N. F., & Manson, S. M. (2017). Building a mentoring network. *Nursing Outlook, 65*(3), 305–314. https://doi.org/10.1016/j.outlook.2016.12.001

Mccusker, K., & Gunaydin, S. (2014). Research using qualitative, quantitative or mixed methods and choice based on the research. *Perfusion, 30*(7), 537–542. https://doi.org/10.1177/0267659114559116

Memon, J., Rozan, M. Z., Ismail, K., Uddin, M., & Daud, D. (2015). Mentoring an entrepreneur. *SAGE Open, 5*(1), 215824401556966. https://doi.org/10.1177/2158244015569666

Menges, C. (2015). Toward improving the effectiveness of formal mentoring programs. *Group & Organization Management*, *41*(1), 98–129. https://doi.org/10.1177/1059601115579567

Ministry of Higher Education Malaysia. (2018, January 25). *Senarai daftar dan statistik IPTS*. http://jpt.moe.gov.my/portal/ipts/institusi-pendidikan-tinggi-swasta/senarai-daftar-dan-statistik-ipts

Morgan, M. and Rochford, S. (2017). Coaching and mentoring for frontline practitioners. *Centre for Effective Services*.

Morris, L. V. (2017). Reverse mentoring: Untapped resource in the Academy? *Innovative Higher Education*, *42*(4), 285–287. https://doi.org/10.1007/s10755-017-9405-z

Mullen, C. A., & Klimaitis, C. C. (2019). Defining mentoring: A literature review of issues, types, and applications. *Annals of the New York Academy of Sciences*, *1483*(1), 19–35. https://doi.org/10.1111/nyas.14176

Murphy, W. M. (2011). From E-mentoring to blended mentoring: Increasing students' developmental initiation and mentors' satisfaction. *Academy of Management Learning & Education*, *10*(4), 606–622. https://doi.org/10.5465/amle.2010.0090

Murrell, A. J., Blake-Beard, S., & Porter, D. M. (2021). The importance of peer mentoring, identity work and holding environments: A Study of African American Leadership Development. *International Journal of Environmental Research and Public Health*, *18*(9), 4920. https://doi.org/10.3390/ijerph18094920

Naidoo, K., Plummer, L., McKean, M., Mack, A., Bowdle, G. K., Mullins, M. A., & Gore, S. (2022). Virtual faculty and Peer mentoring to promote social belonging among minoritized physical therapist and nursing students. *Healthcare, 10*(3), 416. https://doi.org/10.3390/healthcare10030416

Niehoff, B. P. (2006). Personality predictors of participation as a mentor. *Career Development International*, *11*(4), 321–333. https://doi.org/10.1108/13620430610672531

Nieß, C., & Zacher, H. (2015). Openness to experience as a predictor and outcome of upward job changes into managerial and professional positions. *PLOS ONE*, *10*(6). https://doi.org/10.1371/journal.pone.0131115

Nkrumah, T., & Scott, K. A. (2022). Mentoring in STEM higher education: A synthesis of the literature to represent the excluded women of color. *International Journal of STEM Education*, *9*(1). https://doi.org/10.1186/s40594-022-00367-7

Nora, A., & Crisp, G. (2007). Mentoring students: Conceptualizing and validating the multi-dimensions of a support system. *Journal of College Student Retention: Research, Theory & Practice, 9*(3), 337-356. https://doi.org/10.2190/cs.9.3.e

Omair, A. (2015). Selecting the appropriate study design for your research: Descriptive study designs. *Journal of Health Specialties, 3*(3), 153-156. https://doi.org/10.4103/1658-600X.159892

Phillips-Jones, L. (1982). Mentors & protégés. *Arbor House*.

Polikoff, M. S., Desimone, L. M., Porter, A. C., & Hochberg, E. D. (2015). Mentor policy and the quality of mentoring. *The Elementary School Journal*, *116*(1), 76–102. https://doi.org/10.1086/683134

Pursell, H. (2023, December 18). *Mentoring Statistics: The Research You Need to Know in 2024*. Guider AI. https://guider-ai.com/blog/mentoring-statistics-the-research-you-need-to-know/

Quacquarelli Symonds. (n.d.). *Universiti Tunku Abdul Rahman (UTAR).* https://www.topuniversities.com/universities/universiti-tunku-abdul-rahman-utar#:~:text=Approximately%2022%2C000%20students%20at%20Universiti,44%20nationalities%20around%20the%20world.

Quast, L. (2012, August 21). *How becoming a mentor can boost your career*. Forbes. https://www.forbes.com/sites/lisaquast/2011/10/31/how-becoming-a-mentor-can-boost-your-career/

Ragins, B. R. (1997). Diversified mentoring relationships in organizations: A power perspective. *The Academy of Management Review, 22*(2), 482-521. https://doi.org/10.2307/259331

Ragins, B. R. and Kram, K. E. (2007). The handbook of mentoring at work theory, research, and Practice. *Sage Publications*.

Rhodes, J. E., & Dubois, D. L. (2006). Understanding and facilitating the youth mentoring movement. *Social Policy Report, 20*(3), 1–20. https://doi.org/10.1002/j.2379-3988.2006.tb00048.x

Rhodes, J., Reddy, R., Roffman, J., & Grossman, J. B. (2005). Promoting successful youth mentoring relationships: A preliminary screening questionnaire. *The Journal of Primary Prevention, 26*(2), 147-167. https://doi.org/10.1007/s10935-005-1849-8

Robinson, E. A., & Harkins, D. A. (2018). Lessons learned from faculty service-learning mentoring. *Journal of Community Engagement & Higher Education, 10*(3). https://www.researchgate.net/profile/Debra_Harkins/publication/336601937_Lessons_Learned_from_Faculty_service-learning_mentoring/links/5da7c140a6fdccdad54ad042/Lessons-Learned-from-Faculty-service-learning-mentoring.pdf

Russell, J. E. A., & Adams, D. M. (1997). The changing nature of mentoring in organizations: An introduction to the special issue on mentoring in organizations. *Journal of Vocational Behavior*, *51*(1), 1–14. https://doi.org/10.1006/jvbe.1997.1602

Sands, R. G., Parson, L. A., & Duane, J. (1991). Faculty-faculty mentoring and discrimination. *Equity & Excellence in Education, 25*(2-4), 124–129. https://doi.org/10.1080/1066568910250219

Schmidt*, M. E., Marks, J. L., & Derrico, L. (2004). What a difference mentoring makes: Service learning and engagement for college students. Mentoring & Tutoring: *Partnership in Learning, 12*(2), 205–217. https://doi.org/10.1080/1361126042000239947

Schuster, T., Ambrosius, J., & Bader, B. (2017). Mentoring in international assignments: A personality traits perspective. *Employee Relations*, *39*(7), 1100–1130. https://doi.org/10.1108/er-09-2016-0180

Sedgwick, P. (2014). Cross sectional studies: advantages and disadvantages. *BMJ: British Medical Journal (Online),* 348-349. https://doi.org/10.1136/bmj.g2276

Sekaran, U., & Bougie, R. (2013). Research methods for business: A skill-building approach. *Wiley*.

Setia, M. (2016). Methodology series module 5: Sampling strategies. *Indian Journal of Dermatology, 61*(5), 505-509. https://doi.org/10.4103/0019-5154.190118

Shaw, R. B., Lawrason, S. V., Todd, K. R., & Ginis, K. A. (2020). A scoping review of peer mentorship studies for people with disabilities: Exploring interaction modality and frequency of interaction. *Health Communication*, 1-11. https://doi.org/10.1080/10410236.2020.1796293

Shiner, R., & Caspi, A. (2003). Personality differences in childhood and adolescence: measurement, development, and consequences. *Journal of Child Psychology and Psychiatry, 44*(1), 2–32. https://doi.org/10.1111/1469-7610.00101

Solansky, S. T. (2010). The evaluation of two key leadership development program components: Leadership skills assessment and leadership mentoring. *The Leadership Quarterly, 21*(4), 675-681. https://doi.org/10.1016/j.leaqua.2010.06.009

Sosik, J. J., Godshalk, V. M., & Yammarino, F. J. (2004). Transformational leadership, learning goal orientation, and expectations for career success in mentor–protégé relationships: A multiple levels of analysis perspective. *The Leadership Quarterly*, *15*(2), 241–261. https://doi.org/10.1016/j.leaqua.2004.02.003

Tackett, J. L., Herzhoff, K., Kushner, S. C., & Rule, N. (2016). Thin Slices of child personality: Perceptual, situational, and behavioral contributions. *Journal of Personality and Social Psychology*, *110*(1), 150–166. https://doi.org/10.1037/pspp0000044

Taha, H. binti M., Jalal, F. H. binti A., Yahya, N. binti D., Omar, M. S. bin., & Lin, E. Y. E. (2014). The Effectiveness of Peer Mentoring Module on the Personality of Peer Mentors. *International Journal of Asian Social Science, 4*(2), 145–151. Retrieved from https://archive.aessweb.com/index.php/5007/article/view/2614

Terrion, J. L., & Leonard, D. (2007). A taxonomy of the characteristics of student peer mentors in Higher Education: Findings from a literature review. *Mentoring & Tutoring: Partnership in Learning*, *15*(2), 149–164. https://doi.org/10.1080/13611260601086311

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*(11), 4344. https://doi.org/10.3390/su12114344

Tisdell, C. C., & Shekhawat, G. S. (2019). An applied e-mentoring model for academic development, reflection, and growth. *International Journal for the Scholarship of Teaching and Learning, 13*(2), 6. https://doi.org/10.20429/ijsotl.2019.130206

Turban, D. B., Moake, T. R., Wu, S. Y.-H., & Cheung, Y. H. (2016). Linking extroversion and proactive personality to career success. *Journal of Career Development*, *44*(1), 20–33. https://doi.org/10.1177/0894845316633788

Turner, A. (2003). Sampling frames and master samples. *UNSD, Expert Group Meeting to Review the Draft Handbook on Designing of Household Sample Surveys*.

Universiti Tunku Abdul Rahman (UTAR). (n.d.). *Introduction*. https://utar.edu.my/Introduction.php

Universiti Tunku Abdul Rahman (UTAR). (n.d.). Peer mentoring programme. http://www.utar.edu.my/dsa/index.jsp?fcatid=545&fcontentid=2138&f2ndcontentid=4138

Universiti Tunku Abdul Rahman (UTAR). Times Higher Education (THE). (2020). https://www.timeshighereducation.com/world-university-rankings/universiti-tunku-abdul-rahman-utar.

University of Nottingham Malaysia. (n.d.). Peer mentoring. https://www.nottingham.edu.my/CurrentStudents/Nottingham-Advantage-Award/Modules/Peer-mentoring.aspx

Wanberg, C. R., Welsh, E. T., & Hezlett, S. A. (2003). Mentoring research: A review and Dynamic Process Model. *Research in Personnel and Human Resources Management*, 39–124. https://doi.org/10.1016/s0742-7301(03)22002-8

Waters, L. (2004). Protégé–mentor agreement about the provision of psychosocial support: The mentoring relationship, personality, and workload. *Journal of Vocational Behavior*, *65*(3), 519–532. https://doi.org/10.1016/j.jvb.2003.10.004

Welch, S. (2017). Virtual mentoring program within an online doctoral nursing education program: *A phenomenological study. International Journal of Nursing Education Scholarship, 14*(1). https://doi.org/10.1515/ijnes-2016-0049

Wells, C. V., & Grabert, C. (2004). Service-learning and mentoring: Effective pedagogical strategies. *College Student Journal, 38*(4), 573-579. https://go.gale.com/ps/i.do?id=GALE%7CA126386895&sid=googleScholar&v=2.1&it=r&linkaccess=abs&issn=01463934&p=AONE&sw=w

Whitely, W., Dougherty, T. W., & Dreher, G. F. (1991). Relationship of career mentoring and socioeconomic origin to managers and professionals early

career progress. *Academy of Management Journal, 34*(2), 331-350. https://doi.org/10.2307/256445

Woiceshyn, J., & Daellenbach, U. (2018). Evaluating inductive vs deductive research in management studies: Implications for authors, editors, and reviewers. *Qualitative Research in Organizations and Management: An International Journal, 13*(2), 183-195. https://doi.org/10.1108/QROM-06-2017-1538

Wronski, L., & Cohen, J. (2019, July 16). *Nine in 10 workers who have a career mentor say they are happy in their jobs*. CNBC. https://www.cnbc.com/2019/07/16/nine-in-10-workers-who-have-a-mentor-say-they-are-happy-in-their-jobs.html

Yang, W., Wang, Y., Choi, M., & Li, Y. (2024). Influence of mentoring on the proactive behavior of new employees: Moderated mediation effect of agreeableness. *Frontiers in Psychology*, 15. https://doi.org/10.3389/fpsyg.2024.1370815

Yirci, R., Karakose, T., Uygun, H., & Ozdemir, T. Y. (2016). Turkish adaptation of the mentorship effectiveness scale: A validity and reliability study. *EURASIA Journal of Mathematics, Science and Technology Education, 12*(4). https://doi.org/10.12973/eurasia.2016.1440a

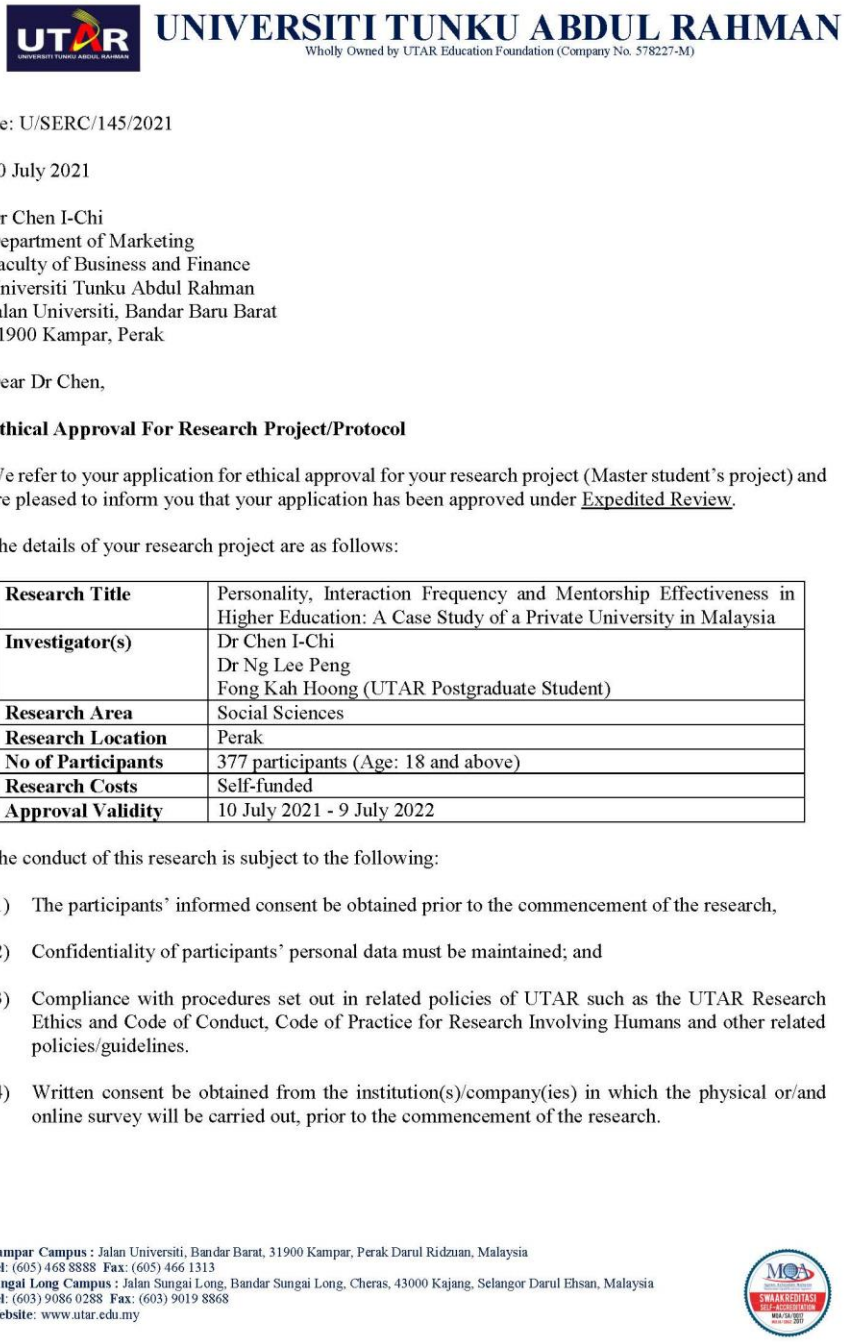
Younginer, S. T., & Elledge, L. C. (2021). Mentor personality and attachment as correlates of Youth Mentoring Relationship Quality within a school-based mentoring intervention: The moderating role of negative interactions. *Journal of Community Psychology*, *49*(7), 2569–2589. https://doi.org/10.1002/jcop.22654

Yu, M.-N., Chang, Y.-N., & Li, R.-H. (2024). Relationships between big five personality traits and psychological well-being: A mediation analysis of social support for university students. *Education Sciences*, *14*(10), 1050. https://doi.org/10.3390/educsci14101050

Zacher, H., & Frese, M. (2009). Remaining time and opportunities at work: Relationships between age, work characteristics, and occupational future time perspective. *Psychology and Aging*, *24*(2), 487–493. https://doi.org/10.1037/a0015425

Ethics Approval

Ethics Approval was obtained from the university's Scientific and Ethical Review Committee under the reference number U/SERC/145/2021.



UNIVERSITI TUNKU ABDUL RAHMAN
Wholly Owned by UTAR Education Foundation (Company No. 578227-M)

Re: U/SERC/145/2021

10 July 2021

Dr Chen I-Chi
Department of Marketing
Faculty of Business and Finance
Universiti Tunku Abdul Rahman
Jalan Universiti, Bandar Baru Barat
31900 Kampar, Perak

Dear Dr Chen,

Ethical Approval For Research Project/Protocol

We refer to your application for ethical approval for your research project (Master student's project) and are pleased to inform you that your application has been approved under Expedited Review.

The details of your research project are as follows:

Research Title	Personality, Interaction Frequency and Mentorship Effectiveness in Higher Education: A Case Study of a Private University in Malaysia
Investigator(s)	Dr Chen I-Chi Dr Ng Lee Peng Fong Kah Hoong (UTAR Postgraduate Student)
Research Area	Social Sciences
Research Location	Perak
No of Participants	377 participants (Age: 18 and above)
Research Costs	Self-funded
Approval Validity	10 July 2021 - 9 July 2022

The conduct of this research is subject to the following:

(1) The participants' informed consent be obtained prior to the commencement of the research,

(2) Confidentiality of participants' personal data must be maintained; and

(3) Compliance with procedures set out in related policies of UTAR such as the UTAR Research Ethics and Code of Conduct, Code of Practice for Research Involving Humans and other related policies/guidelines.

(4) Written consent be obtained from the institution(s)/company(ies) in which the physical or/and online survey will be carried out, prior to the commencement of the research.

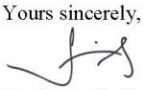
Kampar Campus : Jalan Universiti, Bandar Barat, 31900 Kampar, Perak Darul Ridzuan, Malaysia
Tel: (605) 468 8888 **Fax**: (605) 466 1313
Sungai Long Campus : Jalan Sungai Long, Bandar Sungai Long, Cheras, 43000 Kajang, Selangor Darul Ehsan, Malaysia
Tel: (603) 9086 0288 **Fax**: (603) 9019 8868
Website: www.utar.edu.my

Should you collect personal data of participants in your study, please have the participants sign the attached Personal Data Protection Statement for your records.

The University wishes you all the best in your research.

Thank you.

Yours sincerely,



Professor Ts Dr Faidz bin Abd Rahman
Chairman
UTAR Scientific and Ethical Review Committee

c.c Dean, Faculty of Business and Finance
Director, Institute of Postgraduate Studies and Research

Kampar Campus : Jalan Universiti, Bandar Barat, 31900 Kampar, Perak Darul Ridzuan, Malaysia
Tel: (605) 468 8888 **Fax**: (605) 466 1313
Sungai Long Campus : Jalan Sungai Long, Bandar Sungai Long, Cheras, 43000 Kajang, Selangor Darul Ehsan, Malaysia
Tel: (603) 9086 0288 **Fax**: (603) 9019 8868
Website: www.utar.edu.my

APPENDIX I – Items for Key Constructs of the Study

Variables	Survey Item		Scale
Big Five Personalities	1	Is talkative	5-point Likert Scale
	2	Tends to find fault with others	1=Strongly Disagree to 5=Strongly Agree
	3	Does a thorough job	
	4	Is depressed	BFI scale scoring ("R" denotes reverse-scored items): Extraversion: 1, 6R, 11, 16, 21R, 26, 31R, 36 Agreeableness: 2R, 7, 12R, 17, 22, 27R, 32, 37R, 42 Conscientiousness: 3, 8R, 13, 18R, 23R, 28, 33, 38, 43R Neuroticism: 4, 9R, 14, 19, 24R, 29, 34R, 39 Openness: 5, 10, 15, 20, 25, 30, 35R, 40, 41R, 44
	5	Is original, comes up with new ideas	
	6	Is reserved	
	7	Is helpful and unselfish with others	
	8	Can be somewhat careless	
	9	Is relaxed, handles stress well	
	10	Is curious about many different things	
	11	Is full of energy	
	12	Starts quarrels with others	
	13	Is a reliable worker	
	14	Can be tense	
	15	Is ingenious, a deep thinker	
	16	Generates a lot of enthusiasm	
	17	Has a forgiving nature	
	18	Tends to be disorganized	
	19	Worries a lot	
	20	Has an active imagination	
	21	Tends to be quiet	
	22	Is generally trusting	
	23	Tends to be lazy	
	24	Is emotionally stable, not easily upset	

	25	Is inventive	
	26	Has an assertive personality	
	27	Can be cold and aloof	
	28	Perseveres until the task is finished	
	29	Can be moody	
	30	Values artistic, aesthetic experiences	
	31	Is sometimes shy, inhabited	
	32	Is considerate and kind to almost everyone	
	33	Does things efficiently	
	34	Remains calm in tense situations	
	35	Prefers work that is routine	
	36	Is outgoing, sociable	
	37	Is sometimes rude to others	
	38	Makes plans and follows through with them	
	39	Gets nervous easily	
	40	Likes to reflect, play with ideas	
	41	Has few artistic interests	
	42	Likes to cooperate with others	
	43	Is easily distracted	
	44	Is sophisticated in art, music or literature	
Interaction	1	Frequency of virtual interaction between mentor and mentee (e.g., phone, mail, virtual meeting, texts)	4-point Likert scale 1=Little or None to 4=The Most
	2	Frequency of physical interaction between mentor and mentee (e.g., face-to-face)	

	3	The outcome of virtual mentoring engagement? (e.g., phone, mail, virtual meeting, texts)	
	4	The outcome of a physical mentoring engagement? (e.g., face-to-face)	
Mentorship Effectiveness	1	My mentor was accessible.	5-point Likert Scale
	2	My mentor demonstrated professional integrity.	1=Strongly Disagree to 5=Strongly Agree
	3	My mentor demonstrated content expertise in my area of need.	
	4	My mentor was approachable.	
	5	My mentor was supportive and encouraging.	
	6	My mentor provided constructive and useful critiques of my work.	
	7	My mentor motivated me to improve my work product.	
	8	My mentor was helpful in providing direction and guidance on professional issues (e.g., networking).	
	9	My mentor answered my questions satisfactorily (e.g., timely response, clear, comprehensive).	
	10	My mentor acknowledged my contributions appropriately (e.g., committee contributions, awards).	
	11	My mentor suggested appropriate resources (e.g., experts, electronic contacts, source materials).	
	12	My mentor challenged me to extend my abilities (e.g., risk	

taking, try a new professional activity, and draft a section of an article).
