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# BIG FIVE PERSONALITY AND MENTORING EFFECTIVENESS AMONG UNIVERSITY STUDENTS: MODERATING EFFECT OF INTERACTION

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## ABSTRACT

*This study investigates the impact of individual personality traits on mentorship effectiveness in the presence of interaction. Employing a quantitative approach, data from undergraduate students in a Malaysian private university were analyzed using the Big Five Personality model and Mentorship Effectiveness Scale. Results reveal a significant positive correlation between Agreeableness and Extraversion with Mentorship Effectiveness, tempered by a negative moderating effect of Interaction. Besides that, the study offers a valuable framework for assessing personality's role in mentorship effectiveness, aiding institutions and researchers in their future research.*

## INTRODUCTION

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). However, 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).

As important as mentoring may be, there are few questions remain unanswered about the conditions and types of interventions required to maximize the benefits and effectiveness for young people. Factors such as gender, race, age, education and personality which are used to evaluate the mentorship effectiveness are rarely discussed (Berk et al., 2005; Dubois et al., 2011; Nkrumah & Scott, 2022; Ragins & Kram, 2007).

In particularly, the 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) proposed that an individual's personality plays a key role in explaining mentoring outcomes. They further stressed on the tools of evaluating personality using the Big Five Personality model in predicting mentoring effectiveness using the Mentorship Effectiveness Scale. Thus, upon conducting this proposed research, a valid and reliable framework and tools shall be identified to lay a foundation for institutions and researchers.

Previous researchers 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). 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 institution.

Therefore, the purposes of this study include: (a) To determine the influence of Big Five Personality of mentee towards mentorship effectiveness; (b) To identify the moderating effect of interaction between Big Five personality of mentee and mentorship effectiveness

## LITERATURE REVIEW

### *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. FFM 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). 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). 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'.

### *Big Five Personality and Mentorship Effectiveness*

Several studies have explored the underpinning concept of the quality of mentoring relationships and found correlations between personalities and mentorship effectiveness. For instance, extraversion and agreeableness were found to have positive correlations with mentorship quality (Cavell et al., 2020). Meanwhile another research which discussed the influence of the Big Five Personality on the perceived effectiveness of executive coaching found that there is a significant positive relationship between extraversion and perceived coaching effectiveness (Jones et al., 2014). Similarly, an earlier study by Niehoff (2006) showed that individuals who were positively associated with extraversion, conscientiousness and openness to experience would have higher tendency to participate in a mentoring programme as a mentor.

There are findings where mentees who scored high on openness and agreeableness received more mentoring. At the same time, low levels of extraversion were negatively associated with mentoring received, while high levels of extraversion were positively associated with mentoring received. Additionally, having high levels of conscientiousness and emotional stability had a positive relationship with mentoring receipt (Bozionelos, 2014; Schuster et al., 2017).

Based on the literature review above, the following hypotheses are proposed:

$H_1$: The trait of agreeableness in a mentee has a positive influence on mentorship effectiveness.

$H_2$: The trait of conscientiousness in a mentee has a positive influence on mentorship effectiveness.

$H_3$: The trait of extraversion in a mentee has a positive influence on mentorship effectiveness.

$H_4$: The trait of neuroticism in a mentee has a negative influence on mentorship effectiveness.

$H_5$: The trait of openness in a mentee has a positive influence on mentorship effectiveness.

### ***Moderating Effect of Interaction between Big Five Personality and Mentorship Effectiveness***

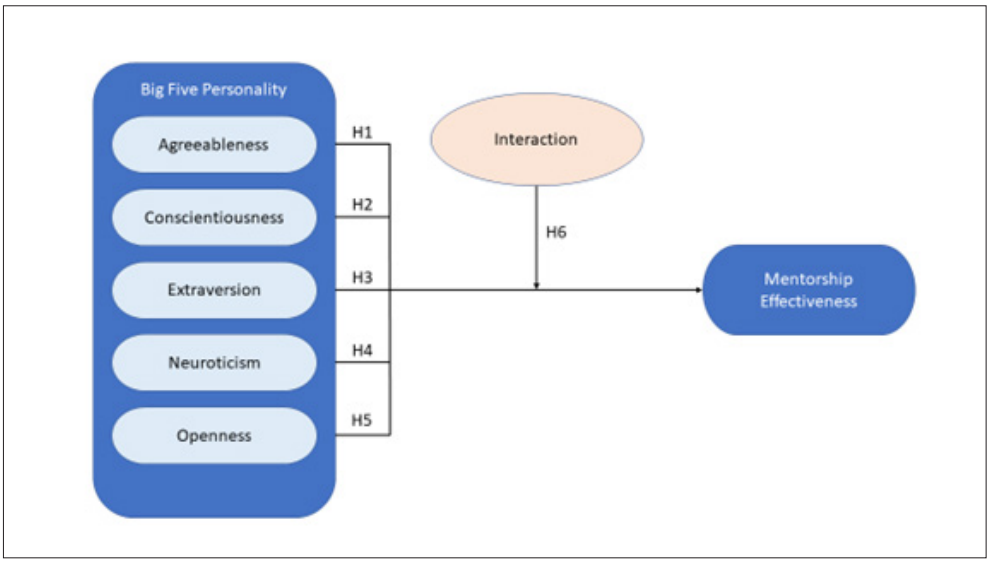
Research has shown that interaction frequency, which is part of the mentorship program characteristic, would serve as a moderating variable which would have potential influence as a catalyst or lead to a positive outcome on mentoring-program effectiveness (Dubois et al., 2011; Eby et al., 2013; Hernandez et al., 2016). Besides that, interaction between mentor and mentee would also affect the relationship between mentee's personality and mentorship effectiveness. With a higher interaction score, mentee could have a better perception of 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 of the personalities of others (Tackett et al., 2016). Aryee (as cited in Menges, 2015) found that mentees with personalities such as extraversion will be positively related to the mentoring experience, and thus, they tend to be engaged more frequently with mentors.

In this study, interaction consists of both interaction frequency and interaction quality. This enhances the richness and accuracy of relationship assessments, providing a more reflective and practical measure for understanding and evaluating connections between individuals or entities. Therefore, this led to the development of the following hypothesis, and the proposed research framework is shown in Figure 1.

$H_6$: Interaction will moderate the relationship between Big Five Personality dimensions of mentee; (a) agreeableness, (b) conscientiousness, (c) extraversion, (d) neuroticism, (e) openness and mentorship effectiveness.

### *Conceptual Framework and Hypothesis of The Study*

**FIGURE 1.** CONCEPTUAL FRAMEWORK




## METHODOLOGY

The current study used a cross-sectional design, and a quantitative research methodology was employed. Partial Least Square-Structural Equation Modelling (PLS-SEM) was used for data analysis. The method of collecting data is through survey where a self-administered questionnaire was validated and distributed to the respondents who meet the criteria.

### *Participants and Procedure*

The data for 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 G-Power Protocol with standard criteria of effect size $f^2 = 0.15$, 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).

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. 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.

### *Instrument Development*

The study utilized a well-validated instrument based on existing literature to measure key constructs. 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.

*Big Five Personalities* was adopted from John and Srivastava (1999), consists of 44 items to measure agreeableness (9 Items), conscientiousness (9 Items), extraversion (8 Items), neuroticism (8 Items) and openness (10 Items). A 5-point Likert scale to measure range from 1=Strongly Disagree to 5=Strongly Agree. ***Interaction*** was adapted from Buhrmester and Furman (2008) consisting of 4 items with a 4-point Likert scale 1=Little or None to 4=The Most. ***Mentorship Effectiveness*** was developed by Berk et al. (2005), consists of 12 items measured with 5-point Likert scale from 1=Strongly Disagree to 5=Strongly Agree.

### *Pilot Test*

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 frequency 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.

### *Data Analysis*

The data from 310 mentees collected from this study was first entered into IBM-SPSS statistical software and further analysed in SmartPLS 4 software to test the hypotheses of the study. The data was analysed using PLS-SEM approach to find the fundamental relationships between the Big Five Personality, interaction and mentorship effectiveness. PLS-SEM method allows researchers to analyse complex models which consist of many variables, constructs or structural path without having the influence of distributional assumptions on the data. Besides that, PLS-SEM is a SEM which practices causal predictive approach which focus on prediction in estimating statistical models which is designed to give causal explanation (Hair et al., 2019).

## FINDINGS

### *Demographic Profile*

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, information technology, arts and etc.

### *Preliminary analysis*

Normality test was performed to test for data normality through skewness and kurtosis analysis. As shown in Table 1, 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 1.** SKEWNESS AND KURTOSIS

| | 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 |

### *Measurement Model Evaluation*

The construct ensured that all items' loadings are above 0.7 for individual item reliability to be accepted. All the constructs in Table 2 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).

**TABLE 2.** 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 Effectiveness | 0.959 | 0.961 | 0.711 |

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 3, 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 the 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 3.** 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 |

**TABLE 4.** 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*** ** | **0.05** | **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*** ** | **0.03** | **Supported** | 1.237 |
| H4 | Neuroticism -> Mentoring Effectiveness | -0.02 | 0.052 | 0.702 | 0.001 | Not Supported | 1.197 |
| H5 | Openness -> Mentoring Effectiveness | 0.038 | 0.05 | 0.449 | 0.002 | Not Supported | 1.112 |
| **H6a** | **A x I -> Mentoring Effectiveness** | **-0.146** | **0.06** | **0.015** ** | **0.04** | **Supported** | 1.439 |
| H6b | C x I -> Mentoring Effectiveness | -0.024 | 0.05 | 0.626 | 0.001 | Not Supported | 1.698 |
| H6c | E x I -> Mentoring Effectiveness | 0.06 | 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 | 1.51 |
| H6e | O x I -> Mentoring Effectiveness | -0.022 | 0.048 | 0.645 | 0.001 | Not Supported | 1.293 |

Note. *p<0.1, **p<0.05, ***p<0.01. A=Agreeableness, C=Conscientiousness, E=Extraversion, N=Neuroticism, O=Openness, x I = with inclusion of interacting as moderating variable

*Structural Model Assessment*

The structural model was assessed by performing bootstrapping procedure with 5000 re-sampling. Table 4 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.

Table 4 shows that agreeableness has the most significant positive influence on mentoring effectiveness (β = .186, p < .01). Meanwhile, the trait with the second highest significant positive influence on mentoring effectiveness is extraversion (β = .144, p < .01). Thus, Hypothesis 1 and 3 were supported. However, traits such as conscientiousness (β = .162, p > .05), neuroticism (β = -.02, p > .05) and openness (β = .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 (β = -.146, p < .05) and mentorship effectiveness shows significant result while conscientiousness (β = -.024, p > .05), extraversion (β = .060, p > .05), neuroticism (β = .019, p > .05) and openness (β = -.022, p > .05) show non-significant results. Thus, Hypothesis 6a was supported while Hypothesis 6b to 6e were not supported. 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

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 5, only Agreeableness ($f^2$ = 0.045), Extraversion ($f^2$ = 0.027) and Agreeableness x Interaction ($f^2$ = 0.042) show significant results. Thus, $f^2$ value on Agreeableness, Extraversion and Agreeableness x Interaction which are > 0.02 have a small effect on the $R^2$ value. A $Q^2$ value of above zero (0.288) represents that the model has predictive relevance (Hair et al., 2020).

## DISCUSSION

This study would present a framework to provide insights to education 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).

Meanwhile, several research also indicated that extraversion was positively correlated with mentoring effectiveness (Bozionelos, 2004; Goldner, 2015; Jacobi, 1991; Schuster et al., 2017). Mentees with trait of extraversion were more likely to receive instrumental support, such as job leads and networking opportunities and to engage in active listening and empathic responding. This led to greater career success for the mentees (Allen et al., 2004; Jones et al., 2014).

Therefore, the findings brought a new insight of the mentoring programme. The study was conducted during the Covid-19 lock-down period where most respondents mainly interacted virtually instead of physically. Interaction which occurs virtually may be more effective, however it greatly reduces the interaction quality as virtual interaction would ignore the important elements in interaction such as voice tone, emphasis, body language and emotional attachment. At the same time, prior research found that a team with low agreeableness interacting virtually would even outperform a team with high agreeableness communicating physically (Bradley et al., 2013). Thus, due to the Covid-19 situation which happened during the course of this study, most students who are only able to interact via virtual communication methods may also have an impact on the findings.

### *Theoretical Implication*

From the theoretical perspective, our findings showed that mentees who are extroverts and high in agreeableness contribute to mentoring effectiveness compared to other personality traits. Moreover, interaction was found to be a significant moderating effect in the relationship between agreeableness to mentorship effectiveness. The evaluation of personality and mentoring effectiveness might indeed be culturally sensitive, suggesting that what is considered effective in one culture may not hold true in another. This study, therefore, contributes to the existing literature by fortifying and refining our understanding of the relationship between personality and mentorship effectiveness, emphasizing the need for a nuanced approach that considers cultural variations.Besides that, the finding of this study contributes to the existing literature as the majority of the previous research were conducted in a business environment instead of academic institutions (Bozionelos, 2004; Niefhoff, 2006; Turban et al., 2016; Waters, 2004). As such, the findings from this study could lay a foundation in the academic setting for future research.

### *Managerial Implication*

The findings of this study are useful in designing a more effective mentorship programme for the students which is beneficial in improving students' academic attainment as well as improved psychosocial support throughout their course in the institution (Astin et al., 2000; Cheah et al., 2015; Colvin & Ashman, 2010; Morris, 2017). Thus, this study has provided insight into how institutions could use the concept of personality, particularly the Big Five Personality assessment tools, to identify the traits of individuals in order to have a better understanding of the students in order to cultivate successful mentorship programmes in the future.

In light of findings that demonstrate the validity and reliability of the Big Five Personality assessment tools and the Mentorship Effectiveness Scale, university and academic faculty management may utilize these measurements to facilitate specific mentorship programs by identifying mentee personalities prior to the commencement of the mentorship program. Institution may also further strengthen their mentorship programmes by constantly evaluating

their programme by using the Mentorship Effectiveness Scale and make any necessary adjustments to the programme's setting.

Moreover, the finding from this study has shown that interaction do play a role in moderating the relationship between individual's personality and mentorship effectiveness. Thus, this insight prompts institutions to consider tailoring their programs, whether physical or virtual, based on the nuanced performance and feedback of each student.

## 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 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.

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