An investigation of the relationship between personality traits and academic performance

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Abstract

This current study extended prior research not only examined the relationship between various personality traits and academic performance but also explored how the possible mediator variables affected the relationship between personality traits and academic performance among the university students in Hong Kong. A total number of 150 university students who aged 18-25 participated in this current study. The online questionnaire included four sections which were ‘Demographic profile’, 'Big Five Inventory', 'Student Stress Inventory' and 'Academic Motivation Inventory', it was distributed to the university students randomly. Data were analyzed by using IBM SPSS Statistics Software. Regarding to the result of this current study, conscientiousness and agreeableness predicted to university student’s average GPA significantly and positively. Findings not only showed that conscientiousness and agreeableness predicted university student’s average GPA significantly and positively but also revealed that no factor was found to mediate the relationship between conscientiousness and academic performance. Findings also showed that neuroticism, openness and extraversion not significantly predicted university student’s average GPA.

Keywords:
Big Five, academic performance, conscientiousness, agreeableness, extraversion, neuroticism, openness

Introduction

Education is one of the most significant elements that every individual has to equip in this demanding world. Not only the individuals spend a lot of time as a student but also the Hong Kong government spends lots of funds on education activities. So, it is extremely valuable for us to discover what variables have an effect on and predict academic achievement. There were a lot of researchers have been looking for the factors, which affect the student's academic performance. Personality trait of the individuals is one of the most important variables that affect their academic performance. More specifically, personality trait conscientiousness was strongly correlated to academic success (Noftle & Robins, 2007). Besides that, there are possible mediator variables, which affect the relationship between personality traits and academic performance. So, the objective of this study not only examined the relationship between personality traits and academic performance, but also explored how the possible mediator variables such as academic stress, academic motivation, the numbers of missing lectures affected the relationship between personality traits and academic performance among the university students in Hong Kong.

The trait theory within personality psychology, it implies descriptions of different universal traits to distinguish individuals and their unique abilities. 'The Big Five Personality Traits' is one of the instruments, which is used widely for predicting performance and gained a widespread acceptance. The Big Five is a model which is used to describe the human universal personality based on five factors: extraversion, neuroticism, conscientiousness, agreeableness and openness (DeYung, 2010).

This study focused on the university students in Hong Kong to investigate the relationship between the Big Five Personality Trait and academic performance. Through this current study, the academicians would have a deeper understanding of the relationship between personality traits and academic performance.

Brief explanation of 'The Big Five Personality Trait'

The Big Five Personality Model is a unifying framework for people to study their or others personality. The Big Five Personality Model has generalized across cultures and rating formats.

Neuroticism

The individuals who score high in neuroticism are more likely to feel nervous, anxious and tense in most of the situations. They maintain a low level of self-esteem, negative emotionality and pessimistic attitude. According to Zhang (2003), he demonstrated that neuroticism was correlated with academic achievement negatively as it hindered academic performance. However, the relationship between neuroticism and academic achievement is complex as there are mixed results from different research studies (Ahmad & Rana, 2012; Bidjerano & Dai, 2007; Vedel & Poropat, 2017; Zhao, 2011).

Extraversion

The individuals who score high in extraversion are more likely to feel confident to experience a new situation. According to Zhang (2003), he stated that extraverts are physically active and talkative whereas the introverts tend to stay alone and work alone. Extraverts tend to spend their attention and energy to the external world by interacting with different kinds of people while introverts tend to spend their attention to the inner

world such as their own emotions, ideas. According to Seman and Ismail (2018), they demonstrated that extraversion predicted academic performance negatively as the extroverted students tended to be more talkative and spontaneous; they also found out that the talkative students might focus on chatting with others instead of focusing on their lectures, which affected their academic success negatively.

Agreeableness

The individuals who score high in agreeableness dimension are more likely to help others and have more pleasant social interactions, as they are helpful, trustworthy and kind. Disagreeable individuals tend to show less pro-social behavior. Most of the disagreeable people are unfriendly and uncooperative as they are not used to concern others well-being. According to Hafiz (2016), he demonstrated that agreeableness correlated with academic success positively, as agreeable students were tended to be pleasant, cooperative and compassionate.

Openness to experience

The individuals who perceive high level of openness tend to be creative and explore new ideas for their assessments. They are broad minded and imaginative. They are willing to undertake new challenges and feel glad to think about the abstract concepts. Those who score low in openness prefer to follow the tradition and resistant to change instead of opening to new ideas. So, most innovative scientist and artists achieve a high score in openness (Feist, 1998). According to Viari, Rad and Torabi (2012), they found out that the college students who perceived a high level of openness would be more successful at university as the academic motivation played a mediating role on the relationship between openness with academic performance.

Conscientiousness

The individuals who score high in conscientiousness tend to be well-organized, hard-working and self-discipline etc. They will not rush to complete their tasks, as they are plan-oriented. They may pay full attention capacity on the things that they are processing. They will deliberate first before prioritizing tasks. As they are self-discipline, they will follow the rules and pursue non-immediate targets. They are typically aware of what they are doing in the current situation. Thus, as mentioned above, personality trait conscientiousness is strongly correlated to academic success (Noftle & Robins, 2007).

Academic grading in Hong Kong's universities

Hong Kong education implies students to attend three years of senior secondary education and four years of university education. In addition, the grades that the students achieve from secondary school are used for applying to higher education like universities. Therefore, it deserves student's attention to understand what variables underlying their academic grades.

The universities in Hong Kong commonly use GPA to measure student's academic achievement, which is the mean grade of all the courses that the students study in a semester and the mean grade is included in the final grade of the semester. There are several benefits by using GPA to measure student's academic achievement such as reliable, objective and temporally stable (Bacon & Ben, 2006). But there are some limitations by using GPA to measure student's academic achievement such as grade inflation, which means that the lecturers may award higher grades for the students who have similar performance at different level for maintaining the university's academic reputation (Johnson, 2003). GPA is mean grade of the courses that determined by the

lecturers deliberately for indicating student's academic achievement. For making this decision, there is different more or less objective information such as verbal presentation, tests, and final examination etc. available for the lecturers. Thus, the lecturers are supposed to assign the grades for their students based on this variety of sources. Importantly, the lecturers are not permitted to assign a higher or lower grade because of the student's personal behavior. The lecturers are supposed to consider each course requirements when assigning the grades that included in the GPA (Bacon & Ben, 2006). Although GPA is considered as an objective measurement of student's academic achievement and being used by different universities widely (Bacon & Ben, 2006), it is also based on entrusted lecturer's subjective judgment (Richardson, Abraham & Bond, 2012).

Literature Review

There were many research studies which examined the relationship between the Big Five dimension of personality and academic performance (Hafiz, 2016; Seman & Ismail, 2018; Tomsik, 2018; Viari et al., 2012; Zhang, 2003). A vast amount of research studies demonstrated that the university undergraduate students who perceived a high level of conscientiousness could achieve high levels of academic performance (Al-Naggar, Osman, Ismail, Bobryshew, Ali & Gonzalez, 2015; Conrad & Patry, 2012; Chamorro- Premuzic & Furnham, 2003; Tomsik, 2018). Noftle and Robins (2007) revealed that conscientiousness was the only personality trait which had consistently been associated with academic achievement among the Big Five Personality Traits as the conscientious students were believed to be responsible, self-discipline, organize, careful and will-to achieve etc. For instance, conscientiousness could predict student's academic

performance and GPA stably (Chamorro- Premuzic & Furnham, 2003). Most of the research studies in this literature review were using survey research method to measure the relationship between personality traits and academic performance and their survey mostly consisted of three sections including socio-demographic profile, academic performance such as 'CGPA' and the Big Five personality types (Al-Naggar et al., 2015; Chamorro-Premuzic & Furnham, 2003; Hafiz, 2016; Nechita, Alexandru, Turcu-Ştiolică & Nechita, 2015; Sahinidis, Frangos & Fragkos, 2013; Seman & Ismail, 2018; Viari et al., 2012). Al-Naggar et al. (2015) investigated a total sample of 246 health sciences students in the Management and Science University in Malaysia. After they had done the data collection, they used multiple linear regressions for analyzing the relationship between CGPA and the score of Big Five Personality Inventory. According to the result of the study, it depicted that the personality type of conscientiousness could predict the academic performance positively and significantly among the sample. The result of this study had proven that conscientiousness was a strong predictor of individual's academic performance and it also appeared that conscientiousness was probably the only one of the Big Five factors that had the strongest direct relationship with academic performance. This study indicated that conscientious students tended to be self-organized, precise, energetic and careful (Al-Naggar et al., 2015).

There were previous studies, which demonstrated that agreeableness was the second personality type that could predict academic performance positively as agreeableness students obey teaching instructions and staying focused on learning tasks (Kumari, 2014; Seman & Ismail, 2018; Vermetten, Lodewijks, & Vermunt, 2001). Thus, the students who perceived a high level of agreeableness could have a higher probability

to achieve academic success than those low in agreeableness (Chowdhury & Amin, 2006). Hafiz (2016) investigated a total sample of 60 university students from Guru Nanak Dev University in Amritsar. After data collection, the researchers used linear regression to analyze the correlation between openness to experience, agreeableness, conscientiousness and academic achievement. And the result of this study depicted that those who perceived a high level of agreeableness possessed greater academic success. This study also indicated that agreeable students tended to be pleasant, cooperative and compassionate, which would lead them to achieve academic success because they were more willingness to learn and to cooperate well with their classmates.

Although there was a study, which demonstrated that agreeableness could predict the academic performance positively and there was a positive correlation between agreeableness and academic success (Hafiz, 2016), there was a study, which revealed that agreeableness might not have a positive correlation and effects on academic success (Sahinidis et al., 2013). Sahinidis et al. (2013) investigated a total sample of 962 university students from business faculties in Athens and Piraeus. After collecting the data, the researchers used regression analysis from SPSS to investigate the relationship between the Big Five Personality Traits and academic performance among the participants. The result of this study had shown that personality factors were important variables to predict academic performance but there was no positive correlation between agreeableness and academic performance. The researchers of this study indicated that the university students in Greek were not used to work in teams and in team projects so the findings of this research study demonstrated that agreeableness had no effect and positive correlation on academic performance.

According to some previous research studies, openness was the third personality trait that could predict individual's academic performance positively as openness students tended to be more open-minded, intellectual and interested in learning new things (Gatzka & Hell, 2018; Litman & Spielberger, 2003; Litman, Hutchins, & Russon, 2005; Powell & Nettelbeck, 2014). However, most of the studies revealed that although openness could predict academic performance positively, the correlation between openness and academic performance was slightly small (Gatzka & Hell, 2018). There were some researchers who had done a research study for studying the effects of personality traits on academic performance and they found out that academic motivation could be a mediator variable to mediate the relationship between openness with academic performance (Viari et al., 2012). Viari et al. (2012) had done a research study for examining the mediating role of academic motivation on the correlation between personality traits and academic performance. The researchers had investigated a total sample of 217 college students. The questionnaire of this research study was different from the other research studies in this literature review as it consisted of four sections including academic motivation, personality types, academic performance and demographic profile. They were adopting the 28 items of academic motivation scale for measuring college student's academic motivation (Vallerand, Blais, Brière, Pelletier, Senécal & Vallières 1993). After collecting the data, they were using structural equation modeling method to analyze the data. Based on the result of this study, it depicted that intrinsic and extrinsic motivation could mediate the correlation between personality traits and academic performance. The result also depicted that the college students who perceived a high level of conscientiousness and openness would be more successful at

university as the academic motivation played a mediating role on the relationship between openness and conscientiousness with academic performance. Based on the findings of this study, conscientiousness could predict both of intrinsic and extrinsic motivation positively and openness could predict intrinsic motivation positively (Viari et al., 2012). Openness only predicted intrinsic motivation positively as those who had a high level of openness were tended to be interested and insightful which meant that they desired to explore and gain deep understanding of many things (Clark & Schroth, 2010).

Although there was a study, which demonstrated that openness could predict the academic performance positively (Viari et al., 2012), there was a study, which revealed that the students who perceived a high level of openness would miss more lectures (Chamorro-Premuzic & Furnham, 2003). Chamorro-Premuzic and Furnham (2003) investigated a total sample of 70 undergraduate students from University College London. Based on the findings of this research study, openness was not significantly correlated with academic performance. The researchers found out that the participants who perceived a high level of openness tended to skip more lectures and caused them to achieve a bad academic performance (Chamorro-Premuzic & Furnham, 2003).

According to the findings of a previous study, the researchers indicated that extroverts could have greater ability to achieve academic success comparing to introverts as they had positive attitudes towards their courses and more emotionally engaged in their subjects (Sahinidis et al, 2013). But based on the recent study, the researchers suggested that extraverts would have worse ability to perform in academic setting because they are easily to get distracted, tended to be sociable and impulsive (Chamorro-Premuzic & Furnham, 2003). Seman and Ismail (2018) investigated a total sample of 137

participants who studied in private universities in Malaysia. After collecting the data, the researchers used Pearson correlation analysis to identify the relationship between personality traits and academic performance. According to the result of the study, it showed that extraversion predicted the academic performance (CGPA) negatively. Based on the findings of the study, the researchers indicated that extroverted students tended to be more talkative and spontaneous, which caused them to suffer a low academic performance. Thus, they also implied that extroverted people might not focus during the lectures, which also affected their academic success negatively (Seman & Ismail, 2018).

Although there was a study, which demonstrated that extraversion could predict the academic performance negatively (Seman & Ismail, 2018), there was a study, which revealed that there was positive correlation between extraversion and academic performance (Sahinidis et al., 2013).

There was a study, which showed that the students with neurotic personality would tend to have a low academic performance, as they were not able to regulate their emotions properly and tended to experience negative emotions such as anger, anxious etc. (Bhagat & Nayak, 2014). Nechita et al. (2015) had done a research study for examining the influence of personality factors and academic stress on academic performance. The researchers investigated a total sample of 259 students from the University of Medicine and Pharmacy from Craiova. The researchers measured the personality type, the level of academic stress, the average grade from the last semester in order to obtain the data. Based on the findings of the study, the researchers found out that academic stress mediated the association between neuroticism and academic achievement. The researchers found out that neuroticism correlated to the academic stress level directly,

those high in neuroticism react more to academic stress. Thus, neuroticism predicted the academic performance negatively, because of the negative effects of academic stress level (Nechita et al., 2015).

Although the students who perceived a high level of neuroticism were more likely to experience failure in academic performance, some of the neurotic students might achieve academic success as they saw anxiety and stress as a motivation and motivate them to study (Komarraju, Karau & Schmeck, 2009).

Regarding to the literatures, there were a few research gaps that this current study would attempt to fill. Firstly, there was scarcity of research studies, which explore the relationship between personality traits and academic performance of college students in Hong Kong, the studies in the literature review were conducted in overseas instead of Hong Kong (Al-Naggar et al., 2015; Chamorro-Premuzic & Furnham, 2003; Hafiz, 2016; Nechita et al., 2015; Sahinidis et al., 2013; Seman & Ismail, 2018; Viari et al., 2012), so this current study aimed to reduce this research gap by focusing on Hong Kong college students rather than foreign college students. Secondly, the results in describing the relationship between personality trait and academic performance appeared to be inconsistent and vague, so this current research study would attempt to reduce this controversy by not only explored the relationship between personality traits and academic performance, but also explored how the possible mediator variables such as ‘academic stress, academic motivation, the numbers of missing lectures’ affected the relationship between personality traits and academic performance.

The following hypotheses were made: First, I hypothesized that personality traits conscientiousness, openness, agreeableness predicted university student’s GPA

positively. Second, I hypothesized that personality traits extraversion and neuroticism predicted university student's GPA negatively; Third, I hypothesized that university students with high level of neuroticism were more likely to experience a higher level of academic stress, which predicted their GPA negatively. Fourth, I hypothesized that university students with high level of openness and conscientiousness were more likely to have higher level of academic motivation, which predict their GPA positively. Fifth, I hypothesized that university students with high level of openness were more likely to skip more seminars, which predicted their GPA negatively. Sixth, I hypothesized that the correlation between agreeableness and university student's average GPA would be small if the university students did less group works in the last semester.

Methodology

Participants

As the objective of this study was to investigate the relationship between personality traits and academic performance, a sample of 150 university students of both sexes were recruited randomly to participate in this research study. The gender ratio was 69 males and 81 females. The age range of the total sample was 18-25. The total sample of 150 university students studied in the universities from Hong Kong.

Materials

This study used an online questionnaire, which was created by using Google form. The online questionnaire was divided into four sections of measurements. An online informed consent form was provided for the participants (Appendix A) and indicated whether they agreed to participate in this research or not before filling the online questionnaire.

The first section of the online questionnaire investigated the demographic profile of the college students, which involved the academic performance (average GPA) of the university students (Appendix B).

The second section of measurement measured the Big Five Personality Trait of the college students (Appendix C), which based on the 44 items of Big Five Personality Inventory (John, Donahue & Kentle, 1991). There was a translated version of the 44 items of Big Five Personality Inventory, which provided for the participants to fill in (Appendix D). The reliability of the 44 items of Big Five Personality Inventory was analyzed. The extraversion subscale included 8 items (α = .809), which was very good; the agreeableness subscale included 9 items (α = .656), which was undesirable, so I deleted the item 'Is generally trusting' to improve the reliability of agreeableness. The Cronbach's alphas for agreeableness was (α = .667), which was minimally acceptable after deleting the item. The conscientiousness subscale included 9 items (α = .782), which was respectable; the neuroticism subscale included 8 items (α = .596), which was unacceptable, so I deleted the item ‘Is emotionally stable, not easily’ to improve the reliability of neuroticism. The Cronbach's alphas for neuroticism was (α = .743), which was respectable after deleting the item. The openness subscale included 10 items (α = .808), which was very good.

The third section of measurement measured the level of academic stress of the college students (Appendix E), which based on the 40 items of The Student Stress Inventory (Arip, Kamaruzaman, Roslan & Ahmad, 2015). The reliability of the 40 items of The Student Stress Inventory was analyzed. The Student Stress Inventory was found to be excellently reliable (40 items; α = .937).

The fourth section of measurement measured the level of academic motivation of the college students (Appendix F), which based on the 28 items of The Academic Motivation Scale (Vallerand et al., 1993). The reliability of the 28 items of The Academic Motivation Scale was analyzed. The intrinsic motivation subscale included 12 items ($\alpha = .894$), which was very good; the extrinsic motivation subscale included 12 items ($\alpha = .886$), which was very good and the amotivation subscale included 4 items ($\alpha = .874$), which was very good. An online debriefing form (Appendix G) had given to the participants after they had filled in the online questionnaire.

The normality of each inventory was also analyzed, as the sample size was 150 Hong Kong's university students so the Kolmogorov-Smirnov normality test was used. For the Big Five Personality Inventory, the extraversion subscale data, $p=.200 > .05$ suggesting evidence of normality (Appendix H); the agreeableness subscale data, $p=.076 > .05$ suggesting evidence of normality (Appendix I); the conscientiousness subscale data, $p=.200 > .05$ suggesting evidence of normality (Appendix J); although the neuroticism subscale data $p=.022 < .05$ suggesting evidence of non-normality, regarding to (Appendix K), it had shown that the neuroticism data was approximately normally distributed with a bell-shaped curve, a peak in the middle and quite symmetrical. Although the openness subscale data $p=.025 < .05$ suggesting evidence of non-normality, regarding to (Appendix L), it had also shown that the openness subscale data was approximately normally distributed with a bell-shaped curve, a peak in the middle and quite symmetrical. For the total score of Student Stress Inventory (SSI) data, $p=.065 > .05$ suggesting evidence of normality (Appendix M). For the Academic Motivation Scale, the intrinsic motivation subscale data $p=.07 > .05$ suggesting evidence of normality (Appendix

N); the extrinsic motivation subscale data p=.200>.05 suggesting evidence of normality (Appendix O); the amotivation subscale data p=.018 <.05 suggesting evidence of non-normality, (Appendix P).

Independent Variable

The independent variable of this study was the Big Five Personality Trait of the college students, which included 'Extraversion, Agreeableness, Conscientiousness, Openness, Neuroticism'

Dependent Variable

The dependent variable of this study was the average GPA that the college students achieved.

Mediator Variable

There were several mediator variables in this study including the level of academic stress of the college students, the level of academic motivation of the college students, the numbers of lectures that the college students missed from the last semester.

Measurement

The Big Five Inventory, BFI (John et al., 1991)(see Appendix C, D)

The BFI was a reliable self-report inventory, which was used to assess the individual's personality of the Big Five Dimensions including extraversion, agreeableness, conscientiousness, neuroticism and openness to experience (Goldberg, 1993). The BFI is a simple, flexible and straightforward assessment. There are total 44 items of the Big Five Personality Inventory, which are able to describe the personality briefly. Extraversion and Neuroticism consist of 8 items respectively. Agreeableness and Conscientiousness consist of 9 items respectively. And Openness consists the most items, which includes 10 items

in total. The test-taker is required to respond with a degree, which ranges from disagree strongly to agree strongly on a 5-point Likert scale. For example, it asks the participants to rate how much they agree or disagree on a short statement like: ' I see myself as someone who is emotionally stable, not easily upset; I see myself as someone who is perseveres until the task is finished; I see myself as someone who is helpful and unselfish with others'. As it's a 5-point Likert scale, so there is a value point given for each selection, for example: 1 point for 'Disagree strongly', 2 points for' Disagree a little ', 3 points for ' Neither agree nor disagree', 4 points for 'Agree a little', 5 points for 'Agree Strongly'. The BFI uses short statement for items instead of single adjectives. These 44 brief personality descriptors of BFI were developed through expert ratings so it's efficient and reliable; The BFI had a high mean test reliability and convergent validity (Hee, 2014). The reliability coefficient of all the factors from the Big Five Personality Inventory was above 0.7 (Hee, 2014).

The Student Stress Inventory (SSI) (Arip et al., 2015)(See Appendix E)

The SSI is a self-report inventory, which is used to measure the stress among the college students. It consists of four subscales including physical stress, interpersonal relationship, academic stress and environmental stress. Each of the subscale contains 10 negative items so there are 40 negative items in total. The test-taker is required to respond on an ordinal scale: 'Never', 'Somewhat frequent', 'Frequent' and 'Always' of the SSI. The SSI provides a list of ways that the respondent may feel over the current semester, for example: 'I find difficult to meet my high parent's expectations; I feel stressed as submission deadline neared, I feel stressed to sit for examination.' As it's a 4 point Likert scale, so there is a value point given for each selections, for example: 1 point for 'Never',

2 points for ‘Somewhat Frequent’, 3 points for ‘Frequent’ and 4 points for ‘Always’. The main concept, scales and subscales of SSI were developed from two theories including The General Adaptation Syndrome and The Environmental Stress Theory (Arip et al., 2015). There were nine experts in total who tested the validity and reliability of SSI. They indicated that the SSI had a high reliability and the values of Cronbach’s alpha for these 40 items were greater than 0.7, which showed an acceptable consistency (Nor & Saharudin, 2011).

The Academic Motivation Scale (AMS) (Vallerand et al., 1993) (See Appendix F)

The AMS is a self-report inventory, which is used to measure the academic motivation of college students. It consists of 28 items. There are seven subscales of the AMS, which allows the researchers to measure three intrinsic motivation subscales and three extrinsic motivation subscales and amotivation. Both intrinsic motivation and extrinsic motivation subscales contain 12 items respectively. There are 4 items in amotivation subscale. The test-taker is required to respond with a degree, which ranges from ‘does not correspond at all’ to ‘corresponds exactly’ on a 7-point Likert scale. The AMS provides a list of reasons why the students are motivated to go to college, for example ‘because I think that a college education will help me better prepare for the career I have chosen; I once had good reasons for going to college; however, now I wonder whether I should continue; because I want to show myself that I can succeed in my studies.’ As it’s a 7- point Likert scale, so there is a value point given for each selection, for example: if the participants select ‘Does not correspond at all’, they will have 1 point; if they select ’Corresponds a little, they will have 2 to 3 points; if they select ‘Corresponds moderately’ they will have 4 points; if they select ‘Corresponds a

lot', they will have 5-6 points; if they select 'Corresponds exactly', they will have 7 points. There were two experts who used AMS to test the validity and reliability of the AMS in Solvenian university students (Levpušček & Podlesek, 2017). They demonstrated that AMS had a high construct and convergent validity and high reliability.

Procedures

First, 150 Hong Kong's university students of both sexes who aged 18-25 were recruited randomly to participate in this research study. The participants were requested to read the online informed consent form and indicated that whether they agreed to participate in this research or not. Once they had agreed to participate, they started to fill in the online questionnaire. The participants were requested to answer the questions about their demographic profile first. Then, there were 44 questions, which requested the participants to fill in for measuring their Big Five Personality Traits. These 44 questions were provided in Chinese-English bilingual format. After that, there were 40 questions, which requested the participants to fill in for measuring their level of academic stress. At last, there were 28 questions, which requested the participants to fill in for measuring their level of academic motivation. Once the participants had filled in all the questions from the online questionnaire, they were requested to read the debriefing form of this research study.

After completing the data collection, the data were analyzed by using multiple linear regression, simple linear regression, Pearson product-moment correlation and T-Test from SPSS for identifying the relationship between personality traits and academic performance.

Ethic Consideration

Firstly, this current study used Google form for conducting the questionnaire. Then, there was an online informed consent form (Appendix A) that provided for the participants and indicated that whether they agreed to participate in this research or not before filling the online questionnaire. The participants could press the 'disagree' button to leave the study if they had any objection.

Secondly, an online debriefing form (Appendix G) was given to the participants after they had filled in the online questionnaire. The participants would have a deeper understanding of the purpose, variables and hypothesis of this current study by reading the debriefing form.

Thirdly, there was low potential risk involved in this current research study. If the participants had any questions and concerns about this current study, they could contact the researchers as the contact information was provided in the informed consent form (Appendix A) and debriefing form (Appendix G).

Finally, confidentiality and privacy were guaranteed in this current research study. The name of the participants were not obtained in the research study. Likewise, the online questionnaire only asked for basic information from the participants such as gender and age.

Results

Data were entered and analyzed by using IBM SPSS Statistics Software. The data were analyzed by using multiple linear regression, simple linear regression, Pearson product-moment correlation and T-Test from SPSS for identifying the relationship between personality traits and academic performance.

Table 1.

t-test Result comparing Male and Female on Average GPA

	Gender	N	Mean	SD	t	Df	p-value
Average_GPA	Male	69	2.93	0.51	-1.159	148	.249
	Female	81	3.02	0.48			

Regarding to Table 1, from Levene's Test, Male (M = 2.93, SD = .51) and Female (M = 3.02, SD = .48) did not different significantly on average GPA, t (148) = -1.159, p> .05.

Table 2.

Correlations between Big Five Personality Traits and Average GPA

		BFI_Extraversion	BFI_Agreeableness	BFI_Conscientiousness	BFI_Neuroticism	BFI_Openness	Average_GPA
BFI_Extraversion	Pearson Correlation						
	Sig. (2-tailed)						
	N	150					
BFI_Agreeableness	Pearson Correlation	.135					
	Sig. (2-tailed)	.099					
	N						
BFI_Conscientiousness	Pearson Correlation	.064	.197*				
	Sig. (2-tailed)	.437	.016				
	N						
BFI_Neuroticism	Pearson Correlation	-.293**	-.094	-.350**			
	Sig. (2-tailed)	.000	.251				
	N						
BFI_Openness	Pearson Correlation	.250**	.070	.134	-.011		
	Sig. (2-tailed)	.002	.392	.102	.890		
	N						
Average_GPA	Pearson Correlation	.026	.177*	.260**	-.031	.054	
	Sig. (2-tailed)	.756	.030	.001	.703	.508	
	N						

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 2 had shown that the Pearson product-moment correlation was used for analyzing the correlation between university student's average GPA and their Big Five Personality Traits. Extraversion was correlated with average GPA positively but not significantly, (r=.026, p>.05). Agreeableness was correlated with average GPA significantly and positively, (r=.177, p<.05). Conscientiousness was correlated with average GPA significantly and positively, (r=.260, p<.01). Neuroticism was correlated

with average GPA negatively and not significantly, (r= -.031, p>.05). Openness was correlated with average GPA positively but not significantly, (r=.054, p>.05).

The Pearson product-moment correlation was used for analyzing the correlation between university student's average GPA and their age. There was no correlation between age and average GPA and age wasn't significantly correlated with average GPA, (r=.063, p=.440>.05).

Table 3.

Coefficients

Variables	*B*	*SE_B*	β	*t*	*p*
(Constant)	1.186	.383		4.748	
BFI_Conscientiousness	.207	.072	.232	2.851	.005
BFI_Openness	.012	.067	.014	.178	.859
BFI_Agreeableness	.137	.085	.130	1.610	.110

Dependent Variable: Average_GPA

Regarding to Table 3, multiple regression analysis was used to test whether personality traits conscientiousness, openness and agreeableness predicted university student's average GPA positively. H1 was rejected. The results of the regression revealed that three predictors explained 6.5% of the variance (R^2=.084, F(3,146)=4.464, p=.005 <.01). It was found that conscientiousness predicted average GPA significantly and positively. It was also found that openness and agreeableness not significantly predicted average GPA. The predicted average GPA was indicated by following regression formula: Average GPA= 1.816 + 0.207 (Conscientiousness). In other words, for every conscientiousness score increase, average GPA increased by 0.207 points.

Table 4.

Coefficients

Variables	*B*	*Std.Error*	β	*t*	*p*
(Constant)	3.019	.395		7.652	
BFI_Extraversion	.014	.069	.018	.207	.836
BFI_Neuroticism	-.027	.088	-.026	-.304	.762

Dependent Variable: Average_GPA

Regarding to Table 4, multiple regression analysis was used to test whether personality traits extraversion and neuroticism predicted university student's average GPA negatively. H2 was rejected. The results of the regression revealed that extraversion and neuroticism explained -1.2% of the variance (R^2=.001, F(2,147)=.094, p=.910>.05). It was found that extraversion and neuroticism not significantly predicted average GPA.

Table 5a.

Coefficients

Variables	*B*	*Std.Error*	β	*t*	*p*
(Constant)	3.080	.263		11.715	
BFI_Neuroticism	-.032	.084	-.031	-.383	.703

Dependent Variable: Average_GPA

Table 5b.

Coefficients

Varibles	B	Std. Error	β	t	p
(Constant)	3.095	.179		17.286	
SSI_Totalscore	-.001	.002	-.054	-.659	.511

Dependent Variable: Average_GPA

According to Table 5a, simple linear regression was conducted to test whether personality trait neuroticism predicted university student's average GPA. The results of the regression revealed that neuroticism explained -0.6% of the variance, (R^2=.001, F(1,148)=.146, p =.703>.05). It was found that neuroticism not significantly predicted average GPA. As personality trait neuroticism not significantly predicted university's average GPA, the mediation effects of 'college student's academic stress' couldn't be tested. So, H3 was rejected. Besides that, regarding to Table 5b, simple linear regression was conducted to test whether academic stress predicted university student's average GPA. The results of the regression revealed that academic stress explained -0.4 % of the variance, (R^2=.003, F(1,148)=.434, p=.511>.05). It was found that academic stress not significantly predicted average GPA.

Table 6a.

Coefficients

Variables	*B*	*Std.Error*	β	*t*	*p*
(Constant)	2.829	.232		12.207	
BFI_Openness	.046	.069	.054	.663	.508

Dependent Variable: Average_GPA

Table 6b.

Coefficients

Variables	*B*	*Std.Error*	β	*t*	*p*
(Constant)	2.255	.225		10.007	
BFI_Conscientiousness	.231	.071	.260	3.270	.001

Dependent Variable: Average_GPA

Table 6c.

Coefficients

Varibles	B	Std. Error	β	t	p
(Constant)	3.672	.403		9.118	0.000
BFI_Conscientiousness	.311	.126	.198	2.463	.015

Dependent Variable: AMS_Intrinsic

Table 6d.

Coefficients

Varibles	B	Std. Error	β	t	p
(Constant)	4.913	.396		12.410	0.000
BFI_Conscientiousness	.065	.124	.043	.526	.600

Dependent Variable: AMS_Extrinsic

Table 6e.

Coefficients

Variables	*B*	*Std.Error*	β	*t*	*p*
(Constant)	2.179	.317		6.869	
BFI_Conscientiousness	.228	.072	.256	3.183	.002
AMS_Intrinsic_and_extrinsic	.018	.052	.028	.342	.733

Dependent Variable: Average_GPA

Table 6f.

Coefficients

Varibles	B	Std. Error	β	t	p
(Constant)	2.784	.262		10.643	
AMS_Intrinsic_and_extrinsic	.04	.053	.062	.761	.448

Dependent Variable: Average_GPA

Table 6g.

Coefficients

Varibles	B	*Std. Error*	β	t	p
(Constant)	2.831	.220		12.844	
AMS_Intrinsic	.032	.047	.057	.691	.491

Dependent Variable: Average_GPA

Table 6h.

Coefficients

Varibles	B	*Std. Error*	β	t	p
(Constant)	2.814	.251		11.229	
AMS_Extrinsic	.032	.048	.055	.672	.503

Dependent Variable: Average_GPA

Table 6a showed that simple linear regression was conducted to test whether personality trait openness predicted university student's average GPA. It revealed that openness explained -0.4% of the variance, (R^2=.003, F(1,148)=.440, p =.508>.05) and openness not significantly predicted average GPA. As personality trait openness not significantly predicted university student's average GPA, the mediation effects of 'college student's academic motivation' couldn't be tested. Table 6b showed that simple linear regression was conducted to test whether personality trait conscientiousness predicted university student's average GPA. It revealed that conscientiousness explained 6.1% of the variance, (R^2=.067, F(1,148)=10.690, p=.001<.05) and conscientiousness predicted average GPA significantly and positively. The predicted average GPA was indicated by following regression formula: Average GPA= 2.255 + 0.231

(Conscientiousness). In other words, for every conscientiousness score increase, average GPA increased by 0.231 points. Table 6c showed that simple linear regression was conducted to test whether conscientiousness predicted college student's intrinsic motivation. It revealed that conscientiousness explained 3.3% of the variance, (R^2=.039, F(1,148)=6.064, p=.015<.05) and showed that conscientiousness predicted college student's intrinsic motivation significantly and positively. The predicted intrinsic motivation was indicated by following regression formula: Intrinsic motivation= 3.672 + 0.311 (Conscientiousness). In other words, for every conscientiousness score increase, intrinsic motivation increased by 0.311 points. Table 6d showed that simple linear regression was conducted to test whether conscientiousness predicted college student's extrinsic motivation. It revealed that conscientiousness explained -0.5% of the variance, (R^2=.002, F(1,148)=0.276, p=.6>.05) and showed that conscientiousness not significantly predicted college student's extrinsic motivation. According to Table 6e, multiple regression analysis was used to test whether college student's academic motivation mediate the relationship between conscientiousness and average GPA. It revealed that conscientiousness and college student's academic motivation explained 5.5% of the variance (R^2=.068, F(2,147)=5.372, p =.006<.01). Although conscientiousness predicted average GPA significantly and positively, college student's academic motivation not significantly predicted average GPA which meant that academic motivation couldn't mediate the relationship between conscientiousness and average GPA. According to Sobel Test, the data suggested that academic motivation was not statistically significant mediator between conscientiousness and average GPA, (z=0.335, p=0.738>.05). In sum, H4 was rejected. Besides that, regarding to Table 6f, g, h simple linear regression was

conducted to test whether academic motivation, intrinsic motivation and extrinsic motivation predicted university student's average GPA respectively. It revealed that academic motivation explained -0.3 % of the variance, (R^2=.004, F(1,148)=.578, p =.448>.05); intrinsic motivation explained -0.4% of the variance, (R^2=.003, F(1,148)=.477, p =.491>.05) and extrinsic motivation explained -0.4% of the variance, (R^2=.003, F(1,148)=.451, p =.503>.05). It was found that academic motivation, intrinsic motivation and extrinsic motivation not significantly predicted average GPA respectively.

Table 7.

Coefficients

Variables	*B*	*Std.Error*	β	*t*	*p*
(Constant)	2.829	.232		12.207	
BFI_Openness	.046	.069	.054	.663	.508

Dependent Variable: Average_GPA

According to Table 7, simple linear regression was conducted to test whether openness predicted university student's average GPA. The results of the regression revealed that openness explained -0.4% of the variance, (R^2=.003, F(1,148)=.440, p =.508>.05). It was found that openness not significantly predicted average GPA. As openness not significantly predicted university student's average GPA, the mediation effects of 'skipping more seminars' couldn't be tested. So, H5 was rejected.

Table 8.

Coefficients

Variables	*B*	*Std.Error*	β	*t*	*p*
(Constant)	2.334	.298		7.820	
BFI_Agreeableness	.186	.085	.177	2.185	.030

Dependent Variable: Average_GPA

According to Table 8, simple linear regression was conducted to test whether agreeableness predicted university student's average GPA. The results of the regression revealed that agreeableness explained 2.5% of the variance, (R^2=.031, F(1,148)=4.776, p<.05). It was found that agreeableness predicted average GPA significantly and positively. The predicted average GPA was indicated by following regression formula: Average GPA= 2.334 + 0.186 (Agreeableness). In other words, for every agreeableness score increase, average GPA increased by 0.186 points.

Table 9.

Correlations

			BFI_Agreeableness	Group_projects	Average_GPA
Little	BFI_Agreeableness	Pearson Correlation			
		Sig. (2-tailed)			
		N	100		
	Group_projects	Pearson Correlation	-.136		
		Sig. (2-tailed)	.176		
		N			
	Average_GPA	Pearson Correlation	.145	-.111	
		Sig. (2-tailed)	.149	.269	
		N			
Much	BFI_Agreeableness	Pearson Correlation			
		Sig. (2-tailed)			
		N	50		
	Group_projects	Pearson Correlation	-.082		
		Sig. (2-tailed)	.569		
		N			
	Average_GPA	Pearson Correlation	.329*	.324*	
		Sig. (2-tailed)	.020	.022	
		N			

*. Correlation is significant at the 0.05 level (2-tailed).

The total sample was 150 university students and the median of the group projects was (Mdn=3.00) which was 3-4 numbers of group projects. The numbers of group projects had divided into two domains which were 'less' and 'much' respectively. '0 to 4 numbers of group works' represented to 'less' and '5 to more than 6 numbers of group works' represented to 'much'. There were 100 university students in total who did less amount of group projects and the median of this domain was (Mdn=3.00) which was 3-4 numbers of group projects; there were 50 university students in total who did much

amount of group projects and the median of this domain was (*Mdn*= 4.00) which was 5-6 numbers of group projects. Sahinidis et al. (2013) indicated that agreeableness had no effect and positive correlation on academic performance if the university students were not used to work in team projects. Table 9 showed that Pearson product-moment correlation was used for analyzing the correlation between average GPA and agreeableness; the correlation between numbers of group projects and average GPA and the correlation between agreeableness and numbers of group projects. In the 'less' domain, agreeableness was correlated with average GPA positively but not significantly, (r=.145, p>.05) and the correlation was weak. So, H6 was confirmed. And, in the 'much' domain, agreeableness was correlated with average GPA positively and significantly, (r=.329, p=.02<.05)

Discussion

In this current study, it found out that conscientiousness and agreeableness predicted university student's average GPA significantly and positively. This finding was consistent with many other research studies considering conscientiousness predicted academic performance positively (Al-Naggar et al., 2015; Conrad & Patry, 2012; Chamorro- Premuzic & Furnham, 2003; Tomsik, 2018). It could be explained that conscientious students tended to be well-organized, hard-working and self-discipline; they paid full attention capacity on the things that they were processing (Noftle & Robins, 2007). Regarding to Table 3, multiple linear regression had shown that agreeableness not significantly predicted university student's average GPA but regarding to Table 8, simple linear regression had shown that agreeableness predicted university student's average GPA significantly and positively. This finding was consistent with

other research study considering agreeableness predicted academic performance positively (Hafiz, 2016). It could be explained that agreeable students tended to help others and have more pleasant social interactions, as they were helpful, trustworthy and kind (Hafiz, 2016).

This current study found out that agreeableness was correlated with average GPA positively but not significantly and the correlation was weak instead of no effect if the university students did less amount of group projects. This finding could be explained that the agreeable students couldn't have more opportunities for demonstrating pleasant social interactions if they did less group projects. But this finding wasn't in line with the results from (Sahinidis et al., 2013). Sahinidis et al. (2013) demonstrated that agreeableness had 'no effect and positive correlation' on academic performance if the university students were not used to work in group projects.

This current study found out that openness not significantly predicted university student's average GPA. This finding wasn't in harmony with the previous research studies (Chamorro- Premuzic & Furnham, 2003; Viari et al., 2012). It could be attributed to the fact that the university students who perceived a high level of openness were less interested in more analytical and less creative thinking that required in some majors and electives (Lipnevich, Preckel & Krumm, 2016). Therefore, as openness not significantly predicted university student's average GPA, mediation effects of 'the numbers of missing lectures' couldn't be test.

This current study found out that conscientiousness predicted academic performance and intrinsic motivation significantly and positively which is somewhat in harmony with the previous research study (Viari et al., 2012). This finding could be

explained that conscientious students desired to finish tasks on time rather than leave them incomplete, they would put much effort on different tasks and had a strong desire to accomplish them.

Nevertheless, academic motivation couldn't mediate the relationship between conscientiousness and average GPA. So, this finding didn't corroborate the findings of previous research study which revealed that university students who perceived a high level of conscientiousness and openness would be more successful at university as the academic motivation played a mediating role on the relationship between openness and conscientiousness with academic performance (Viari et al., 2012). Intrinsic motivation and extrinsic motivation also not significantly predicted university student's average GPA respectively was that there were numbers of uncontrolled variables such as intelligence, learning styles and cognitive skills etc. which possibly affected the university student's average GPA (Çetin, 2015). We had to accept the fact that intrinsic motivation and extrinsic motivation not significantly predicted university student's average GPA based on the total sample of this current study. Areepattamannil, Freeman and Klinger (2011) also demonstrated that extrinsic motivation not significantly predict academic achievement for the Indian adolescents in India.

Although this current study found out that intrinsic motivation and extrinsic motivation not significantly predicted university student's average GPA, it was found that intrinsic motivation was correlated with university student's average GPA positively but not significantly (r=.057, p=.491>.05). It could be explained that the students who perceived a high level of intrinsic motivation, they were more likely to conquer more

challenges, desired to learn anything without any rewards and enjoyed the learning process (Pintrich & Garcia, 1991).

This current study found that extraversion not significantly predicted university student's average GPA. This finding wasn't in consonance with previous research study (Seman & Ismail, 2018). It could be explained that the university students who perceived a low level of extraversion were less interested in some majors and electives that required oral exams or oral presentation (Liang & Kelsen 2018).

This current study found out that neuroticism not significantly predicted university student's average GPA. Thus, the mediation effects of 'college student's academic stress' couldn't be tested. This finding could be explained that the university students who perceived a high level of neuroticism were less interested in some majors and electives that required tests or examinations (Gupta & Dutta, 2012). This finding disagreed with the outcome of the previous research study (Nechita et al., 2015), as the mediation effects of academic stress between academic performance and neuroticism couldn't be tested.

By adopting simple linear regression, this current study was found that academic stress and academic motivation could not predict average GPA respectively so in this case, we could understand that the sample of this study perceived a low level of academic stress which caused this predictor not significantly predicted average GPA. The mean score of Student Stress Total score was 77.29 (Appendix M) which was pretty low. But we had to accept the fact that academic motivation not significantly predicted average GPA based on the total sample of this current study. Isik (2018) also demonstrated that academic motivation could not predict academic achievement for the non-Western university students was that there were numbers of uncontrolled and mediator variables

which possibly affected the association between academic motivation and academic performance.

This current study addressed the research gap which mentioned in the literature review; this current study was conducted in Hong Kong and it investigated Hong Kong university students instead of overseas university students. Besides that, this current study explored the effects of the possible mediator variables such as ‘academic stress, academic motivation, the numbers of missing lectures’ affected the relationship between personality traits and academic performance.

Obviously, this current study had some limitations. Some of the mediators couldn’t be tested such as ‘academic stress’ and ‘numbers of missing lectures’ because openness and neuroticism not significantly predicted average GPA. This current study didn't take account of other variables which could affect academic performance such as university student's major or years of university completed. Future research could try to ask for participant's permission for obtaining their average GPA from university records instead of asking them to fill in self-reported average GPA. Although there was research study which revealed that grades obtained from university records were correlated with self-reported GPA positively, it might contain some errors because of mistaken recall (Noftle & Robins, 2007). Besides that, the online survey was conducted in English version except the Big Five Inventory section so the participants might not able to understand the meaning of some words from the online survey and filled in inadequate response. Some of the participants major Pure Psychology so they had prior knowledge of the Big Five Personality Traits, they might rate themselves a high score in the positive descriptors for showing a perfect self.

Conclusion

In conclusion, personality traits were significant predictors which affected student's academic performance. This current study proved that conscientiousness and agreeableness personality trait predicted university student's academic performance significantly and positively. It not only assisted the instructors to keep in focus of the university student's particular personality trait for modifying the best learning activities for them but also assisted the instructors to construct the best learning environments for the university students by considering their differences and strengths. These environments may encourage the university students to be self-discipline, well-organized and able to demonstrate pro-social behavior.

Big Five Personality assessment tool may be an effective tool for guiding the university students to pursuit their academic goals and directed them toward disciplines.

As this current study didn't find any significant mediator effects between the relationship of conscientiousness and academic performance, it concluded that conscientiousness had direct effects on academic performance. Conscientiousness was a significant trait which predict academic performance positively without any mediator variables.

This current study was a cross-sectional research study and self-report research method was used. The limitations were clearly stated. It contributed to the literatures on the role of Big Five personality traits in predicting university student's academic performance.

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Appendix

Appendix A

Informed Consent Form for Adults

An investigation of the relationship between personality trait and academic performance

You are invited to participate in a research study conducted by Lui Him Pok, Boris in the Department of Counseling and Psychology under the supervision of Dr. Calvin Yu at the Hong Kong Shue Yan University.

PURPOSE OF THE STUDY
The purpose of the research is to investigate the relationship between 'The Big Five Personality Trait' and academic performance among university students.

PROCEDURES
The participants are required to complete an online questionnaire. The questionnaire includes the demographic profile of the participants, the score of their Big Five Personality Trait, the level of their academic stress and motivation and their academic performance.

POTENTIAL RISKS / DISCOMFORTS AND THEIR MINIMIZATION
These procedures have no known risks and discomfort. You may find expressing your personal experience during the procedure somewhat uncomfortable and upsetting. Such discomforts, however, should be no greater than what we experience in everyday life.

COMPENSATION FOR PARTICIPATION
There is no compensation provided upon completion of the research.

POTENTIAL BENEFITS
There are no direct benefits to you. However, the research project can provide valuable information on the relationship between personality trait and academic performance among university students.

CONFIDENTIALITY
Confidentiality is promised. All information obtained in this study will be used for research purpose only. All data that are received from the study will be kept privately and confidential. Participants' name will not be recorded.

PARTICIPATION AND WITHDRAWAL

Your participation is voluntary. This means that you can choose to stop at any time without negative consequences.

QUESTIONS AND CONCERNS

If you have any questions or concerns about the research, please feel free to contact Lui Him Pok, Boris at HKSYU, (16P019@hksyu.edu.hk) or Dr. Calvin Yu, (kcyu@hksyu.edu)

If you understand the procedures described above and agree to participate in this study, please click the 'agree' button.

Appendix B

An investigation of the relationship between personality traits and academic performance

Section A—Demographic Profile

Instructions: Please tick in Please read and answer every question item by putting a CHECK ( ) mark on the option given.

1. What is your gender?
( ) Male
( ) Female

2. What is your age?
( ) 17
( )18
( )19
( ) 20
( ) 21
( ) 22
( ) 22+
If 22+ please specify exact age_____

3. What is your GPA from last semester: Please write your answer on the blank provided.

GPA: _____

4. What is your average GPA: Please write your answer on the blank provided.

Average GPA: _____

Note:

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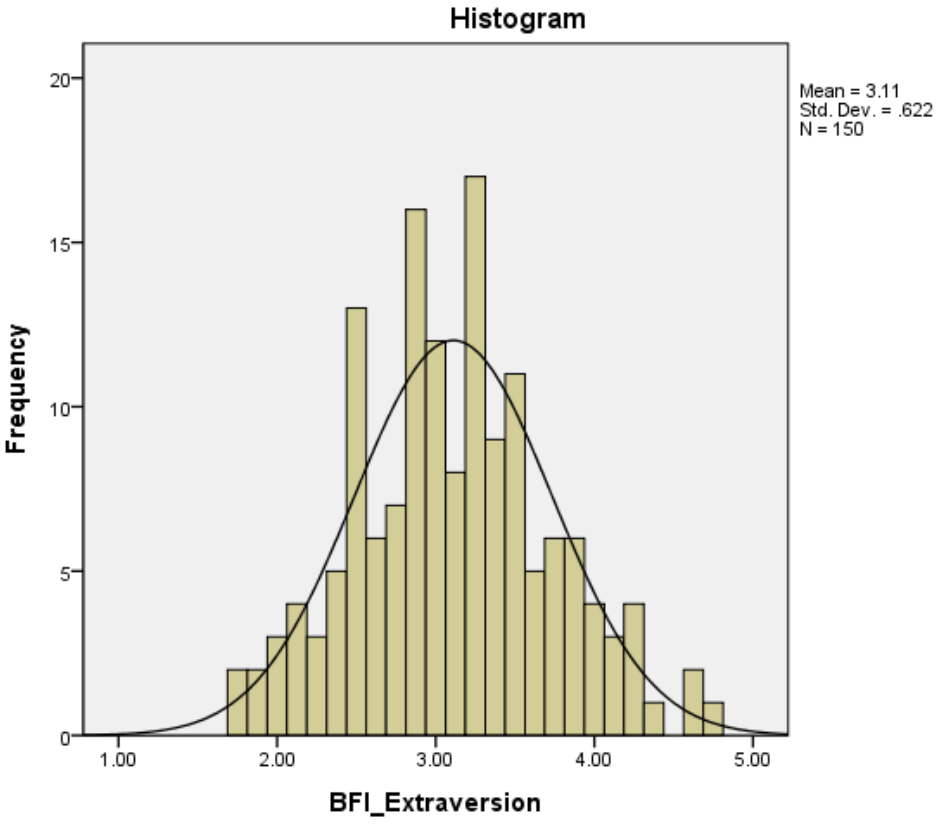
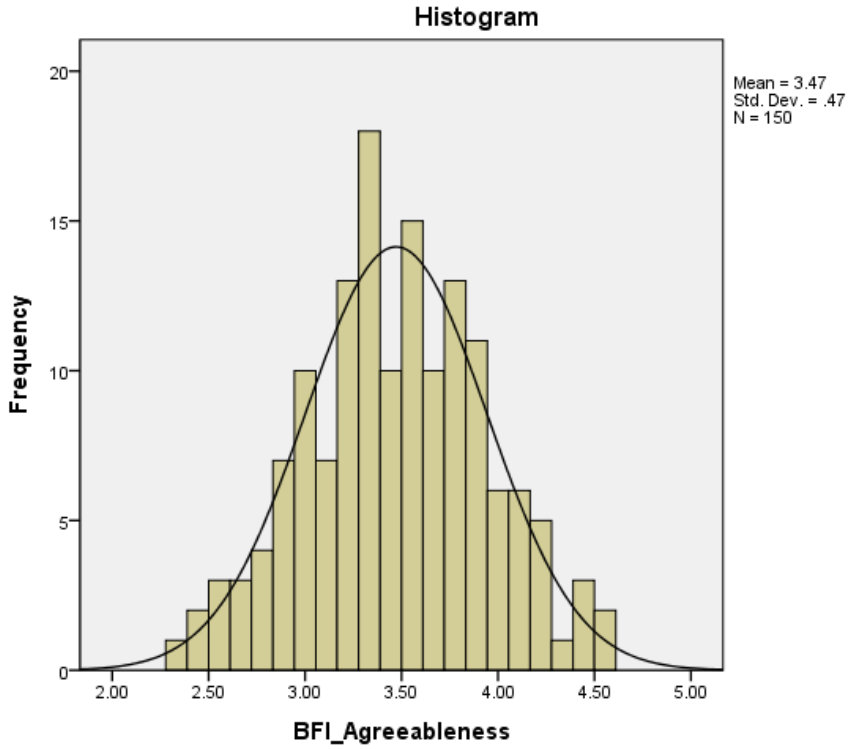
personality traits conscientiousness, openness, agreeableness predict university student's average GPA positively. Second, we assume that personality traits extraversion and neuroticism predict university student's average GPA negatively. Third, regarding to neuroticism, we assume that university students with high base level of neuroticism are more likely to experience a higher level of academic stress, which predict their GPA negatively. Fourth, regarding to openness and conscientiousness, we assume that university students with high base level of openness and conscientiousness are more likely to have higher level of academic motivation, which predict their GPA positively. Fifth, regarding to openness, we assume that university students with high base level of openness are more likely to skip more seminars, which predict their GPA negatively. Sixth, regarding to agreeableness, we assume that the correlation between agreeableness and university student's average GPA will be small if the university students did less group works in the last semester.

If you have any questions regarding this research study, please feel free to contact Dr. Calvin Yu, please email to (kcyu@hksyu.edu) or contact to student investigator, Lui Him Pok, Boris, please email to (16P019@hksyu.edu.hk).

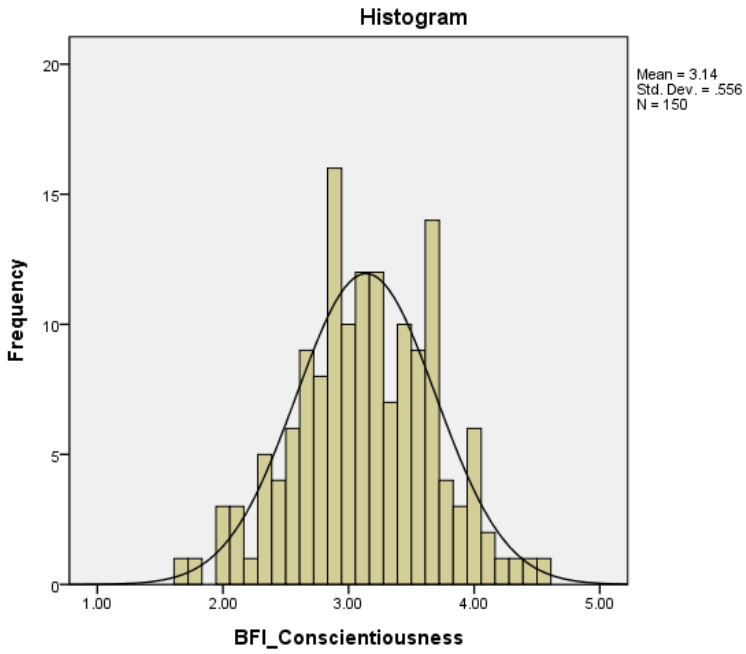
Appendix H



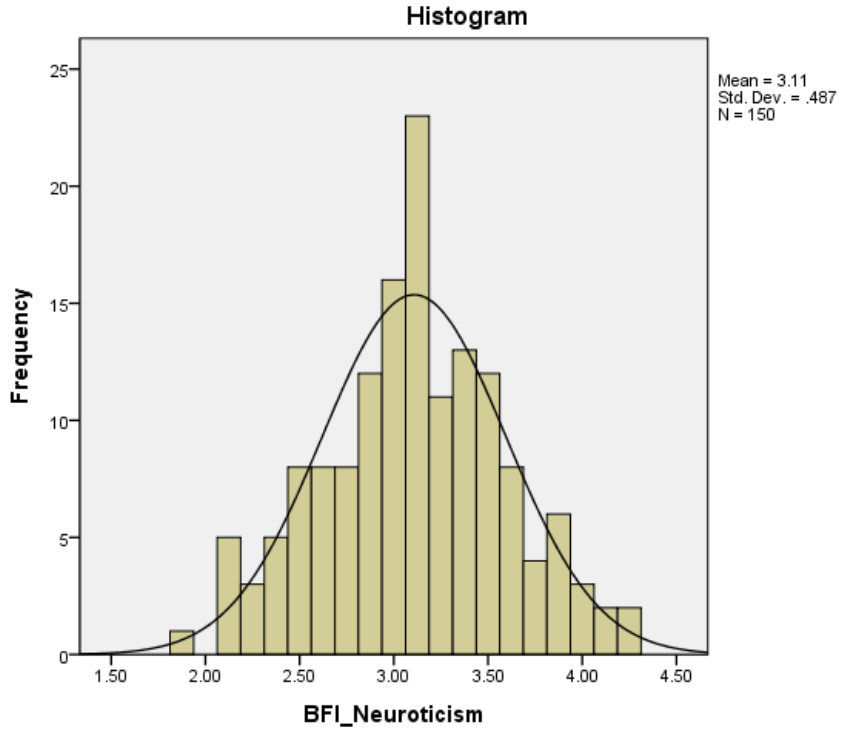
Appendix I



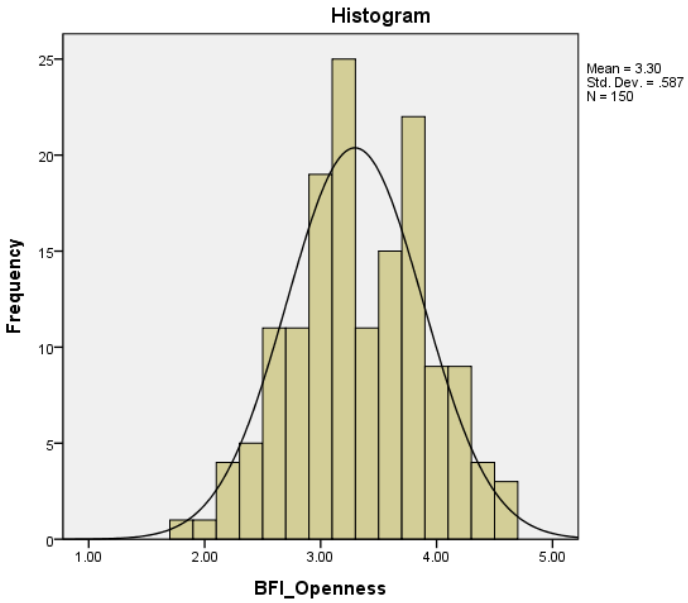
Appendix J



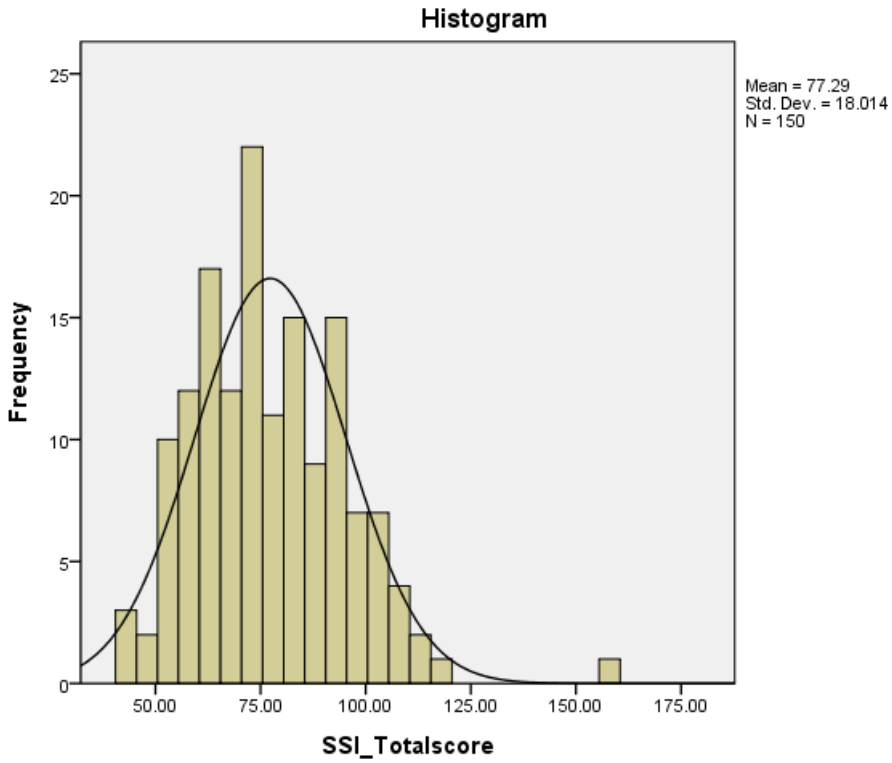
Appendix K



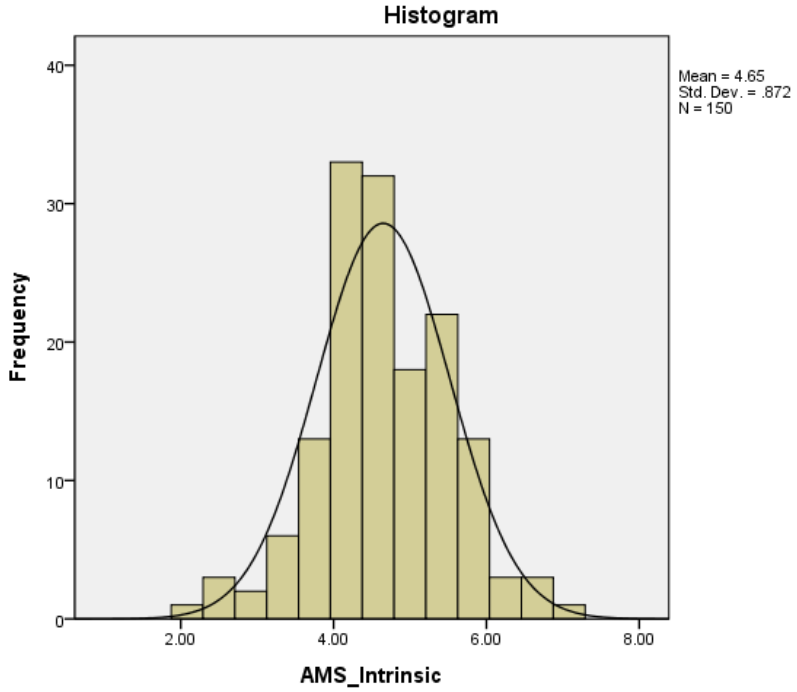
Appendix L



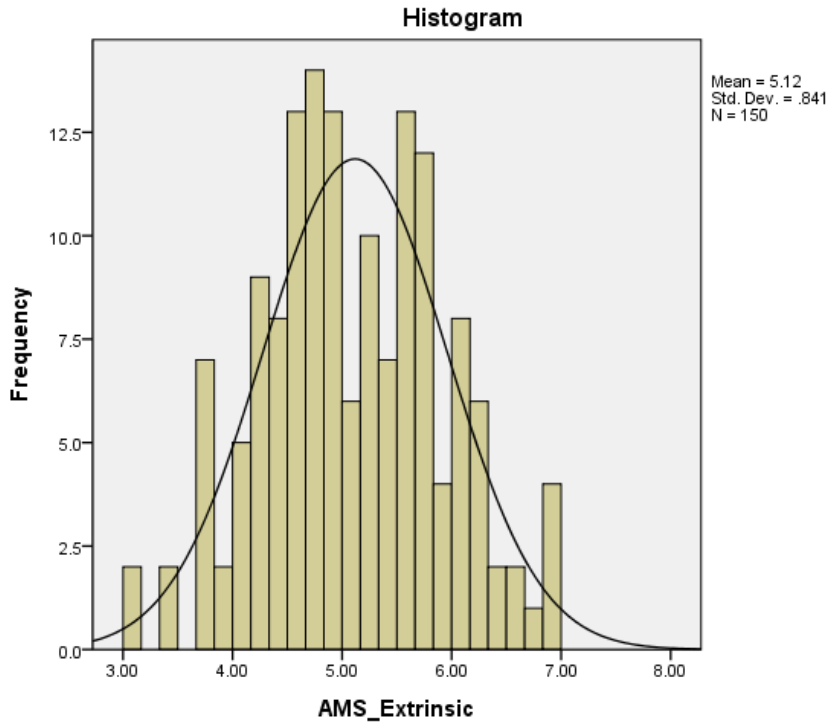
Appendix M



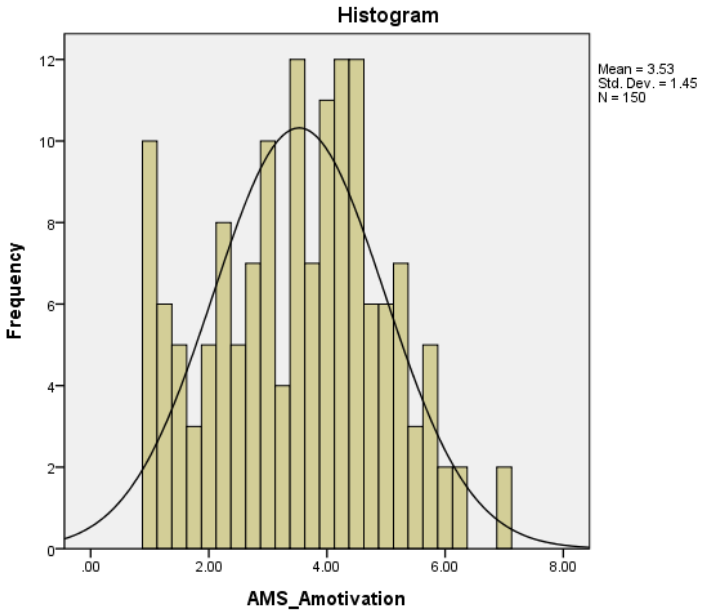
Appendix N



Appendix O



Appendix P


Histogram
Mean = 3.53
Std. Dev. = 1.45
N = 150
Frequency
0
2
4
6
8
10
12
.00
2.00
4.00
6.00
8.00
AMS_Amotivation