Comparative Analysis on Personality Traits and Motivation on International Students's Academic Performance in Universities in Taiwan

Janell Roshea Dawson, Cheng-Ping Shih, Ph.D.

***Abstract*—**To what extent does personality traits of the Big Five Personality Traits and Motivation predict academic performance for international students in Taiwan in Universities was investigated in a quantitative study. Academic performance was assessed at via Test of Chinese as a Foreign Language (TOCFL) in the reading and listening section. The dimensions of the Big Five Personality Traits using its ten aspects traits were examined as an indicator of academic performance followed by the indicators of motivation using the academic motivation scale to also test academic performance. Secondly, an assessment will be done to determine which of the facets traits of the Big Five Personality Traits and motivation have a significant correlation in predicting in academic performance among students. The instrumentation is derived from the Big Five Aspects of Personality and that categorize each of the Big Five into two aspects. To test motivation, a 28- item questionnaire adapted from the Academic Motivation Scale.

***Keywords*—**Personality Traits, Motivation on International Students's Academic Performance in Universities in Taiwan..

I. Introduction

THE Big Five Personality dynamics and motivation are two of the most commonly used instruments in predicting performance. The majority of the studies based on both Big Five Personality Traits and motivation address the issue of predicting job performance, while some of the studies are engrossed on more specific situations, such as academic performance or training performance (Trapmann, Hell, Hirn & Schuler, 2007; Vansteenkiste et al. 2005).

Students contrast in their personal values, as not all students are the same. They obtain and process information differently; their personality trait is different and hence, also their understanding and/or the way they perceive information. It is often deliberated that a combination of personality types is necessary for people to be successful in their career. Educators, researchers, and psychologists have been constantly searching for a set of variables that predicts outlines of students' behaviors and their relationship to academic achievement. Students enrolled in college tend to prefer learning environments that is coherent with their own personality type preference. Many scholars have accepted the five-factor model of personality as a replicable and unifying taxonomy of personality (Digman, 1990; Goldberg, 1992) and have found personality traits to be significantly related to successful job and school performance, both logically and statistically (Hogan & Hogan, 1989). Many researches about motivation have concluded that it is related to many outcomes such as curiosity, persistence, learning and performance (Deci & Ryan, 1985). There are several conceptual perspective have proposed that in order to better understand motivation, it can be divided into categories: intrinsic, extrinsic and amotivation (Deci & Ryan, 1985, 1991)

Purpose Of Study

Nevertheless, there is a lack of accessible research addressing the role of motivation and personality as a predictor of achievement in universities in Taiwan among international students. The purpose of this study is, therefore, to examine and assess the impact of personality type and motivation on the academic performance of international students enrolled at the undergraduate and graduate level using the Big Five Aspect Scale (BFAS) and Academic Motivation Scale. Hence the importance of this study, which will examine and compare whether and to what extent the ten aspects of the Big Five Personality Trait Theory and Motivation can predict academic performance among international university students.

1. Determine the personality traits that significantly correlates and predicts academic performance
2. Determine whether motivation plays a significant role in predicting academic performance.
3. To close research gaps where Taiwan is concern, and to offer both academic and practitioners additional insight in educational issues such as admissions to college or graduate programs.

Question of Study

Based on the intentions to evaluate the impact of personality traits on academic performance in Taiwan's university among international students, this research purposes to answer the following questions:

1. Do the Big Five and motivation dimensions have a significant effect on international students' academic

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performance in the TOCFL exam enrolled in universities in Taiwan?

2. Do the aspects of personalities have an effect on Academic performance?
3. Do the dimensions of motivation have an effect of academic performance?
4. What aspect of the Big 5 Personality traits has a positive effect on students' academic performance?
5. What dimensions of motivation has a positive effect on students' academic performance

II. Details Of The Big Five

The Five-Factor Model of personality trait theory presents 5 major personality constructs, within each of which are grouped several secondary/minor/sub-facet traits. The five major traits hereafter referred to in this research follow the OCEAN acronym derived from five-factor theory which uses Openness (O), Conscientiousness (C), Extraversion (E), Agreeableness (A), and Neuroticism (N); there has always been terminology ambiguity concerning the naming of the traits, but as previously mentioned, there is certainly general consensus in terms of what is being measured/observed in each trait. The FFM includes a number of propositions about the nature and developmental course of each of the major personality traits, as well as about the relation of these traits to their respective sub-facets and to the behavioral outcomes associated with each.

The work of Costa & McCrae is considered invaluable to this particular point in five-factor theory, because their original naming of the major and sub traits is most popularly used as a basis for further investigation. For example, the table below is based on the use of Costa & McCrae's NEO Personality Inventory test as a measure of the big five traits. The table is a summarization of the big five traits, the names and definitions of their respective sub-facet traits, and profile adjectives describing what high and low scoring means within each trait. Following this summary table, a detailed examination of the Big Five is given.

Extroversion

As one of the first traits to be highlighted as significant across the research, extroversion has perhaps always appeared in factor-analytic models, and is one of the traits to appear even in non five-factor models, such as Eysenck's PEN model. The term is incredibly recognizable - and possibly overused to the point of misnomer – even outside the realm of trait psychology. At its simplest, the term implies an "energetic approach to the social and material world" (Popkins, 2010) and high scorers in extroversion are described as having personality traits such as sociability, high activity, assertiveness, and positive emotionality. It has been referred to as social adaptability, though the popularity of this term seems to be waning (Zuckerman, 1971). This emphasis on comfort in social interaction and the external is what is possibly most distinctive about persons who can be considered extroverts.

It is important to discuss traits associated with both extremes of each major trait spectrum. Again, because of the wide understanding of the term extrovert, most laymen will have an idea of what it means to be considered an introvert; scientifically, that is, those who score low on the extroversion scale. Low scorers tend to lack the exuberance, energy, and activity levels of extroverts.

The 6 sub-facet traits on the Extroversion (E) scale in the NEO Personality Inventory are Warmth, Gregariousness, Assertiveness, Activity, Excitement-Seeking, and Positive Emotions. Observing these as examples of the five-factor sub-facet structure, it is relatively easy to see and understand how the structure works to present a comprehensive picture of personality. Each of these sub-facets has its unique definition but they exist under the umbrella of Extroversion, each adding more detail to the overall concept.

Agreeableness

The Agreeableness (A) scale trait is primarily meant to measure interpersonal tendencies; that is, how compatible a person is with others, or, more importantly, how interested a person is in getting along with others. The highly agreeable individual is fundamentally concerned with cooperation, altruism, and social harmony – a 'people person'. Goldberg used the lexical approach to define Agreeableness as a major trait domain from the occurrence of personality words similar to the construct in language and in other previous work (Goldberg, 1994). The personality words used as sub-facet terms under Agreeableness illustrate the good-natured friendliness of the high scoring end of this trait easily and perfectly:

- Trust (in others) – Agreeable people are optimistic about people and their intentions. They believe people are basically decent and so they trust easily.
- Compliance – Because they are interested in social harmony, Agreeable people are more likely to compromise and/or avoid confrontations in order to get along.
- Sympathy – Also referred to as Tender Mindedness, it refers to an ability to be compassionate and empathetic.

- *Conscientiousness*

Conscientiousness relates to a person's level of attention. In the English language the basic dictionary term has its meaning derived from the conscience and this is reflected in the definitions measured within the sub-facets of the domain. Some of the sub-facets seem more aligned with the moral connotation of the term 'conscientious' and some align with the ideas of meticulousness and carefulness that relate to the conscience. Either way, Conscientiousness is associated with self-control – this is reflected in the fact that the term used for low-scorers on the scale is Impulsive. The opposite of a Conscientious individual in personality theory is an Impulsive individual.

The NEO PI-R sub-facets of Conscientiousness are Competence, Order, Dutifulness, Achievement-Striving, Self-Discipline, and Deliberation. Conscientiousness gets a lot of attention in terms of how it can benefit individuals in society. Obviously, high scoring in these constructs can be perceived as desirable character traits, especially in a work environment. High scoring in Competence, Self-Discipline and Deliberation

is a reflection of abilities to think things through, plan for the future, and be careful in terms of one's actions. High Order accounts for the neatness and thoroughness associated with Conscientious persons. Achievement-striving as a facet is somewhat self-explanatory, as it measures exactly that – the degree to which the individual values success and is willing to work towards it. The extreme high end of these traits can combine into a workaholic, perfectionist type nature, or perhaps be considered boring or even be associated with types of compulsive disorders

Openness

Openness, also known as openness to experience or intellect, is held as a broad dimension of individual experiences, that includes both structural and motivational aspects: "Openness is seen as breadth, depth and permeability of consciousness, and in the recurrent need to enlarge and examine experience (McCrae & Costa, 1992). The structural aspect of openness recalls Rokeach's (1960) classic conception of dogmatism in terms of labeled beliefs, and also Hartmann's (1991) description of thick and thin boundaries in the mind. The motivational side of openness suggests links to Murray's (1938) needs for understanding, change, and sentience as well as Zuckerman's (1979) Experience Seeking.

The sub facets that individuals possess with high openness traits tend to be liberal, creative, curious and aesthetically minded and fantastical. They are also characterized as being more willing to have interest novel ideas and interests and experience positive and negative emotions more deeply. In contrast, low scorers tend to behave more conservatively, hold more conformist values, and experience a thinner range of affect than high scorers (Jonassaint et al., 2010)

Unlike Neuroticism and Extraversion, Openness appears to be abstractly directly related to intelligence, rather than merely affect test performance (psychometric intelligence). Conversely, other researchers have favored to refer to Openness as Intellect or Culture, deciphering this personality trait in terms of introspective reflection and intellectual knowledge (Goldberg, 1994; Johnson, 1994; Saucier, 1994). Openness is consequently linked with intellectual curiosity, vivid imagination, and behavioral flexibility (McCrae & Costa, 1997), but also with understanding ability, knowledge in science, change and autonomy (Ashton, Lee, Vernon, & Jang, 2000).

Neuroticism

Of all the traits within the Big Five Personality Trait, neuroticism is the trait that is considered to be "negative" or "bad." Personality researchers habitually reverse it and refer to it as "emotional stability." Stable people are calm under pressure while neurotic people tend to be anxious, pessimistic, stressed, upset, fearful, and emotionally unstable (Hough et al., 1990).

Neuroticism has a very strong biological basis; the two most fundamental traits are neuroticism and extraversion. They date all the way back to Ancient Greece, where Hippocrates (460-370 BC), a Greek physician labeled people as belonging to one of four personality types depending on how calm/excitable and morose/sanguine they were.

Subsequently, Eysenck (1967) proposed just two personality traits, extraversion and neuroticism, before further research expanded to three and eventually five.

Though conscientiousness and agreeableness may be associated to higher cognitive functions of inhibition and executive control extraversion and neuroticism are more associated with the older, "system 1" regions. Many studies have found that neuroticism is related to the "Amygdala," which is considered to be an old, primal area of the brain that is accountable for sensing emotions, specifically fear.

Gray (1970) proposed that there are two independent regions in the brain: the Behavioral Activation System (BAS) and the Behavioral Inhibition System (BIS). The BAS, theorized as extraversion, which concerns a person's sensitivity to reward and their probability of approaching desirable stimuli, whereas the BIS (neuroticism) looks at sensitivity to punishment and evading aversive stimuli. A person can be high in both: a neurotic extravert would be delicate to both positive and negative emotions. It is for this reason that researchers have used measurements of BAS/BIS to determine when a bipolar patient is due to undergo a manic or depressive episode.

Personal achievement further falls under the wheels of neuroticism. For example, the trait is consistently related to poor job performance due to its associations with low self-confidence and high anxiety, hostility and vulnerability. Some studies even suggest that emotional stability is as important for job success as conscientiousness (Kendler, Kuhn & Prescott, 2004).

Additionally, it is an important intercessor of exam success, because neurotics tend to feel a lot more stress and anxiety under exam conditions, which disturbs their performance. This is said to occur because neurotic people are very sensitive to internal and external negative stimuli, which escalates "mental noise" and makes it hard to pay attention to the task at hand (Halamandaris & Power, 1999).

Big Five Aspect of Personality

Personality trait dimensions can be categorized or grouped by organizing them into hierarchies, based on their inter-correlations. Broad domains such as those of the Big Five (Extraversion, Conscientiousness, etc.) each incorporating many linked traits, are located near the top of the hierarchy, and very specific patterns of behavior and experience (e.g. being sociable) are located near the bottom. The establishment of these hierarchies has been one of the main concerns of physiologists for close to a century. The Big Five Aspect of Personality, developed by DeYoung, Quilty, and Peterson (2007) is a theory that additionally develops the Big Five Personality Traits by categorizing each of the five dimensions into to two "aspects". The aspects represent a level of precision between the Big Five Personality Traits and the Revised NEO Personality Inventory 's facets.

A study conducted in large Canadian and German samples showed that there are two genetic factors that are responsible for the shared variance of the six facet scales that makes up the Big Five in the NEO-PI- (Jang, et al., 2002). Therefore, each of the Big Five domains happens to be theoretically dividable into two subdomains with distinct biological sources. This

finding is sufficient enough to motivate research into an intermediate level of personality structure.

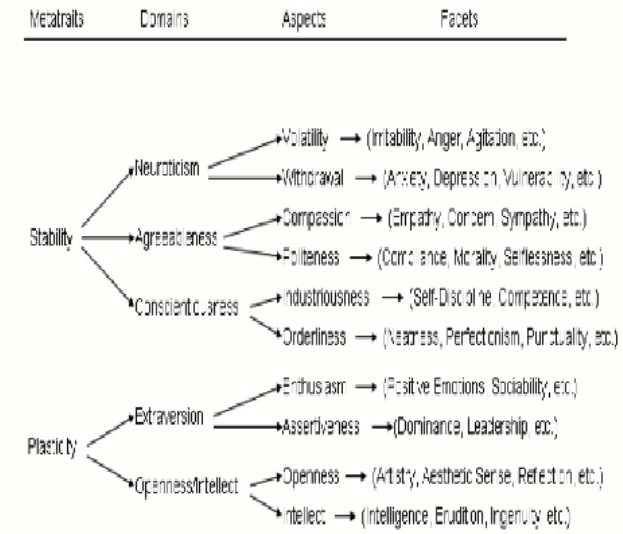

Fig 1. Between Facets and Domains: Ten Aspects of the Big Five

Existing Research on the Big Five and Academic Success

There is a pattern found to reveal strong relationships between specific Big Five traits and positive academic performance and the patterns associating the sub-facet level more strongly with the academic outcomes than the more broad meta-traits. In reviewing the existing literature perhaps most interesting and, in the end, most compelling towards the need for execution of similar work in Taiwan, was the patterns found in the geographical replication of the findings. It is this repetition of findings in different nations that are compelling to the idea that similar findings can be expected from this research among international students in Taiwan.

The literature presented reveals as its foundation the rationality of using Big Five personality traits – to review, these are Openness to Experience, Conscientiousness, Extraversion, Agreeableness and Neuroticism - to predict academic outcomes. One of many research examples supporting this point is the study by Conard, (2006), which investigated validity of the Big 5 for predicting college GPA and course performance. Their results concluded that personality measures are promising predictors of academic outcomes and showed that Conscientiousness predicted both their investigated criterion. Similarly, Noftle, and Robins, (2007), examined the relationship between Big 5 traits and SAT scores and high school and college GPA. This study is of particular interest, since the authors claimed that there had been virtually no research on personality and SAT scores at the time, and the SAT is an internationally recognized test of academic achievement. Also of repute was the fact that Noftle and Robins replicated their findings across 4 different personality inventories and found that participants' scoring in Openness was the strongest predictor of SAT verbal scores, that Conscientiousness predicted high school and college GPA and of course, proved that personality traits have independent effects on academic outcomes, even when controlling for traditional predictors of these outcomes, such as controlling for SAT scores when examining college GPA.

As mentioned, according to the existing literature, the deeper level of trait facets seem to be even more strongly related to academic outcomes than just the Big Five. Paunonen, and Ashton, (2001) studied two of the Big 5 factors - Conscientiousness and Openness - along with 2 of their constituent narrow personality traits - Need for Achievement and Need for Understanding - to predict final grades in an undergraduate psychology course and found exactly that the lower level traits were stronger predictors of grade outcomes. In this case, the researchers even concluded that broad factor measures may be counterproductive in behavior prediction and explanation, but there does not seem to be many others in the field who would concur with this degree of statement. Lounsbury, Welsh, Gibson, and Sundstrom, (2005), for example, examined the relationships between all of the broad Big 5 traits and the narrow personality traits of Optimism and Work Drive in relation to cognitive ability in 375 high school students in Tennessee, USA (their research sampled middle school students as well) and found that Optimism – the narrow personality trait - and Openness were the significant predictors in their high school sample. A pattern emerges here highlighting Conscientiousness and Openness as the Big 5 traits most closely linked with academic outcomes.

III. Details Of Motivation

Intrinsic Motivation

Intrinsic motivation has been defined as partaking in an action purely out of inquisitiveness, that is, for a need to know about something; secondly, the wish to join in an activity simply for the sake of participating in and finishing a task; and lastly, the desire to contribute (Dev, 1997). Intrinsic motivation entails much determination and effort put forth by an individual student. Students who possess intrinsic motivation would develop goals such as, the goal to learn and the goal to accomplish.

More recently a tripartite taxonomy of intrinsic motivation (IM) has been developed (Vallerand et al., 1989). The research reveals that intrinsic motivation can be divided into three categories: IM to know, to accomplish things, and to experience stimulation.

Intrinsic Motivation to Know (IM-to know)

This type of IM has a vast tradition in the field of educational research. It is related to several constructs such as curiosity, exploration, learning goals, intrinsic intellectuality, and the IM to learn (Gottfried, 1985; Harter, 1981. IM-to know can be defined as the act of doing an activity for the satisfaction and pleasure that one experiences while learning, exploring, or trying to understand something new.

Intrinsic motivation toward accomplishments (IM- to accomplish things)

The type of motivation has been researched in developmental psychology as well as in educational research. IM towards accomplishment explores the extent that individuals focus on the process of achieving rather than the outcome. Thus, IM to accomplishment can be defined as participating in an activity for the pleasure and satisfaction one experience when attempting to accomplish or create something (Deci & Ryan, 1985).

Intrinsic motivation to experience stimulation

IM-to experience stimulation is active when some partakes in an activity in order to experience stimulating sensations (Excitement) that come from one's engagement in the activity. An example of this in academic setting would be students who attend class in order to experience the excitement of a thought-provoking class discussing.

Extrinsic Motivation

Differing from IM, extrinsic motivation (EM) pertains to a wide diversity of conduct, which is engaged in a means to an end and not for their sake. Deci and Ryan (1985) that EM can be divided into three categories: external regulation, introjection, and identification.

External Regulation

External Regulation can be defined as behavior that is regulated through external means such as rewards and constraints. For example, a study might study for a test because they are forced to do some by their parents.

Introjected Regulation

Under interojected regulation, the individual begins to internalize the reason for his or her actions. This form of internalization, while it is internal to the person, it is not truly self-determined since it is limited to the internalization of past outside possibilities. An example would be a student who studies because it is what is expected from a good student.

Identification Regulation

The extent to where the behavior becomes valued and judged and deemed important to individual and especially if chosen by oneself, then the internalization of extrinsic motives become regulated through identification. For example a student might say that they have chosen to study because it is something important to them.

Amotivation

In order to fully understand human behavior, Deci and Ryan (1985) posited a third type of motivational construct termed "amotivation." Under amotivation, individuals are never extrinsically or intrinsically motivated. These individuals have feelings of being undeceived and start asking themselves why are they attending school. This may eventually lead to them to stop participating in academic related activities.

Academic Motivation Scale

Vallerand et al. (1989) developed and validated in French the Echelle de Motivation en Education (EME). This scale is made up of seven subcales of four items each assessing the three types of IM, three types of EM and amotivation. In the EME, motivation is serves to understand the underlying "why" of behaviors (Deci and Ryan, 1985) and focus on the perceived reasons for engaging in the activity. The scale asks the question "why do you attend college" and items to represent the possible answers to the question, thus, being a representation of different motivation.

IV. Methodology

Research Hypotheses Identified from the above literature, five null hypotheses can be listed for Personality Traits and Academic Performance:

H1: Neuroticism has no effect on Academic Performance
H2: Agreeableness has no effect on Academic Performance
H3: Conscientiousness has no effect on Academic Performance
H4: Extraversion has no effect on Academic Performance
H5: Openness has no effect on Academic Performance

From the above literature review, the follow hypothesis was developed for Motivation:

H1: Extrinsic Motivation has no effect on Academic Performance
H2: Intrinisic Motivation has no effect on Academic Performance
H3: Amotion has no effect on Academic Performance

Data and Samples

The populations for this study will consist of international students enrolled in public and private universities studying at the graduate and undergraduate level In Taiwan and who took the TOCFL exam is reading and listening. Partial Least Square (PLS), also the experimental quantitative method, is selected for more exact analyses.

Instrumentation

The instrument that will be used to access the Big Five Personality Traits is an adaptation of Big Five Aspect Scale (BFAS) developed by DeYoung, Quilty, and Peterson (2007) consisted of 100 items to measure the Big Five both at the traits and aspects levels; 5 variables and the ten aspects of the variables. A self-reported section for students to self-report their grade for the Test of Chinese as a Foreign Language (TOCFL) and students will be asked to input their demographic information as well. There were 7 sections included in the questions; which will be: part I) student's demographic information (age, sex, major, educational level, etc.); part II) Neuroticism; part III) Agreeableness; part IV) Conscientiousness; part V) Extraversion; part VI) Openness/Intellect; part VII) Academic Performance. The design of questions will be adopted from the 5-point Likert Scale.

To assess motivation, the Academic Motivation Scale will be used, consisting of 28 items. There will be four questions to represent each dimension of Motivation using the 5- point Likert Scale and a self-reporting section for GPA.

Partial Least Square (PLS)

PLS uses a blend of principal component analysis, path analysis and a set of regressions to simultaneous assess the theory and the data (Staples & Webster, 2008). PLS was developed in 1975 by Herman Wold. It evaluates path models using latent variables. PLS is an effective tool to verify both concepts and predictions. PLS will be used in this study for the following reasons: Firstly, it is suitable to use for small sample analysis and convoluted models. Secondly, it is also useful for exploratory analysis, which examines whether relationships might exist among variables (Yu, Kim, & Kim, 2007). It is for these explanations mentioned that PLS would be implemented to test the hypothesized relationships among the variables being studied.

Finding and Discussion

In the past few weeks, the final result collected up to 66 online questionnaires provided by university students in Taiwan for the personality and motivation assessment. There was no invalid questionnaire. The research used ten indicators of personality to assess academic performance but five of them were deemed to be not significant as well as their paths. The indicators that were insignificant were omitted. Secondly, a new model was developed for the five significant indicators that will be used in the research, which were withdrawal, politeness, orderliness, assertiveness, and intellect. Each of the five indicators was represented by three factors. It was observed that the parameters are not significant. Thirdly, a modified model was developed which assumed that the indicators of personality have an indirect effect to academic performance.

As for motivation, empirical results show that it is significant in predicting academic performance especially the constructs of intrinsic motivation, which are: Intrinsic motivation- to know, towards accomplishment and experience to simulation, which were positively linked. Only one of the constructs under extrinsic motivation showed positively relation in predicting academic performance, which was external motivation–identified regulation. The other constructs: amotivation, extrinsic motivation-introjected regulation and extrinsic external regulation were negatively linked in predicting academic performance. In comparison, the best indicator to use to assess academic performance based on the empirical findings is motivation. Unlike personality, motivation showed direct effect on academic performance.

TABLE I.
PERSONALITY AND ACADEMIC PERFORMANCE

Factor loadings and internal consistency reliability analysis via PLS

Constructs	Items Remaining	Factor Loading	Composite Reliability	Cronbach Alpha	AVE
Politeness	POL_COMP	0.763	0.829	0.000	0.618
	POL_MOR	0.831			
	POL_SELF	0.763			
Orderliness	ORD_NEAT	0.753	0.803	0.676	0.581
	ORD_PERF	0.890			
	ORD_PUNC	0.619			
Intellect	IN_ERUD	0.906	0.916	0.865	0.784
	INT_ING	0.865			
	INT_INTL	0.885			
Assertiveness	ASSE_DOM	0.874	0.897	0.830	0.743
	ASSE_EXP	0873			
	ASSE_LEAD	0.839			
Withdrawal	WIT_ANX	0.606	0.838	0.955	0.638
	WIT_DEP	0.867			
	WIT_VUL	0.892			
Academic Performance	TOEFL_READ		0.999	0.998	0.998
	TOEFL_LIST				

TABLE II

PLS Cronbach's Alpha, internal consistency and R^2

Constructs	No. of Items	Cronbach's Alpha	Internal Consistency	R^2
POL	10	0.700	0.829	0.000
ORD	10	0.676	0.803	0.049
INT	10	0.863	0.916	0.687
ASSE	10	0.830	0.897	0.369
WIT	10	0.755	0.838	0.015
AP	2	0.998	0.999	0.082

Note: POL=Politeness, ORD=Orderliness, INT= Intellect, ASSE= Assertiveness, WIT=Withdrawal, AP= Academic Performance

TABLE III

Empirical result of PLS Path Analysis (Hypothesis, Standardized Beta Coefficients and Adjusted T-values)

Path	Hypothesis	B-Path	T-Value	Significance	Support	Direction
WIT→AP	H1	0.126	0.49		Reject	+
POL→AP	H2	-0.098	0.67		Reject	-
ORD→AP	H3	0.091	0.37		Reject	+
INT→AP	H4	-0.011	0.04		Reject	-
ASSE→AP	H5	-0.273	1.81	*	Support	-

Note: POL=Politeness, ORD=Orderliness, INT= Intellect, ASSE= Assertiveness, WIT=Withdrawal, AP= Academic Performance

Notes: *p<0.10. ** p<0.05. *** p<0.

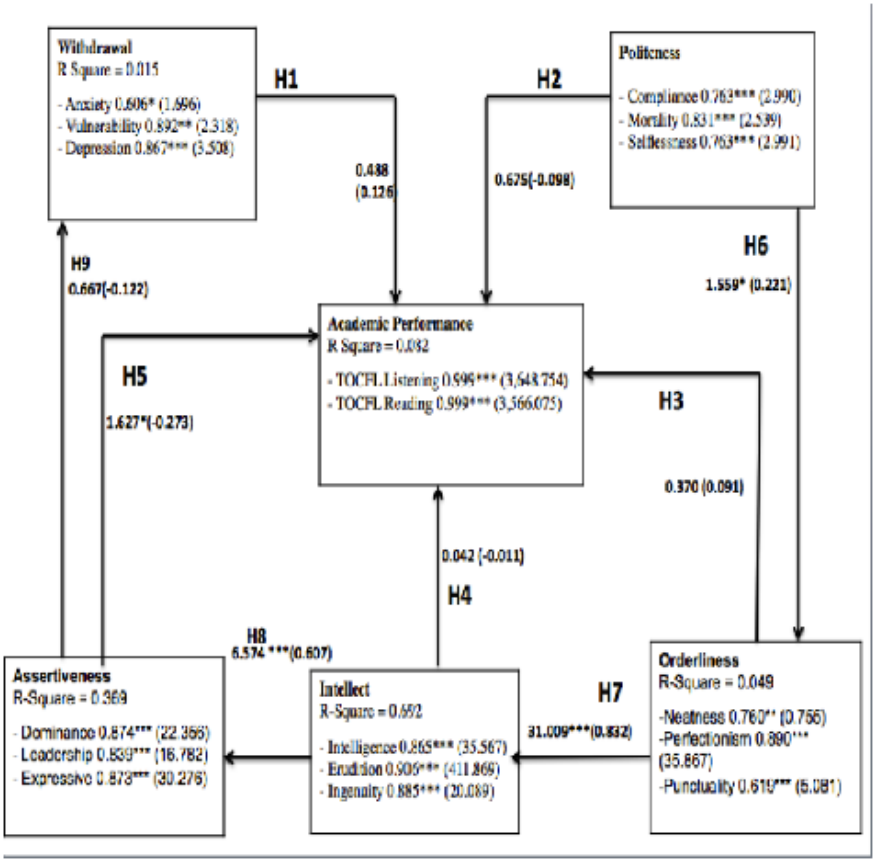

Fig II. PTAP (Sister Model)

TABLE IV

MOTIVATION AND ACADEMIC PERFORMANCE

Factor loadings and internal consistency reliability analysis via PLS

Constructs	Items Remaining	Factor Loading	Composite Reliability	Cronbach Alpha	AVE
Motivation					
	AM	-0.270	0.743	0.689	0.453
	IMES	0.757			
	IMTA	0.870			
	IMTK	0.883			
	EMER	-0.270			
	EMID	0.775			
	EMIR	0.571			
Academic Performance	TOCFL_READ	1.000	1.000	0.999	0.999
	TOCFL_LIST	1.000			

Note: IMES = Intrinsic Motivation-Experience Stimuli, IMTA= Intrinsic Motivation-Towards Accomplishments, IMTK= Intrinsic Motivation-To Know, EMER= Extrinsic Motivation- External Regulation, EMIR- Extrinsic Motivation-Identified Regulation, EMID=Extrinsic Motivation-Interjected Regulation, TOCFL_READ= Test of Chinese as a Foreign Language-Reading, TOCFL_LIST= Test of Chinese as a Foreign Language-Listening

TABLE VI

PLS Cronbach's Alpha, internal consistency and R^2

Constructs	No. of Items	Cronbach's Alpha	Internal Consistency	R^2
MOT	28	0.689	0.743	0.000
GPA	2	0.999		0.021

Note: mot = Motivation, GPA= Grade Point Average

TABLE VII

Empirical result of PLS Path Analysis (Hypothesis, Standardized Beta Coefficients and Adjusted T-values)

Path	Hypothesis	B-Path	T-Value	Significance	Support	Direction
MOT→AP	H1	0.545	2.590	***	Support	+

Note: MOT = Motivation, AP=Academic Performance;

V. RECOMMENDATIONS

While there have been researches that shows direct correlations among the Big Five and its aspects of personality traits and performance whether in the workplace or in an academic setting, this study shows that when tested among Taiwan's international student population, results shows that personality is not directly linked to academic performance but rather it is indirectly linked after running SMART PLS. The study originally started to assess the Big 5 personality using the Big Five Aspects Scale, which divides each of the five personality traits from the Big Five into 2 sub-traits but results showed that only five of test had a significant link to academic performance, after testing the five traits that showed significance, results showed that only the traits of orderliness, intellect, and assertiveness showed to have an indirect linked to academic performance; three out of the ten traits to assess the Big Five Personality Traits.

It can be established that from this study, the overall traits of the Big Five Personality Traits are not directly and highly correlated to academic performance among international students at university level in Taiwan and however, when assessed by its aspects of personality, results showed that its aspects has an indirect effect on personality. When the aspects traits are grouped to represent the Big Five Personality Traits, the results accepts the literature review that Lounsbury, Welsh, Gibson, and Sundstrom, (2005) highlighted that Conscientiousness and Openness as the Big 5 traits most closely linked with academic outcomes. For motivation and academic performance, further studies should be done to determine whether the results of this study are representative. In the current study we used surveys to measure students' motivation. Since students may have answered the questions with socially desirable responses, perhaps interviews with students would have allowed for more relative and thus more honest responses (Mattern, R, 2005). Moreover, the study focused on international students' grades of Test of Chinese as a Foreign Language. Feedback from the teachers or the teachers' instructional strategies might have influenced the higher grades. These and other issues need to be studied further. Finally, further study is needed to look into the connections between motivation and academic performance in more difficult and complex academic domains in this country (Taiwan) such as information technology, economics, mathematics and science courses.

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