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การศึกษาโครงสร้างองค์ประกอบและคุณภาพของแบบวัดบุคลิกภาพ International Personality Item Pool –NEO (IPIP-NEO) ฉบับภาษาไทย

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บทคัดย่อ

วัตถุประสงค์ : เพื่อศึกษาโครงสร้างองค์ประกอบและคุณภาพของการวัดของ International Personality Item Pool –NEO (IPIP-NEO) ฉบับภาษาไทย ที่แปลมาจาก IPIP-NEO ฉบับภาษาอังกฤษ

วัสดุและวิธีการ : การศึกษานี้เป็นการศึกษาเชิงพรรณนา กลุ่มตัวอย่างได้แก่ผู้ใช้อินเตอร์เน็ตที่มีอายุตั้งแต่ 18 ปีขึ้นไป โดยตอบแบบสอบถาม IPIP-NEO ทางอินเตอร์เน็ต ระหว่างเดือนเมษายนถึงเดือนพฤศจิกายน 2557 วิเคราะห์ผลโดยใช้สถิติเชิงพรรณนา วิเคราะห์ค่าความสอดคล้องภายใน การวิเคราะห์องค์ประกอบเชิงสำรวจและวิเคราะห์องค์ประกอบเชิงยืนยัน การศึกษานี้ได้รับการรับรองจากคณะกรรมการวิจัยในมนุษย์ภาควิชาจิตวิทยา มหาวิทยาลัยโกลด์สมิทธิ์ ยูนิเวอร์ซิตี้ออฟลอนดอน

ผล : กลุ่มตัวอย่างมีจำนวนทั้งสิ้น 309 คน (ชาย 118 คน หญิง 191 คน) มีอายุเฉลี่ย 27.48 ปี (SD = 6.2) แม้ว่าผลจากการวิเคราะห์ค่าความสอดคล้องภายในของแบบวัดบุคลิกภาพฉบับต้นฉบับจะอยู่ในระดับดี (Cronbach's Alpha สำหรับด้าน Neuroticism = .85, Extraversion = .76, Openness = .76, Agreeableness = .77 และ Conscientiousness = .61) แต่ผลจากการวิเคราะห์องค์ประกอบเชิงยืนยัน พบว่ามีความสอดคล้องกับโมเดลบุคลิกภาพห้าองค์ประกอบในระดับต่ำ เมื่อวิเคราะห์ข้อมูลเพิ่มเติมโดยใช้การวิเคราะห์องค์ประกอบเชิงสำรวจ เพื่อศึกษาโครงสร้างองค์ประกอบ ทำให้ได้แบบวัดที่ประกอบด้วยข้อคำถาม 30 ข้อที่มีความสอดคล้องกับโมเดลบุคลิกภาพห้าองค์ประกอบในระดับดี X^2 (295) 547.955, $p < 0.0001$, RMSEA = 0.053, CFI = 0.905 SRMR = 0.037) และมีค่าความสอดคล้องภายในแต่ละด้านอยู่ในระดับยอมรับได้ถึงระดับดี (Cronbach's Alpha for N = .83, E = .76, O = .67, A = .37, C = .73) โดยข้อคำถาม 30 ข้อประกอบด้วยคำถามสำหรับบุคลิกภาพแบบหวั่นไหว 8 ข้อ บุคลิกภาพแบบแสดงตัว 3 ข้อ บุคลิกภาพแบบประนีประนอม 5 ข้อ บุคลิกภาพแบบเปิดรับประสบการณ์ 6 ข้อ และบุคลิกภาพแบบมีจิตสำนึก 8 ข้อ

สรุป : แบบวัดบุคลิกภาพ IPIP-NEO ฉบับภาษาไทย 50 ข้อที่แปลมาจากต้นฉบับภาษาอังกฤษมีความสอดคล้องกับโมเดลบุคลิกภาพห้าองค์ประกอบในระดับต่ำ แต่จากการวิเคราะห์องค์ประกอบเชิงสำรวจและเชิงยืนยันเพิ่มเติม ทำให้ได้แบบวัดบุคลิกภาพ IPIP-NEO ฉบับภาษาไทย 30 ข้อที่มีความสอดคล้องกับโมเดลบุคลิกภาพแบบห้าองค์ประกอบในระดับที่เหมาะสม สามารถนำแบบวัดนี้ไปใช้วัดบุคลิกภาพคนไทยที่มีอายุใกล้เคียงกับกลุ่มตัวอย่าง รวมทั้งกลุ่มคนทั่วไป

คำสำคัญ : การวิเคราะห์องค์ประกอบ, บุคลิกภาพห้าองค์ประกอบ, International Personality Item Pool; IPIP-NEO

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FACTOR STRUCTURE AND PSYCHOMETRIC PROPERTIES OF THE INTERNATIONAL PERSONALITY ITEM POOL-NEO (IPIP-NEO) THAI VERSION

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Abstracts

Objective : The aim of this study was to examine the factor structure and psychometric properties of the IPIP-NEO in the Thai language.

Material and Method : This descriptive research recruited internet users who aged over 18 years old. Participants were asked to complete the IPIP-NEO online. Data was collected from April until November 2014. Descriptive statistics, internal consistency, exploratory factor analysis, and confirmatory factor analysis were analyzed. This study was approved by the ethical committees of the Department of Psychology, Goldsmiths, University of London.

Results : Mean age of 309 participants(118 male, 191 female) who took part in this study was 27.48 (SD= 6.2). An initial confirmatory factor analysis showed poor model fit with the a priori five-factor model. Exploratory factor analysis was then conducted to investigate factor structure. This result led to a proposed 30 item version of the IPIP-NEO for Thai, with acceptable fit for the five-factor model $\chi 2$ (295) 547.955, $p < 0.0001$, RMSEA = 0.053, CFI = 0.905 SRMR = 0.037). This 30 item version showed acceptable to good internal consistency (Cronbach's Alpha for N = .83, E = .76, O = .67, A = .37, C = .73). The 30-item Thai version comprises of 8 items for Neuroticism, 3 items for Extraversion, 5 items for Agreeableness, 6 items for Openness and 8 items for Consciousness.

Conclusion : The original 50-item Thai version of the IPIP-NEO had poor model fit for the a priori five-factor model. Further exploratory factor analysis and confirmatory factor analysis led to a 30 item version of the IPIP-NEO in the Thai language with acceptable fit with the five-factor model.

Key words : factor analysis, five-factor Model, international personality item pool; IPIP-NEO

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Introduction

Research on personality has always been an interesting topic for researchers in psychology, as well as related academic fields. Personality can be explained and measured by various theories or approaches, one of which is the Five Factor Model (FFM), which is a widely used model of the structure of traits, namely: Extraversion (E), Agreeableness (A), Conscientiousness (C), Neuroticism (N), and Openness to Experience (O). Recently, these personality traits have been shown to play a major role in clinical assessment and research. A number of studies have shown a relationship between personality traits and mental health issues. For example, it has been found that neuroticism is related to internalising disorders such as anxiety and depression[1–5]. Neuroticism can also be a risk factor for developing anxiety and depression, and indicate poor prognosis.[6]

The Five Factor model is also related to personality disorders[7] suggested that individuals with DSM-IV personality disorders can be differentiated from the general population by the Five Factor model, as they found higher levels of Neuroticism and lower levels of Agreeableness in individuals with a personality disorder. Another study by Distel et al.[8] showed that a combination of high neuroticism and low agreeableness best predicted borderline personality, which is consistent with a previous study by Saulsman and Page[9]. Neuroticism is also found at high levels in individuals with schizotypal personality disorder[10]. In addition, Boyette et al.[11] suggested that the degree of risk for psychosis increases with the level of neuroticism. Furthermore, the level of impairment could be reflected by the degree of openness to experience.

It can be seen that five factors personality traits link with psychological difficulties. Addionnally, it also related to emotional stability and resilience.[12] The measurement of the Five Factors can be beneficial in clinical populations. For example, it can be used for in psychological problems prevention by notifying risk, providing feedback in psychotherapy[13], managing and selecting appropriate treatment plans for clinical settings.

The Five Factor model of personality can be measured using many reliable and appropriate standardised instruments, such as the original version of the NEO Personality Inventory (NEO-PI), through the most current NEO-PI-R[14] and the original version of the NEO Five Factor Inventory (NEO-FFI), through the most up-to-date NEO-FFI-3.[15] Although reliable, valid and convenient to use, the copyright and commercial agreements needed in using such instruments has become a consideration for researchers and has the potential to become a limitation for research.

The International Personality Item Pool (IPIP), which was first presented by Goldberg in 1996, has become a further choice for measuring the Five Factor model of personality traits. The IPIP is cost-free and can be used in either academic or commercial settings without permission, and researchers can obtain the items and scoring keys easily and conveniently; on that basis, the use of the IPIP has dramatically increased[16-17]. According to the IPIP website, many of the IPIP items have been translated into 36 languages, for example, Arabic, French, Chinese, Japanese, and Korean.

The IPIP-NEO is a short measure of the NEO-PI-R at the domain level. It comprises 50 phrases describing an individual's behaviours, which were selected as proxies for the broad domain scores of NEO-PI-R by Costa and McCrae[1], including Extraversion, Agreeableness, Conscientiousness, Neuroticism and Openness to experience. It was found by Socha, Cooper and McCord[18] that the English language version of the IPIP-NEO has acceptable to excellent reliability (Cronbach's alpha from .75 - .86) and fairly good model fit. However, a study by Lim and Ployhart[19] indicated poor fit in CFA analyses of the measure.

Despite existing translations into many languages, as yet there does not appear to have been an examination of the psychometric properties of the IPIP-NEO for the Thai language. More generally, in Thailand there has been work indicating good validity and reliability for FFM measures. Meunapai, Chulakdabba, and Sukhatunga[20] examined the reliability and construct validity of the Five-Factor Nonverbal Personality Questionnaire (FF-NPQ). The results from Thai undergraduate students shows that the FF-NPQ has good levels of internal consistency reliability (α = 0.67 - 0.82). The correlation between the FF-NPQ and the NEO-FFI was also acceptable (r = .36 -.52).

In another study aiming to examine relationships between personality traits and job success by Smithikrai[21], the NEO Five-Factor inventory (form S) (NEO-FFI-S) was employed. The Cronbach's alpha for the NEO-FFI-S Thai version used in this study for the N, E, O, A, and C factors were .80, .58, .45, .63, and .72, respectively. However, these studies did not examine the factor structure of the Five Factor measures they used.

Although the FFM is a popular approach and has gained a lot of attention from Thai researchers, to our knowledge, the use of the FFM in Thailand is still limited due to the copyright and cost of using the FFM measures. The study of FFM measure properties, either copyright versions or free versions like the IPIP-based versions, is rare in the Thai language. Moreover, as mentioned above,

no previous study has used or investigated the psychometric properties of the IPIP-NEO in Thailand. Hence, the aim of this study was to examine the psychometric properties of the IPIP-NEO Thai version using Confirmatory Factor Analysis (CFA). The researchers hope that the results of this study will be useful for the further use of the IPIP-NEO in Thailand.

Material and Method

Sample

This study has been granted an ethical approval from the ethical committees of the Department of Psychology, Goldsmiths, University of London. The research's advertisement and invitation were then published on the internet, social media, community bulletin board as well as words of mouth. Participants were recruited by a convenience sampling method. Those who were interested and willing to take part accessed the online questionnaire link provided. Participants had to meet the inclusion criteria which were aged over 18 years old and willing to participate. Data collection took part from April to November 2014. All participation with more than 80 percent data completion during this period were included in the data analysis. Sample size was yielded based on the rule of thumb that N>300 is acceptable for factor analyzing a small number of factors[22] which is consistent with Comrey and Lee (1992) who stated that N=300 is considered good size.[23] Participants who were willing to take part were asked to complete IPIP-NEO via the internet as a part of a larger study.

Measure

International Personality Item Pool (IPIP-NEO) short version is a self-report measure using a Likert-style response scale. The IPIP-NEO contains 50 phrases describing an individual's behaviours. Personality measured from the IPIP-NEO covers 5 domains, which are Extraversion, Conscientiousness, Agreeableness, Neuroticism and Openness to experience. The IPIP-NEO was translated into Thai by the first author, and then back-translated by one professional translator and one Thai licenced clinical psychologist. The Thai version of IPIP-NEO was then pilot tested with 30 volunteers (mean age 31.23, max=39, min = 25, SD= 3.44). After back-translation and the pilot testing, item content was reviewed by the second author, who is a native English speaker, and minor changes were suggested for several of the translated items. Internal consistency analyses showed good internal consistency (Cronbach's Alpha for N = .85, E=.76, O= .76, A= .77, C= .61).

Data Analysis

In order to test the factor structure, Confirmatory Factor Analysis was conducted using MPlus (version 7)[24] (Muthén & Muthén, 2012). The CFA model tested the a priori

factor structure of the IPIP-NEO; that is, items were constrained to load only on their specified factor, and the latent factors were left free to correlate with each other. Maximum likelihood estimation was employed to test the models. The following indices were employed to examine global model fit: Chi-Square Test of Model Fit, RMSEA (Root Mean Square Error of Approximation), CFI (Comparative Fit Index), and SRMR (Standardized Root Mean Square Residual). Exploratory factor analysis (EFA) was also conducted using Mplus for further investigation of the factor structure. Maximum likelihood estimation with an oblique Geomin rotation method was used for the EFA.

Results

Participants in this study were 309 Thai individuals who were recruited via the internet. 38.2 % of participants were male and 61.8 % were female. Mean age was 27.48 years (max = 51, min = 18, SD= 6.2). The highest educational level was Bachelor's degree (54.4%), Master's degree (32.4%), high school or equivalent (10.7%), Doctorate (1.0%) and secondary school (0.3%).

Descriptive Statistics

Basic descriptive statistics are presented in Table 1. These descriptive statistics are calculated using the standard scoring for the English language version. The skewness values for the 50 items, as well as sum scores for the five domains, ranged from -.94 to 3.37 and kurtosis values ranged from 1.41 from -.99, which were acceptable.[25] Cronbach's alpha values for all five scales were also acceptable (.70 to .81). The inter-correlations between the five scales are presented in Table 2. The inter-correlations between scales from the IPIP-NEO showed low to moderate correlations (.06 to .50). The correlation between neuroticism and agreeableness, and neuroticism and conscientiousness were the two largest significant negative correlations.

Table 1 Descriptive statistics for the IPIP-NEO.

Item	Mean	SD	Skewness	Kurtosis	α
1 Often feel blue	2.71	1.16	.18	-.83	
2 Feel comfortable around people	3.47	.99	-.39	.02	
3 Believe in the importance of art	4.08	.89	-.79	.34	
4 Have a good word for everyone	4.10	.84	-.94	1.24	
5 Am always prepared	3.65	.84	-.27	-.13	
6 Rarely get irritated	3.09	1.01	-.04	-.39	
7 Have little to say	3.14	1.2	-.20	-.97	

Table 1 Descriptive statistics for the IPIP-NEO. (cont.)

Item	Mean	SD	Skewness	Kurtosis	α
8 Am not interested in abstract ideas	3.94	.97	-.52	-.49	
9 Have a sharp tongue	2.89	1.2	.21	-.89	
10 Waste my time	2.95	1.08	.03	-.67	
11 Believe that others have good intentions	3.77	.79	-.25	-.14	
12 Make friends easily	3.77	.98	-.53	-.15	
13 Have a vivid imagination	3.90	.94	-.58	-.12	
14 Pay attention to details	3.90	.90	-.43	-.47	
15 Cut others to pieces	3.40	1.08	3.37	.05	
16 Tend to vote for liberal political candidates	3.38	1.01	-.33	.03	
17 Dislike myself	2.06	1.17	.91	-.11	
18 Don't talk a lot	3.16	1.27	-.21	-.99	
19 Carry the conversation to a higher level	3.39	1.03	-.21	-.47	
20 Am skilled in handling social situations	3.45	.87	-.28	-.08	
21 Shirk my duties	4.03	.96	-.71	-.15	
22 Am often down in the dumps	1.89	.99	.97	.40	
23 Respect others	4.33	.72	-1.01	1.41	
24 Make people feel at ease	3.88	.82	-.47	-.02	
25 Am the life of the party	3.32	1.09	-.20	-.46	
26 Accept people as they are	4.23	.76	-.77	.18	
27 Enjoy hearing new ideas	4.46	.68	-.99	.26	
28 Have frequent mood swings	3.33	1.07	-.06	-.80	
29 Don't see things through	3.50	1.01	-.24	-.56	
30 Get chores done right away	3.33	.84	.01	-.20	
31 Am very pleased with myself	2.31	.92	.50	.08	
32 Carry out my plans	3.67	.90	-.37	-.23	
33 Know how to captivate people	3.69	.90	-.35	-.02	
34 Do not like art	4.33	.89	-1.10	.32	
35 Suspect hidden motives in others	2.55	1.11	.40	-.41	
36 Panic easily	2.54	1.13	.25	-.88	
37 Do just enough work to get by	3.64	1.05	-.31	-.83	
38 Don't like to draw attention to myself	3.76	1.06	-.54	-.43	
39 Make plans and stick to them	3.13	1.05	.00	-.60	
40 Seldom feel blue	2.83	1.12	.20	-.75	
41 Avoid philosophical discussions	3.43	1.09	-.34	-.43	

Table 1 Descriptive statistics for the IPIP-NEO. (cont.)

Item	Mean	SD	Skewness	Kurtosis	α
43 Do not enjoy going to art museums	4.03	.99	-.71	-.25	
44 Keep in the background	2.56	1.12	.26	-.60	
45 Get back at others	3.79	1.18	-.66	-.58	
46 Am not easily bothered by things	2.93	1.01	.13	-.50	
47 Insult people	3.10	1.09	.02	-.74	
48 Tend to vote for conservative political candidates	3.51	1.03	-.08	-.45	
49 Would describe my experiences as somewhat dull	3.75	1.09	-.63	-.29	
50 Find it difficult to get down to work	3.36	1.16	-.26	-.82	
Total Scores					
Neuroticism	25.88	3.01	.44	-.02	.81
Extraversion	34.05	3.69	.01	-.13	.75
Agreeableness	38.46	4.13	.07	-.60	.74
Openness	36.05	3.28	-.09	-.25	.70
Conscientiousness	35.16	3.65	-.19	-.22	.77

Testing the IPIP-NEO facture structure

The CFA results reveal that the a priori factor structure showed poor global model fit, $\chi 2$ (1165) = 3015.567, $p < .0001$, CFI = 0.587, RMSEA = 0.072, SRMR = 0.106. According to Hu and Bentler (1999), CFI greater than .95, RMSEA less than .06, and SMSR less than .08 would be considered good fit. Hence, the results of the CFA of the Five Factor model for the IPIP-NEO showed poor model fit.

Exploratory Factor Analysis

Since the CFA shows poor fit, EFA was conducted for further investigating the factor structures of the IPIP-NEO. It has been claimed that parallel analysis is one of the most effective methods for deciding on factor retention (Glorfeld, 1995). Thus, parallel analysis was used to examine number of factors that should be retained. The results from the parallel analysis suggested that 7 factors should be retained. Analysis of the item loadings after extracting both five and seven factors suggested that a number of items were cross-loading across more than one factor, or not loading substantively on any of the factors. We then engaged in an iterative process whereby these problematic items were removed, and the EFA was re-run on the reduced item pool. This process ultimately

Table 2 Correlations among the five-factor of the IPIP-NEO

	1	2	3	4	5
1 Neuroticism	-				
2 Extraversion	-0.35**	-			
3 Agreeableness	-0.50**	0.29**	-		
4 Openness	-0.06	0.12*	0.12*	-	
5 Conscientiousness	-0.48**	0.32**	0.43**	0.15**	-

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

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

Table 3 Descriptive statistics for the IPIP-NEO Thai version (30 items)

	Mean	SD	Skewness	Kurtosis	α	Eigenvalue	% of total variance
Neuroticism	20.41	5.73	.52	-.03	.83	5.651	18.84
Extraversion	8.84	3.03	-.10	-.57	.76	2.789	9.230
Agreeableness	18.76	2.11	-.35	-.08	.37	2.458	8.19
Openness	23.32	3.65	-.27	-.36	.67	1.953	6.51
Conscientiousness	28.00	4.76	-.15	-.24	.73	1.810	6.03

resulted in the removal of the following items: 2, 5, 9, 10, 11, 12, 13, 15, 16, 19, 20, 21, 25, 27, 29, 33, 34, 35, 36, 38, 45, 46 and 47 (see Table 1 for item content). An EFA was conducted again on a final pool of items. The final result suggested 5 factors should be extracted from the 30 remaining items. The fit statistics for this model are: X^2 (295) 547.955, $p < 0.0001$, RMSEA = 0.053, CFI = 0.905 SRMR = 0.037). Descriptive statistics for the IPIP-NEO 30 items are presented in Table 3. The factor loadings of the IPIP-NEO 30 items are presented in Table 4. The correlations between factors are shown in Table 5. The correlations for the revised measure are generally weaker than those shown in Table 2, suggesting the domains are more independent in the 30-item version of the scale.

Discussion

The purpose of this study was to examine the psychometric properties and factor structure of the 50-item IPIP-NEO. This personality scale has been widely used by researchers for its convenience and free cost. However, this scale is new for Thai researchers and there is no previous study on its factor structure nor psychometric properties. Thus, Confirmatory Factor Analysis and Exploratory Factor analysis were employed to investigate

Table 4 Factor loadings of the IPIP-NEO Thai version (30 items)

Item	N	E	A	O	C
22	0.76*	0.06	-0.01	-0.04	-0.08
1	0.74*	-0.07	-0.05	0.02	0.05
17	0.67*	-0.04	0.10	-0.10*	-0.24*
40	0.67*	-0.06	-0.13*	0.09	0.07
42	0.54*	0.06	-0.20*	-0.03	-0.09
31	0.51*	-0.01	-0.09	0.06	-0.29*
6	0.42*	0.04	-0.19*	0.14*	0.13
28	0.42*	0.16*	0.13*	0.10	-0.10
7	-0.01	0.89*	-0.01	-0.03	0.01
18	0.01	0.88*	0.06	-0.02	0.03
44	-0.02	0.43*	-0.15*	0.12*	-0.04
23	-0.03	-0.02	0.62*	0.04	0.18*
24	-0.10	0.23*	0.55*	-0.04	0.01
26	-0.08	-0.04	0.55*	0.05	-0.00
4	0.06	0.12*	0.50*	0.08	0.08
11	-0.12	0.05	0.42*	0.05	-0.06
34	0.04	-0.11*	0.07	0.71*	-0.02
43	-0.04	-0.04	0.01	0.70*	-0.00
3	0.16*	-0.03	0.12	0.59*	0.08
41	0.02	-0.00	-0.07	0.50*	0.00
8	-0.03	0.12*	0.06	0.39*	-0.00
48	-0.03	0.04	-0.09	0.23*	-0.02
32	-0.06	-0.02	0.11	-0.15*	0.64*
39	0.101	-0.130*	0.044	-0.338*	0.60*
37	-0.04	0.01	-0.12	0.10	0.59*
50	-0.18*	0.01	-0.05	0.18*	0.50*
14	0.22*	0.00	0.16*	-0.08	0.42*
21	-0.19*	0.05	0.04	0.07	0.42*
10	-0.21*	0.06	-0.14*	0.06	0.41*
30	0.03	0.02	0.25*	-0.01	0.36*

*$p < 0.05$

Table 5 Correlation between factors

	1	2	3	4	5
1 Neuroticism	-				
2 Extraversion	-0.28*	-			
3 Agreeableness	-0.23*	0.02	-		
4 Openness	-0.05	-0.01	-0.01	-	
5 Conscientiousness	-0.27*	0.02	0.25*	0.16*	-

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

the factor structure of the IPIP-NEO Thai version, and ultimately propose a new version of this measure with 30 items.

The results from the CFA on the 50 item version revealed poor fit for the five factor model. This is consistent with previous studies which have stated that using CFA to evaluate the properties of complex personality inventories could be overly restrictive.[26] When CFA was employed to evaluate personality trait scales, it has often showed poor results.[27–29] For example it was found that CFA models that were fit to personality scales typically range from .09-.13 for RMSEA and .52 - .70 for TLI.[28]

In this study, the result from the subsequent EFA showed some items were cross- loading across more than one factor, or did not load substantively on any factor. After removing such items, the results from an EFA revealed 30 items with an acceptable global model fit for five factors, with all items loading substantively on their a priori factor and with minimal cross-loading across factors. All items had a moderate to strong loading on their primary factor, except item 48 ('Tend to vote for conservative political candidates') and 30 ('Get chores done right away'), which had modest loadings on 'Openness' and 'Conscientiousness', respectively. The correlations between factors were small to moderate (-.001 to -0.286), which demonstrates no significant overlap between each domain of personality.

Nonetheless, some limitations should be brought to attention. This study employed convenience sampling method which might have caused selection bias. More than haft of the sample were high educated and predominantly female. Generalizability of this research finding as well as the application of this personality scale should be consciously considered.

Conclusion

This study proposes a 30 item version of the IPIP-NEO in the Thai language. There are 8 items for N, 3 items for E, 5 items for A,

6 items for O and 8 items for C. This scale in Thai could be used when personality traits are needed to be measured. However, one should keep in mind that the scoring and interpretation, as well as the initial statistical analysis in this study, was based on the standard scoring for the English version. Cultural background should be considered when interpreting the results. Moreover, in a clinical setting, the IPIP-NEO must be administered with other standard personality inventories for a more accurate assessment of personality. For further study on the psychometric properties of the IPIP-NEO, a more representative and larger sample of participants should be recruited. When sufficient funds or other resources are available, convergent validity of IPIP-NEO Thai and other five factor inventories might add further knowledge to the measurement of the five-factor model of personality in the Thai language.

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