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# Cross-cultural adaptation and reliability of Positive and Negative Affect Schedule (PANAS) on Thai smokers

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**Background** : *Positive and Negative Affect Schedule (PANAS) is a questionnaire for evaluating the affect which is one of the factors associated with smoking relapse and is widely used in clinics and in research. The original version of PANAS is in English and has been translated into many languages. However, there has been no translation available into the Thai language.*

**Objectives** : *To translate PANAS into the Thai language by using the standard method according to the cross-cultural adaptation process and to evaluate the test-retest reliability and internal consistency of PANAS in Thai smokers.*

**Methods** : *PANAS was translated into Thai. Participants – current smokers – completed the questionnaire twice, at baseline and seven days after. The intra-class correlation coefficient ( $ICC_{(3,1)}$ ) and Cronbach's alpha were calculated for the test-retest reliability and internal consistency, respectively.*

- Results** : *The average age of 60 participants was 35.2 years old. They averagely smoked 10.9 cigarettes per day over an average period of 12.9 years. Sixty-five percent of the participants had previously attempted to quit. The ICC<sub>(3,1)</sub> of PANAS in Thais was 0.90 for positive affect and 0.93 for negative affect. Cronbach's alpha was 0.89 for positive affect and 0.90 for negative affect.*
- Conclusion** : *In general, PANAS in Thai demonstrated good to excellent internal consistency and excellent test-retest reliability. Therefore, the PANAS in Thai could be used in clinics and in researches.*
- Keywords** : *Positive and Negative Affect Schedule (PANAS), positive affect, negative affect, reliability, Thai smokers.*

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ฐานิยา กลิ่นโสภณ, เปรมทิพย์ ทวีรดิธรรม, ประวิตร เจนวนรธนะกุล. การแปลภาษาตามแนวทางการปรับข้ามวัฒนธรรมและการตรวจสอบความน่าเชื่อถือของแบบสอบถาม Positive and Negative Affect Schedule (ฉบับภาษาไทย) สำหรับผู้สูบบุหรี่. จุฬาลงกรณ์เวชสาร 2560 พ.ศ. - มิ.ย.;61(3): 333 - 42

- เหตุผลของการทำวิจัย** : แบบสอบถามที่ใช้แพร่หลายในทางคลินิกและวิจัย เพื่อประเมินความรู้สึกเชิงบวก และความรู้สึกเชิงลบ หรือ Positive and Negative Affect Schedule (PANAS) ซึ่งเป็นแบบประเมินปัจจัยที่ส่งผลต่อการหวนกลับมาสูบบุหรี่ใหม่ ต้นฉบับของแบบสอบถามใช้ภาษาอังกฤษ และได้รับการแปลเป็นภาษาต่าง ๆ มากมาย อย่างไรก็ตามแบบสอบถาม ฉบับดังกล่าวยังไม่ได้รับการแปลเป็นภาษาไทยในปัจจุบัน
- วัตถุประสงค์** : เพื่อแปลแบบสอบถาม PANAS จากต้นฉบับภาษาอังกฤษเป็นภาษาไทยด้วยวิธีการแปลภาษาตามแนวทางการปรับข้ามวัฒนธรรม รวมทั้งตรวจสอบความน่าเชื่อถือของการทดสอบซ้ำ และความสอดคล้องภายใน ในกลุ่มประชากรไทยที่สูบบุหรี่
- วัสดุและวิธีการ** : ดำเนินการแปลแบบสอบถาม PANAS จากภาษาอังกฤษเป็นภาษาไทยด้วยวิธีการแปลภาษาตามแนวทางการปรับข้ามวัฒนธรรม หลังจากนั้นดำเนินการตรวจสอบความน่าเชื่อถือในประชากรไทยที่สูบบุหรี่ โดยให้ผู้เข้าร่วมวิจัยทำแบบสอบถามด้วยตนเอง 2 ครั้ง ห่างกัน 7 วัน รวมทั้งได้ทำการวิเคราะห์สัมประสิทธิ์สหสัมพันธ์ และ Cronbach's alpha
- ผลการศึกษา** : ผู้เข้าร่วมวิจัยจำนวน 60 คน มีอายุเฉลี่ย 35.2 ปี ผู้เข้าร่วมวิจัยสูบบุหรี่เฉลี่ยวันละ 10.9 มวน โดยสูบมาแล้วเฉลี่ย 12.9 ปี โดยร้อยละ 65 ของผู้เข้าร่วมวิจัยเคยพยายามเลิกสูบบุหรี่มาแล้ว การทดสอบความน่าเชื่อถือของแบบประเมินที่แปลเป็นภาษาไทยด้วยวิธีการทดสอบซ้ำพบว่า มีค่า ICC<sub>(3, 1)</sub> ของมาตรวัดอารมณ์เชิงบวก เท่ากับ 0.90 ค่า ICC<sub>(3, 1)</sub> ของมาตรวัดอารมณ์เชิงลบ เท่ากับ 0.93 และมีค่าความสอดคล้องภายใน Cronbach's alpha ของมาตรวัดอารมณ์เชิงบวก และเชิงลบ เท่ากับ 0.89 และ 0.90 ตามลำดับ
- สรุป** : ค่า ICC<sub>(3, 1)</sub> และ ค่า Cronbach's alpha ของแบบสอบถาม PANAS ฉบับภาษาไทยนี้อยู่ ในเกณฑ์ดีถึงดีมาก ดังนั้นจึงสามารถนำแบบสอบถาม PANAS ฉบับภาษาไทยไปใช้ใน ทางคลินิก และงานวิจัยได้
- คำสำคัญ** : แบบสอบถาม Positive and Negative Affect Schedule (PANAS), ความรู้สึกเชิงบวก, ความรู้สึกเชิงลบ, ความน่าเชื่อถือ, ประชากรไทยที่สูบบุหรี่.

The Tobacco Atlas reported that 37.4 % of males and 2.2% of females are smokers in Thailand. More than 74,600 die from tobacco-related diseases each year.<sup>(1)</sup> Evidence suggests that quitting smoking reduces mortality risk.<sup>(2)</sup> However, smoking relapse is a major problem in smoking cessation treatment. A negative affect such as feeling guilty and upset is one of the factors associated with smoking relapse.<sup>(3)</sup><sup>-5)</sup> Individuals reporting negative affect at pretreatment are less likely to be successful in smoking cessation and more likely to relapse to smoking compared to those with neutral or positive affect such as feeling relaxed and happy.<sup>(6,7)</sup> Thus, assessment of the affect in smoking cessation is necessary.

To date, there have been many tools to evaluate mood and evidence shows that mood is correlated with smoking relapse. In 1988, Watson and colleagues developed the Positive and Negative Affect Schedule (PANAS) in English language.<sup>(8)</sup> PANAS is a self-reported questionnaire consisting of two subscales: positive and negative affect to evaluate positive and negative affect. Each positive and negative affect subscale is composed of 10 items which are scored separately. PANAS utilizes a 1- 5 Likert scale and the scores of each subscale can range from 10 - 50. Higher scores on PANAS reflect a more positive or negative affect. PANAS is short and easy to administer a questionnaire for evaluating the two primary dimensions of mood. This questionnaire demonstrates highly internal consistency, excellent convergence and discriminant correlation with lengthier scales of the underlying of mood factors. In addition, PANAS shows stability over a 2-month time period.<sup>(8)</sup> Therefore, PANAS has been

used as instrument in many research fields including smoking addiction. PANAS has been translated into many languages such as Italian<sup>(9)</sup>, German<sup>(10)</sup>, Swedish<sup>(11)</sup> and Spanish.<sup>(12)</sup> So far, there is no Thai language of PANAS. Therefore, the aims of this study were to translate PANAS into Thai using the standard method according to the cross-cultural adaptation process and to evaluate the test-retest reliability and internal consistency of the PANAS in Thai smokers.

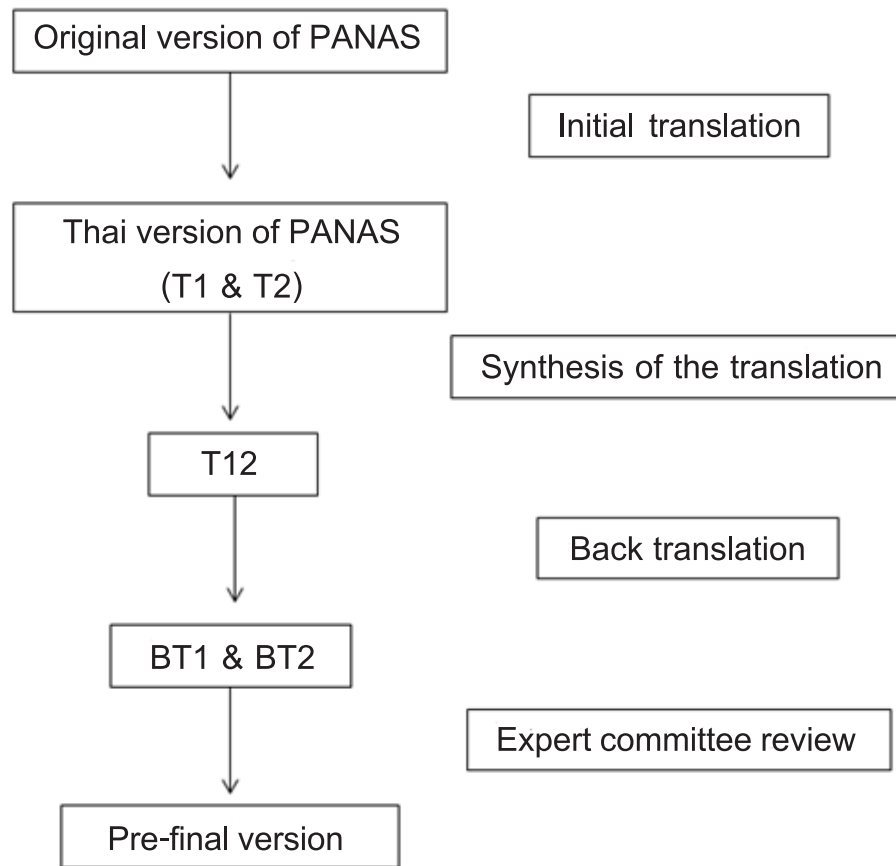
## **Methods**

### ***Participants***

This study recruited a convenience sample of adult smokers from the Bangkok metropolitan area. The inclusion criteria were as follows: Thai adult smoker aged over 18 years old, smoking for at least one cigarette/day, and has been smoking for at least one year. The exclusion criteria were as follows: unable to read and understand Thai. Participants were screened by interviews. This study has been approved by the Chulalongkorn University Human Ethics Committee.

### ***Procedure***

The Positive and Negative Affect Schedule (PANAS) consists of two subscales: positive affect and negative affect. Both subscales of PANAS were translated into Thai according to the cross-cultural adaptation process.<sup>(13)</sup> The cross-cultural adaptation process comprises five stages: 1) Initial translation, 2) Synthesis of the translation, 3) Back translation, 4) Expert committee review, and 5) Test of the pre-final version of the questionnaire (Figure 1).



**Figure 1.** Flowchart of the stage of cross-cultural adaptation.

#### ***Initial translation***

Two bilingual translators participated in this stage. The native language of the two translators was Thai. The first translator was the psychologist who had knowledge of all of the processes proposed and the concept being examined in the questionnaire (T1). The second translator was not aware or informed about the process proposed and the concept being examined in the questionnaire. However, this translator was aware of the language appropriate for the general Thai population (T2). Both translators independently translated PANAS into Thai.

#### ***Synthesis of the translations***

At this stage, both translators synthesized the results of the translations (T1 and T2). The two translators compared and resolved any discrepancies.

A synthesis of the translations produced the first consensus version of the questionnaire (T12).

#### ***Back translation***

The process of back translation into English began after the first version of PANAS in Thai language was completed (T12). In this stage, the back translation (BT1 and BT2) was completed by two native English speakers, who were able to read and understand Thai. These two translators were totally blinded to the original English version, were not aware of the process proposed and did not have any medical background.

#### ***Expert committee review***

The expert committee consisted of three persons: 1) an academic psychologist, 2) a senior academic physiotherapist, and 3) the main researcher.

In this stage, all the translations derived from the previous stages (T1, T2, T12, BT1, and BT2) were reviewed by the committee. In addition, the committee also considered the original version. Finally, the pre-final version of PANAS in Thai language was developed in response to the committee's feedback and recommendations.

#### **Test of the pre - final version of the questionnaire**

The pre - final version of PANAS in Thai language was tested in 10 smokers. The purpose and the scope of the questionnaire along with instructions on how to complete the questionnaire were explained to each participant prior to questionnaire was responded. In addition, these participants were asked to provide comments on the questionnaire and identify word(s) or phrase(s) that were difficult to understand. Then, the main researcher collected all the information and comments to develop the final version in Thai.

#### **Reliability study**

The test - retest reliability and internal consistency of PANAS in Thai language was investigated. As for the test-retest reliability, each participant was asked to complete the questionnaire, unassisted twice with at least a 7-day interval in between. An intra-class correlation coefficient ( $ICC_{(3,1)}$ ) was calculated for the test - retest reliability. An  $ICC_{(3,1)}$  value of greater than 0.70 was accepted as a reliable tool. <sup>(14)</sup> Cronbach's alpha was used to assess internal consistency. A test was accepted as having good internal consistency if Cronbach's alpha was greater than 0.70. <sup>(14)</sup>

#### **Statistical analysis**

Statistical analysis was performed using the Statistical Package for Social Sciences (SPSS Release 17.0 for Windows). The demographic data of the participants were described as percentages, means, and the standard deviations of variable values. Analysis of the test-retest reliability and internal consistency was evaluated for positive affect and negative affect subscales separately. The  $ICC_{(3,1)}$  was used to evaluate the test - retest reliability. Cronbach's alpha was used to assess internal consistency.

#### **Results**

Sixty smokers participated in this study. The characteristics of the participants are presented in Table 1.

The participants were generally able to complete the questionnaire by themselves. At baseline assessment, the mean score of the positive and negative affect of the PANAS in the Thai language were  $30.2 \pm 9.2$  and  $20.4 \pm 9.0$ , respectively. At the second assessment, the mean scores for the positive and negative affect of PANAS in the Thai language were  $29.6 \pm 9.3$  and  $20.9 \pm 9.1$ , respectively. The mean difference score for the positive affect of PANAS in the Thai language was  $0.6 \pm 4.1$  (95% confidence interval, -0.428 – 1.694) and the negative affect was  $-0.5 \pm 3.5$  (95% confidence interval, -1.370 – 0.437). There were no significant differences between the baseline and second assessment of the positive and the negative affect. The  $ICC_{(3,1)}$  value of the positive affect of PANAS in the Thai language was 0.90 ( $P < 0.001$ ; 95% confidence interval, 0.87 - 0.94) and the  $ICC_{(3,1)}$  value of the negative affect of the PANAS in the Thai language was 0.93 ( $P < 0.001$ ; 95%

confidence interval, 0.88 - 0.96). With respect to internal consistency, Cronbach's alpha was computed. The Cronbach's alpha for the positive affect and

negative affect of PANAS in Thai were 0.89 and 0.90, respectively (Table 2).

**Table 1.** Characteristic of participants.

Variables	n = 60	%
Age (mean $\pm$ SD) (years)	35.2 $\pm$ 11.8	
Gender		
Male	56	93.3
Female	4	6.7
Marital status		
Single	34	56.7
Married	22	36.7
Divorced/separated	4	6.7
Education		
Primary school	3	5.0
Secondary school	29	48.3
Bachelor's degree	25	41.7
Higher than Bachelor's degree	3	5.0
Number of cigarette/day (mean $\pm$ SD)	10.9 $\pm$ 6.5	
Years smoking continuously (mean $\pm$ SD)	12.9 $\pm$ 10.0	
Previous quit attempts		
Yes	21	35.0
No	39	65.0

**Table 2.** Reliability study for the PANAS in Thai.

PANAS score	Mean $\pm$ SD		ICC <sub>(3,1)</sub>	Cronbach's alpha
	Baseline assessment	Second assessment		
Positive affect	30.2 $\pm$ 9.2	29.6 $\pm$ 9.3	0.90*	0.89*
Difference score	0.6 $\pm$ 4.1			
95% CI of the difference	-0.428 – 1.694			
Negative affect	20.4 $\pm$ 9.0	20.9 $\pm$ 9.1	0.93*	0.90*
Difference score	-0.5 $\pm$ 3.5			
95% CI of the difference	-1.370 – 0.437			

\*P - value < 0.001



## Discussion

The purposes of this study were to translate the PANAS into the Thai language by using the standard method according to the cross-cultural adaptation process and to assess the test-retest reliability and internal consistency of PANAS in Thai smokers. The findings suggest that the PANAS in the Thai language showed excellent test-retest reliability ( $ICC_{(3,1)} = 0.90$  for positive affect, 0.93 for negative affect) and good to excellent internal consistency (Cronbach's alpha = 0.89 for positive affect, 0.90 for negative affect). Therefore, it can be used in both clinical treatment and research settings for evaluating positive and negative affect in Thai smokers.

The results of the current study indicate that PANAS can be translated and culturally adapted into the Thai language without modification of the contents and structures of the questionnaire. There were 3 participants (3 from 60) who graduated from primary school and discontinued their studies included in this study. It was important to test the use of the questionnaire with participants with low levels of education because the comprehensibility of the questionnaire would be confirmed if these participants could understand the questionnaire. All participants in the current study could complete the questionnaire by themselves. This indicates its ease and the adequate comprehensibility of PANAS in the Thai people.

In the analysis of the reliability of PANAS in Thai language, the 7-day test-retest reliability between the two sets of scores was excellent for both positive and negative affect, with an  $ICC_{(3,1)}$  of 0.90 and 0.93, respectively. Watson D. *et al.* (1988) reported a test-retest reliability of 0.47 - 0.68 for positive affect and

0.39 - 0.71 for negative affect in English language varying according to timeframe.<sup>(8)</sup> In 2003, Terracciano A, *et al.* translated PANAS into Italian language and reported a test-retest reliability of the Italian version. The test-retest was 0.65 (right now) and 0.76 (in general) for positive affect and 0.52 (right now) and 0.73 (in general) for negative affect.<sup>(9)</sup> Excellent test-retest reliability in the current study may result from the data collection sessions being controlled for collection during the same time of day. The participants in this study completed the questionnaire twice in the morning. Therefore, the participants were in the same condition during completion of the questionnaire. In addition, the excellent test-retest reliability in the current study may be due to the clarity and comprehensibility of the wording of PANAS in Thai.

The internal consistency was evaluated by Cronbach's alpha. This study demonstrated good internal consistency for positive affect (Cronbach's alpha = 0.89) and excellent internal consistency for negative affect (Cronbach's alpha = 0.90) in line with previous studies. Watson D, *et al.* (1988) reported an internal consistency of 0.86 - 0.90 for positive affect and 0.84 - 0.87 for negative affect in the English version varying according to timeframe.<sup>(8)</sup> Regarding the internal consistency of the Italian version of PANAS, this was 0.83 (right now and in general) for positive affect and 0.85 (right now) and 0.87 (in general) for negative affect.<sup>(9)</sup> The good to excellent internal consistency reflected the good correlation among the items and the total score in each subscale.

This is the first study to translate PANAS into Thai, following the cross-cultural adaptation process, and to examine the test-retest reliability and internal

consistency in Thai smokers. Further studies should, however, be done in other populations to widen use of PANAS in the Thai language. In addition, other psychometric properties should be identified.

### Conclusion

The results of this study showed excellent test-retest reliability and good to excellent internal consistency. Thus, this PANAS in Thai language can be used in both clinical treatment and research settings for evaluating positive and negative affect in Thai smokers.

### Acknowledgements

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### Declaration of conflict of interest

The authors report no conflicts of interest.

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