Validity and Reliability of the Thai Version of the Faces Test

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Objective: *This study aimed to evaluate the validity and reliability of the Thai version of the Faces Test.*
Material and Method: *The Faces Test was administered to 60 participants, including 35 normal controls [mean age 37.2 (11.5) years and education 13.3 (4.2) years] and 25 patients with schizophrenia [mean age 37.2 (11.3) years and education 12.6 (3.9) years]. To study the convergent validity, the Faces Test was administered concurrently with the Thai version of the Addenbrooke's Cognitive Examination (ACE).*
Results: *The Faces Test had a correlation with the ACE ($r = 0.65$, $p<0.001$). The mean (SD) score on the Faces Test were 16.2 (1.7) for normal controls and 14.8 (2.1) for schizophrenia patients ($p = 0.009$). The Faces Test demonstrated excellent test-retest reliability (intraclass correlation 0.85, $p = 0.035$) and acceptable internal consistency (0.62).*
Conclusion: *The Thai version of the Faces Test seem to be a valid and reliable measure to assess emotion recognition in Thai people.*

Keywords: *Emotion recognition, Neuropsychological test, Cognitive function, Social cognition*

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During the past decade, studies on psychiatric disorders have paid increasing attention to cognitive function, particularly in social cognition. The newest edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) has added social cognition as one of the core cognitive function domains. It includes six cognitive areas: 1) attention/concentration, 2) executive function, 3) memory, 4) language, 5) perceptual-visual perception, and 6) social cognition[1].

Social cognition is the mental ability that is involved in the perception, storage, retrieval and regulation of information about other people with relation to ourselves[2]. These processes include emotion perception, inferring other people's thoughts, as well as social rules and social cues. Emotion perception is one type of social cognition, which is widely investigated among mental disorders, especially in autism, schizophrenia and bipolar disorder[3,4]. To assess emotion perception, participants are usually asked to look at pictures of an individual with assorted emotions and state the emotion they have inferred.

The Faces Test has been developed by Simon Baron-Cohen to assess an individual's emotion perception[5]. Based on a review of current literature, no emotion perception test has been developed in a Thai context. The objective of the present study was to examine the validity and reliability of the Thai version of the Faces Test.

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Material and Method

Participants

There were 60 participants which consisted of 35 normal controls and 25 people with schizophrenia. People with schizophrenia were enrolled from a psychiatric clinic, Thammasat University Hospital. They were diagnosed by psychiatrists using the DSM-5 criteria for schizophrenia. Normal controls were enrolled from other clinics within the Thammasat University Hospital. They did not have any major psychiatric or neurological disorders. All participants were able to read and write Thai and had received a formal education for at least 6 years.

The two groups were selected to evaluate known-group validity. Based on the previous studies, schizophrenia patients had lesser emotion

perception ability than the normal control group, thus the significant differences between the two groups was expected.

The study was approved by the Human Ethics Committee of Thammasat University (protocol number: MTU-EC-PS-6-151/58). All participants provided written informed consent adults.

Measures

The Faces Test

The faces test has been developed by Simon Baron-Cohen to assess emotion perception in adults with autism or Asperger. The results demonstrated a significant lower scores relative to normal adults[5]. The Faces Test consisted of a set of 20 black-and-white images printed on A4 papers including 10 basic emotions and 10 complex emotions or mental states. Participants had to select a correct answer from a set of multiple choices; one point would be given for a correct answer and the total score was 20. Higher score indicates better emotion perception.

The Thai version of the Faces Test

Two independent psychiatrists (TC and TL) translated the original Faces Test[5] from English to Thai and checked the accuracy and appropriateness of the translated version. Then, five psychiatrists were subsequently asked to complete the Thai version of the test and the provided feedback was employed to revise the test.

The Addenbrooke's Cognitive Examination (ACE)

The ACE was used to assess general cognitive function. It assessed five cognitive function domains including attention/orientation, verbal fluency, language, visuospatial ability and memory. The total score of the test was 100. A higher score indicates better cognitive function[6].

Procedure

The present study was a cross-sectional design. the participants had to complete a demographic data form, which included gender, age, and level of education. Subsequently, they had to complete the Thai version of the Faces Test. In addition, the Thai version of the Addenbrooke's Cognitive Examination (ACE)[6,7] was rated on the same day by experienced psychiatrists or psychologists. After two to four weeks, 20 participants were asked to complete the Faces Test again to evaluate the test-retest reliability.

Statistical analysis

All data were analyzed using the STATA version 14. To analyze the known-group validity, an independent t-test was employed to determine whether there was a significant difference between the normal control group and people with schizophrenia.The Pearson's correlation was used to measure the convergent validity between the Faces Test and the ACE. Cronbach's alpha and intraclass correlation (ICC)were used to analyze an internal consistency and test-retest reliability respectively. A *p*-value of 0.05 was considered statistically significant.

Results

Most participants were female (78.3%) with an average age of 37.2 (11.3) years old and an average of 13 (4.1) years of education. No significant difference was found between normal control group and patient group with regard to age and education (Table 1).

Validity

For known-group validity, the mean score of the normal control group was16.2 (1.7) with a mean score of 14.8 (2.1) for schizophrenia patients, which were statistically different ($p = 0.009$). Regarding convergent validity, the Faces Test had a moderate correlation with the ACE ($r = 0.65$, $p<0.001$).

Table 1. Characteristics and the Faces Test scores

Variables	Normal controls (n = 35)	Schizophrenia (n = 25)	*p*-value
Gender: female, n (%)	32 (91.4%)	15 (60.0%)	0.004
Age (years): mean (SD)	37.2 (11.5)	37.2 (11.3)	0.990
Education (years): mean (SD)	13.3 (4.2)	12.6 (3.9)	0.490
The Faces Test score: mean (SD)	16.2 (1.7)	14.8 (2.1)	0.009
The ACE total score: mean (SD)	92.4 (7.4)	82.1 (11.3)	<0.001

The ACE = the Addenbrooke's Cognitive Examination

Reliability

The Faces Test demonstrated acceptable internal consistency (Cronbach's alpha 0.62) and excellent test-retest reliability (0.85, $p = 0.035$). As an additional test of agreement between test and retest, the Bland-Altman plot is illustrated in Fig. 1. The 95% limits for the range of possible error was (-3.2, 1.9) with 5% outside the limits of agreement.

Discussion

The study examined the validity and reliability of the Thai version of the Faces Test, which is used to measure emotion perception. To the author's knowledge, this is the first validated emotion perception assessment in Thailand.

The most complicated task in translating this test was how to select appropriate Thai words expressing complex emotion. To ensure the accurate and culturally-appropriate translation, two psychiatrists verified the translated version and multiple choice answers to suit the Thai context. After the verification, other five psychiatrists took the test and provided some feedback, which was used for revision and modification of the test.

To examine the known-group validity, the performance of the normal controls and people with schizophrenia were compared. Despite comparable age and education, the schizophrenia patients performed significantly lower score than the control group with regard to emotion recognition. This finding is in line with results from previous studies[4].

In addition, convergent validity was conducted by comparing the results from the Faces Test with the ACE. The study demonstrated a moderate correlation between the two measures. Many studies have found that the emotion perception usually correlate, to some extent, with general neurocognitive function. For example, a study by de Achaval et al (2010) demonstrated a significant correlation between performance on the Faces Test and the ACE in healthy individuals ($r = 0.6$, $p<0.001$)[8].

The results show that the test-retest reliability of the Faces Test is excellent; on the other hand, the internal consistency is acceptable (0.62). This can be explained by the fact that there were a limited number of test items (20 items), a low sample size and the aspect of the test was multidimensional. The questions in the Face Tests could be divided into two groups: 10 pictures illustrating basic emotion and 10 pictures complex emotion or mental state, whose level of difficulty differed greatly. This might be the reason why the internal consistency value was only acceptable.

Limitations

Only 35 normal control participants with different ages and educational backgrounds participated in this study; therefore, the sample size may not be adequate to establish a norms value for the general Thai population. Future research should be on a larger scale with more participants to provide a norm reference in Thai. Furthermore, we could not determine convergent validity with other emotion perception measures since they are not available in Thailand.

Conclusion

The Thai version of the Faces Test is a valid and reliable measure. It can be used to assess the emotion perception in Thai people.

What is already known on this topic?

A Thai version of the Faces Test has not been previously developed.

What this study adds?

The Thai version of the Faces Test is a valid and reliable measure. It can be used to assess the emotion perception in Thai people.

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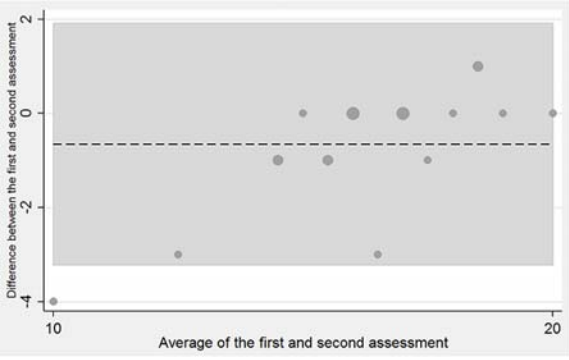

Fig. 1 Bland-Altman plot of the stability of the Faces Test.

Potential conflicts of interest
None.

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ความเที่ยงตรงและความเชื่อมั่นของแบบประเมิน the Faces Test ฉบับภาษาไทย

ธรรมนาถ เจริญบุญ

วัตถุประสงค์: *เพื่อทดสอบความเที่ยงตรง (validity) และความเชื่อมั่น (reliability) ของแบบประเมิน the Faces Test ฉบับภาษาไทย*

วัสดุและวิธีการ: *ทำการศึกษาในกลุ่มตัวอย่าง 60 คน ประกอบด้วยกลุ่มตัวอย่างทั่วไป 35 คน มีอายุเฉลี่ย 37.2 (11.5) ปี ระดับการศึกษาเฉลี่ย 13.3 (4.2) ปี และกลุ่มผู้ป่วยโรคจิตเภท อายุเฉลี่ย 37.2 (11.3) ปี ระดับการศึกษาเฉลี่ย 12.6 (3.9) ปี ทำการศึกษา convergent validity โดยทำแบบประเมิน the Faces Test ร่วมกับแบบประเมิน Addenbrooke's cognitive examination III ฉบับภาษาไทย (ACE)*

ผลการศึกษา: *แบบประเมิน the Faces Test มีความสัมพันธ์อย่างมีนัยสำคัญกับแบบประเมิน ACE ($r = 0.65$, $p<0.001$) กลุ่มตัวอย่างทั่วไปมีคะแนนเฉลี่ยเท่ากับ 16.2 (1.7) คะแนน ส่วนกลุ่มผู้ป่วยโรคจิตเภทมีคะแนนเท่ากับ 14.8 (2.1) คะแนน ซึ่งแตกต่างกันอย่างมีนัยสำคัญ ($p = 0.002$) แบบประเมิน the Faces Test มีค่า test-retest reliability อยู่ในเกณฑ์ดีมากโดยมี intraclass correlation เท่ากับ 0.85 ($p = 0.035$) และมีค่า internal consistency เท่ากับ 0.62*

สรุป: *แบบประเมิน the Faces Test ฉบับภาษาไทยเป็นแบบประเมินที่มีความเที่ยงตรงและความเชื่อมั่นที่ดีในการประเมิน emotion perception ในคนไทย*
