

Reliability and Validity of the Multidimensional Scale of Perceived Social Support (MSPSS): Thai Version

Tinakon Wongpakaran^{1,*}, Nahathai Wongpakaran¹ and Ruk Ruktrakul²

¹Department of Psychiatry, Faculty of Medicine, Chiang Mai University, 110 Intawarorot Rd., Tambon Sripoom, Amphur Muang, Chiang Mai, Kingdom of Thailand 50200

²Lampang Hospital, 280/20 Paholyothin Rd., Tambon Huawiang, Amphur Muang, Lampang, Kingdom of Thailand 52000

Abstract: This study examines the Thai version of the Multidimensional Scale of Perceived Social Support (MSPSS) for its psychometric properties. **Methods:** In total 462 participants were recruited - 310 medical students from Chiang Mai University and 152 psychiatric patients, and they completed the Thai version of the MSPSS, the State Trait Anxiety Inventory (STAI), the Rosenberg Self-Esteem Scale (RSES) and the Thai Depression Inventory (TDI). Test-retest reliability was conducted over a four week period. **Results:** Factor analysis produced three-factor solutions for both patient (PG) and student groups (SG), and overall the model demonstrated adequate fit indices. The mean total score and the sub-scale score for the SG were statistically higher than those in the PG, except for 'Significant Others'. The internal consistency of the scale was good, with a Cronbach's alpha of 0.91 for the SG and 0.87 for the PG. After a four week retest for reliability exercise, the intra-class correlation coefficient (ICC) was found to be 0.84. The Thai-MSPSS was found to have a negative correlation with the STAI and the TDI, but was positively correlated with the RSES.

Conclusion: The Thai MSPSS is a reliable and valid instrument to use.

Keywords: Social support, MSPSS, Reliability, Validity, Factor analysis, Confirmatory Factor analysis, Thai.

INTRODUCTION

A number of studies have demonstrated that social support functions as a buffer for psychological distress, and so a lack of it may lead to adverse outcomes such as a relapse into depression, emotional distress in physically ill patients, and adverse health and psychological impacts due to stressful life experiences among adolescents [1-4].

In an attempt to measure social support, Zimet *et al.* developed the Multidimensional Scale of Perceived Social Support (MSPSS), which has been widely used in both clinical and non-clinical samples [5-9]. The MSPSS is a brief, easy to administer self-report instrument containing twelve items rated on a five-point Likert-type scale. It is meant to measure an individual's perception of how much he or she receives outside social support and has been tested on people from different age groups and cultural backgrounds and found to be a reliable and valid instrument [10-12]. MSPSS consists of three sub-scales: Family, Friends, and Significant Others. Most investigations have revealed MSPSS to be a three-factor construct which demonstrates good to excellent internal consistency and test-retest reliability (with a Cronbach's alpha of 0.81 to 0.98 in non-clinical samples, and 0.92 to 0.94 in clinical samples) [3, 5, 7, 10].

In terms of its construct validity, Stanley *et al.* [13] first raised the issue of an instability in the MSPSS's factor structure when they found that it provides a two-factor structure in older adults suffering from Generalized Anxiety Disorder (GAD). However, due to the small sample size ($n = 50$), the authors of this study were precluded from making a definitive conclusion. On the other hand, Clara *et al.* provided confirmatory analysis endorsing the *a priori* structure of the three-factor model for MSPSS, and their study included a sample of both students and depressed patients, contained a sufficient sample size ($n = 549$ and $n = 156$ for the student and outpatient samples, respectively) and thus confirmed that the three-factor construct provided a much better fit than the two-factor model in both the samples [10]. Chou and Cheng replicated this study but using a larger sample of young people in Hong Kong ($n = 475$ and $n = 2105$, respectively), and found that the two-factor construct is still a model that can compete with the original three-factor structure model when the Friends and Significant Others sub-scales are merged into one [14, 15]. The fact that in this study there was a relatively low reliability coefficient for SO indicates that the respondents may not have been able to differentiate between Significant Others and Other Supportive People such as friends and family, and that this led to the factorial validity problem. More recently, Bruwer *et al.* [11] tested the MSPSS on 502 South African young people and found it to demonstrate a three-factor structure; however, unfortunately the problem found with the two-factor construct by Chou and Cheng was not adequately addressed in this study.

*Address correspondence to this author at the Department of Psychiatry, Faculty of Medicine, Chiang Mai University, 110 Intawarorot Rd., Tambon Sripoom, Amphur Muang, Chiang Mai, Kingdom of Thailand 50200, Tel: +6653945422, Fax: +6653945426, E-mail: tchanob@med.cmu.ac.th

The aim of the present study was to perform further confirmatory analysis of the MSPSS with student and patient groups in Thailand - another Asian sample.

MATERIALS AND METHODOLOGY

This study was approved by an independent IRB at the Faculty of Medicine, Chiang Mai University. All authors had been certified as part of ICH-GCP training.

SUBJECTS

A total of 462 participants - divided into two samples, were recruited for the study. The student sample consisted of 310 medical students in years one to five at the Faculty of Medicine, Chiang Mai University, and they voluntarily participated in the study.

In this group, 59% were female and the age range was 18 to 22 years ($M= 19.16$ years, $SD=1.02$ years). The clinical sample consisted of 152 psychiatric outpatients with a diagnosed history of major depressive disorder, and who were recruited at Chiang Mai University Hospital, and in this group, 55% were female and the age range was 18 to 74 years ($M= 41.23$ years, $SD=12.30$ years).

Of the clinical participants, 10% met the criteria for DSM-IV-TR major depressive disorder and had had a recent episode, while the rest had varying levels of depressive symptoms. Participants who gave incomplete responses for the MSPSS, STAI, TDI or RSES were excluded from the analysis.

PROCEDURES

Students were informed after class about the research study by a research assistant, and were then given a pack containing a participant information sheet (PIS), questionnaires and informed consent forms, for both the initial test and the four week retest. Interested participants subsequently returned the completed questionnaires and the completed informed consent forms individually to the research assistant, who separated the informed consent forms from the anonymous questionnaires. Students were asked to complete the second test after four weeks, after which their retest questionnaires were matched with their initial questionnaires. The retest questionnaires were processed without the exact names or initial testing results being referred to. No fee was given to the students for their participation.

In a similar fashion, the patient volunteers were offered patient information sheets and informed consent forms by a research assistant. Interested patients received a pack containing a patient information sheet (PIS), questionnaires and informed consent forms. After returning the completed informed consent form individually to the research assistant, the patients were asked to complete the questionnaires in a room set aside for this purpose, and then returned them to the assistant.

INSTRUMENTS

The Multidimensional Scale of Perceived Social Support (MSPSS)

The MSPSS is intended to measure the extent to which an individual perceives social support from three sources:

Significant Others (SO) (Items 1, 2, 5, and 10), Family (FA) (Items 3, 4, 8, and 11) and Friends (FR) (Items 6, 7, 9, and 12) [3, 6-9]. The MSPSS is a brief, easy to administer self-report questionnaire which contains twelve items rated on a seven-point Likert-type scale with scores ranging from 'very strongly disagree' (1) to 'very strongly agree' (7). The MSPSS has proven to be psychometrically sound in diverse samples and to have good internal reliability and test-retest reliability, and robust factorial validity [5, 16].

To produce a Thai version of the MSPSS, the first and second authors translated the original English version into Thai, after which it was back-translated by a bilingual school teacher who had no knowledge of the wording from the original English version. The two versions were compared item by item and revised through consensus by the authors and the bilingual teacher. The draft version was tested with 30 individuals who were not participating in the study. Grammatical errors, misspellings and other minor discrepancies were addressed and corrected before field testing.

The State Trait Anxiety Inventory (STAI)

The STAI is a twenty-item common trait and state anxiety scale developed by Spielberger *et al.* [17]. Respondents use a four-point scale ranging from 1 (not at all) to 4 (mostly), such that higher scores are associated with greater feelings of anxiety. A sample response is 'I feel secure'. The study version of the STAI was translated into Thai (Thapinta D, 1991, Unpublished work) and tested for its reliability by T. Nonthasak (In Techakomol W [18]). The Thai STAI demonstrated good internal consistency and validity [17].

The Rosenberg Self-Esteem Scale (RSES)

The Rosenberg Self-Esteem Scale [19] was also used to examine convergent validity. This is a ten-item questionnaire with a four-point Likert scale, with answers ranging from 'strongly agree' to 'strongly disagree'. Higher scores are associated with higher levels of self-esteem. The Thai version of the RSES showed good internal consistency and validity [17].

Thai Depression Inventory (TDI)

This is a twenty-item Thai instrument that measures the severity of depression, and was originally developed by Lotrakul and Sukanich [20]. Respondents use a four-point scale ranging from 1 (no symptom) to 4 (most severe), such that higher scores are associated with greater feelings of depression. The internal reliability and concurrent validity with other depressive measurements were both found to be satisfactory (Cronbach's $\alpha = 0.86$; $r = 0.72$).

STATISTICAL ANALYSIS

Both samples were compared using both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) - to observe item loading patterns. Descriptive statistics were used for the data screening analysis and found to be acceptable, that is, they had an acceptable reliability (Cronbach's $\alpha > 0.6$), and all items had skewness and kurtosis ($<\pm 2$) [18]. A few cases which had missing values were dealt with by replacing them with the series mean.

Prior to analysis, sample data was screened to make sure that no assumptions were violated. Sampling adequacy was found to be good, with Kaiser-Meyer-Olkin (KMO) values of 0.88 and 0.83 for the student and patient sample groups, respectively. Bartlett's test of sphericity was used to test the null hypothesis - that the variables in the population matrix were uncorrelated. Both samples had a significance level of $p < 0.001$, indicating that the hypothesis was rejected, and meaning that the strength of the relationship among variables was strong. It was thus suitable to proceed to factor analysis for the data [19].

To identify the factor structure, an EFA using the maximum likelihood method with oblique rotation was performed on the items. To facilitate comparison between the observed structure and the structure proposed in the theoretical model, cross-loading on the factor was not allowed - unlike with the EFA. Factor analysis was carried out using the SPSS AMOS package version 18 [20].

Regarding the fit indexes, Hu and Bentler suggested fit statistics guidelines for interpreting the fit of specific models, which in this study included a Comparative Fit Index (CFI) of ≥ 0.95 , a Non-Normed Fit Index (NFI) or Tucker-Lewis Index (TLI) of ≥ 0.9 , a root-mean-square error of approximation (RMSEA) of ≤ 0.6 – and with values as high as 0.08 indicating a reasonable fit, a standardized root-mean-square residual (SRMR) score of ≤ 0.08 [21-23] and a χ^2/df result of < 3 [18]. Modification indices were added to the model after the initial analysis.

The internal consistency reliability was determined by calculation of the Cronbach α coefficient, and the Intraclass Correlation Coefficient (ICC) was used for test-retest reliability. A reliability of more than 0.70 for measures was deemed acceptable [24]. Pearson's product moment correlation was used for assessing the concurrent validity between MSPSS and STAI, RSES and TDI.

RESULTS

Descriptive statistics

The mean total score and the sub-scale scores in the student group were statistically higher than those in the patient group, except for the SO sub-scale ($t = 4.48, 4.37, 6.01$ and 1.42 for the total score, FA, FR and SO respectively). There were no significant gender differences between the mean total score and the sub-scale scores in either the student or clinical samples. Regarding age, there was a negative relationship between age and the total score for MSPSS in the student group ($r = -0.127, p = 0.034$).

Reliability

The internal consistencies of the entire scale were good, with a Cronbach's α of 0.91 in the student group overall, and with sub-scales of 0.91, 0.83 and 0.86 for FR, FA and SO respectively. In the clinical group, the Cronbach's α was 0.87 overall, with sub-scale scores of 0.84, 0.85 and 0.74 for FR, FA and SO respectively (see Table 1). In the four week retest reliability check, the intra-class correlation coefficient (ICC) was calculated for 72 students and found to demonstrate a satisfactory stability, with an ICC of 0.84 (95% CI, 0.756, 0.897).

Factor Analysis

Factor Structure

EFA yielded three Eigenvalues of 5.89, 1.79, and 1.22, which accounted for 49.11%, 13.86% and 10.16% of the variance in the student sample, respectively. The corresponding values in the patient sample were 4.94, 1.75 and 1.21, which accounted for 41.20%, 14.59% and 10.11%, of the variance in the patient samples respectively. There was a higher correlation between SO and FR in the student group ($r = 0.60$), and between SO and FA in the patient group ($r=0.48$) (Table 3). The loading factors from a previous study by Canty-Mitchell and Zimet were compared with those from this study (Table 1).

The CFA - allowing for error term correlation, yielded acceptable fit statistics with values of $\chi^2 120.54, df 44, p = 0.000$; TLI 0.95; CFI 0.96; GFI 0.94; RMSEA 0.078 (0.061-0.094) and SRMR 0.034 for the student group, and $\chi^2 79.59, df 48, p = 0.000$; TLI 0.93; CFI 0.95; GFI 0.92; RMSEA 0.069 (0.040-0.095); SRMR 0.057 for the patient group (Table 2).

Concurrent Validity

It was found that the Thai-MSPSS had a negative correlation with the state trait anxiety inventory ($r = 0.20, p = 0.004$) and the Thai depression inventory (TDI) ($r = -0.19, p = 0.007$), but was positively correlated with the Rosenberg self-esteem scale ($r = 0.33, p<0.0001$). Moreover, it was found that the Rosenberg self-esteem scale correlated with all three sub-scales, whereas the anxiety and depression scales correlated more with the FR sub-scale than with the others (Table 3).

DISCUSSION

The principal results show that the Thai version of the MSPSS is a reliable and valid instrument. The overall reliability of the Thai version is good, even though it is lower for the SO sub-scale in the patient sample (Cronbach's alpha, 0.74) when compared to reliability in the FR and FA subscales; however, it is still acceptable and good enough to use as a 3-factor structure, as found in the original study by Zimet *et al.* and other supporting studies [5, 7, 25]. Confirmatory factor analysis provided an acceptable model fit, though there was a trade-off among the goodness-of-fit indices (CFI, GFI and TFI) and badness-of-fit indices (RMSEA and SRMR) between the student and patient groups, since the magnitude of the correlation between sub-scales was different in both groups. As with previous studies [11, 15, 25], this study found there to be a higher correlation between SO and FA in young adults; however, the sick people - even the younger adults, tended to view family rather than friends as the best support, probably because the study was carried out in an Asian culture [26-29]. This point is illustrated by the existence of a higher correlation between SO and FA in the student sample when compared to the correlation between SO and FR in the patient sample ($r = 0.48$ versus $0.38, p<.001$), and is consistent with previous studies [11, 25].

These results contrast with the previous studies by Chou and Cheng [14, 15], which employed Chinese Hong Kong samples. The problem of misspecification was also raised by

Table 1. Comparison of the Present Study[†], Canty-Mitchell, and Zimet[‡]

Item no.	FR	FA	SO			
	Present Study	Canty-Mitchell and Zimet's	Present Study	Canty-Mitchell and Zimet's	Present study	Canty-Mitchell and Zimet's
7	.91(.86) [§]	.75				
6	.89(.77)	.66				
9	.80(.75)	.83				
12	.77(.70)	.90				
4			.82(.86)	.80		
11			.80(.82)	.89		
3			.73(.71)	.84		
8			.70(.65)	.77		
5					.83(.78)	.85
10					.80(.64)	.78
2					.78(.61)	.92
1					.71(.54)	.67
Eigenvalues	5.89(4.94)	-	1.66(1.75)	-	1.22(1.21)	-
% variances	49.11(41.20)	-	13.86(14.59)	-	10.16(10.11)	-
Mean (\pm SD)	5.56 \pm 1.07 (4.52 \pm 1.22)	5.42 \pm 1.42	6.25 \pm 0.91 (5.79 \pm 1.36)	5.33 \pm 1.48	5.57 \pm 1.06 (4.67 \pm 1.63)	5.90 \pm 1.30
Cronbach's alpha	0.91(0.84)	0.89	0.83(0.85)	0.91	0.86(0.74)	0.91

Note:

[†]n= 310 for student sample, n = 152 for patient sample; [‡]n= 222[§]Data in the parenthesis were from patient group**Table 2. A comparison of the Fit Indexes of Three-Factor Confirmatory Models for the Student[†], Psychiatric Samples[‡]**

Group	TLI	CFI	GFI	RMSEA (90%CI)	SRMR	χ^2	df	χ^2/df
Students	0.95	0.96	0.94	0.078 (.061-.094)	0.034	120.54	44	2.74
Patients	0.93	0.95	0.92	0.069 (.040-.095)	0.057	79.59	48	1.66

Note. TLI = Tucker-Lewis Index; CFI = comparative fit index; GFI = goodness-of-fit index; RMSEA = root mean square error of approximation; SRMR = standardized root-mean-square residual, [†]N = 310, [‡]N = 152

Table 3. Correlations Among Subscales in Two Different Samples

Students ^a				Patients ^b			
	FR	FA	SO		FR	FA	SO
FR	1				1		
FA	.42**	1			.29**	1	
SO	.60**	.51**	1		.38**	.48**	1

Table 3. cont.....

Students ^a				Patients ^b			
	FR	FA	SO		FR	FA	SO
RSES	.27**	.24**	.26**		-	-	-
STAI	-.20**	-.11	-.15*		-	-	-
TDI	-.20**	-.14	-.10		-.27**	-.37**	-.36**

Notes:

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

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

^a Variables' correlations in student group (n = 310)

^b Variables' correlations in patient group (n = 152)

Chou and Cheng and was deemed to have occurred either due to problems with the translation method or due to cultural differences (East versus West). Despite these concerns, it should be noted that in this study there was a different pattern in terms of how the items were 'parcelled' within the different groups, that is - there was a high correlation between SO and FR in adolescents, but between SO and FA in the patient or clinical samples. This pattern appears to be independent [9, 11, 12, 15] of cultural factors, supporting a three-factor solution. The results of this study, also based on subjects from a background similar to those in the Hong Kong study, support the view that cultural background does not affect the structure of MSPSS.

This study helped to clarify those issues related to use of a two-factor model which have emerged from previous studies. The study conducted by Stanley *et al.* was based on a clinical sample but with a relatively small sample size (n=50). Cheng's study was found to have relatively low reliability coefficients, especially in the SO sub-scale, with a Cronbach's α = 0.69 for SO, 0.78 for FA and 0.76 for FR. The present study produced a Cronbach's α of 0.74 for SO, 0.84 for FA and 0.85 for FR. The authors believe that the translation method used contributed to the measurement error which led to model misspecification in Chou and Cheng's studies.

Apart from questions about the factor structure, the MSPSS demonstrated good reliability and validity in this Thai sample, and was found to be positively correlated with the self-esteem scores, but negatively correlated with the depression (except for SO) and anxiety scores, thus reflecting the external validity of the MSPSS. There were no age or gender differences in the MSPSS total or sub-scale scores, which concurs with other studies [15, 25].

To our knowledge, this is the first study from Asia to examine the MSPSS model's factor structure based on a sample of people other than adolescents or normal young people. When comparing the results obtained from the original version of the MSPSS to those obtained from our revised version, we have found that the revised version yields better reliability coefficients and fit indices, and thus supports our hypothesis. The fact that the p value found was not larger than 0.05 (which is indicative of a non-fitting model) may be related to the relatively small sample size which was used; however, other fit indicators provided enough evidence to

support the overall goodness-of-fit of the three-factor solution.

Further investigations - with a different a sample such as a clinical sample, with a larger sample size and with a sample from a different cultural background, are encouraged.

CONFLICT OF INTEREST

None.

ACKNOWLEDGEMENTS

This research project was part of the project 'A comparison of the effect of providing feedback on psychotherapy outcomes', as funded by the Faculty of Medicine, Chiang Mai University in the Kingdom of Thailand.

AUTHORS' CONTRIBUTIONS

The first and second authors conceived the study, developed the proposal, translated the MSPSS into Thai and wrote the manuscript. RR collected the data and wrote the manuscript, while TW performed the statistical analysis. All the authors read and approved the final manuscript.

REFERENCES

- [1] Backs-Dermott B, Dobson K, Jones S. An evaluation of an integrated model of relapse in depression. *J Affect Disord* 2010; 124: 60-7.
- [2] Skouteris H, Wertheim E, Rallis S, Milgrom J, Paxton S. Depression and anxiety through pregnancy and the early postpartum: an examination of prospective relationships. *J Affect Disord* 2009; 113: 303-8.
- [3] Pedersen S, Spindler H, Erdman R, Denollet J. Poor perceived social support in implantable cardioverter defibrillator (ICD) patients and their partners: cross-validation of the multidimensional scale of perceived social support. *Psychosomatics* 2009; 50: 461-7.
- [4] Klineberg E, Clark C, Bhui K, *et al.* Social support, ethnicity and mental health in adolescents. *Soc Psychiatry Psychiatr Epidemiol* 2006; 41: 755-60.
- [5] Zimet G, Dahlem N, Zimet S, Farley G. The Multidimensional scale of perceived social support. *J Pers Assess* 1988; 52: 30-41.
- [6] Dahlem N, Zimet G, Walker R. The multidimensional scale of perceived social support: a confirmation study. *J Clin Psychol* 1991; 47: 756-61.
- [7] Zimet G, Powell S, Farley G, Werkman S, Berkoff K. Psychometric characteristics of the multidimensional scale of perceived social support. *J Pers Assess* 1990; 55: 610-7.
- [8] Frasure-Smith N, Lespérance F, Gravel G, *et al.* Social support, depression, and mortality during the first year after myocardial infarction. *Circulation* 2000; 101: 1919-24.

- [9] Ege E, Timur S, Zincir H, Geçkil E, Sunar-Reeder B. Social support and symptoms of postpartum depression among new mothers in Eastern Turkey. *J Obstet Gynaecol Res* 2008; 34: 585-93.
- [10] Clara I, Cox B, Enns M, Murray L, Torgrude L. Confirmatory factor analysis of the multidimensional scale of perceived social support in clinically distressed and student samples. *J Pers Assess* 2003; 81: 265-70.
- [11] Bruwer B, Emsley R, Kidd M, Lochner C, Seedat S. Psychometric properties of the Multidimensional Scale of Perceived Social Support in youth. *Compr Psychiatry* 2008; 49: 195-201.
- [12] Ramaswamy V, Aroian K, Templin T. Adaptation and psychometric evaluation of the multidimensional scale of perceived social support for Arab American adolescents. *Am J Community Psychol* 2009; 43: 49-56.
- [13] Stanley M, Beck J, Zebb B. Psychometric properties of the MSPSS in older adults. *Aging Ment Health* 1998; 2: 186-193.
- [14] Chou K-L. Assessing Chinese adolescents' social support: the multidimensional scale of perceived social support. *Pers Individ Dif* 2000; 28:299-307.
- [15] Cheng S-T, Chan A. The multidimensional scale of perceived social support: dimensionality and age and gender differences in adolescents. *Pers Individ Dif* 2004; 37:1359-69.
- [16] Cecil H, Stanley M, Carrion P, Swann A. Psychometric properties of the MSPSS and NOS in psychiatric outpatients. *J Clin Psychol* 1995; 51: 593-602.
- [17] Wongpakaran N, Wongpakaran T. The Thai version of the PSS-10: An investigation of its psychometric properties. *Biopsychosoc Med* 2010, 4: 6.
- [18] Kline RB. Principles and practice of structural equation modeling. New York: Guilford 1998.
- [19] Kaiser H. The varimax criterion for analytic rotation in factor analysis.: *Psychometrika* 1958; 23: 187-200.
- [20] Arbuckle J. Amos (Version 18.0) [Computer Program]. Chicago: SPSS 2009.
- [21] Hu L, Bentler PM, Eds. Evaluating model fit. In *Structural equation modeling: concepts, issues and applications*. California: Sage 1995.
- [22] Hu L, Bentler PM. Fit indices in covariance structure modeling: Sensitivity to under parameterized model misspecification. *Psychol Methods* 1998; 3: 424-53.
- [23] Hu L, Bentler PM. Cut off criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Struct Equ Modeling* 1999; 6: 1-55.
- [24] Nunnally J, Bernstein I. *Psychometric theory*. New York, USA: McGraw-Hill Book Company 1994.
- [25] Canty-Mitchell J, Zimet G. Psychometric properties of the Multidimensional scale of perceived social support in Urban adolescents. *Am J Community Psychol* 2000; 28: 391-400.
- [26] Chun C, Enomoto K, Sue S. Health care issues among Asian Americans: implications of somatization. In: Kato P, Mann T. *Handbook of diversity issues in health psychology*. Eds. New York: Plenum Press 1996; pp. 347-65.
- [27] Sue S, Zane N. The role of culture and cultural techniques in psychotherapy: a critique and reformulation. *Am Psychol* 1987; 42: 37-45.
- [28] Sue D, Sue S. Cultural factors in the clinical assessment of Asian Americans. *J Consult Clin Psychol* 1987; 55: 479-87.
- [29] Sue S. In search of cultural competence in psychotherapy and counseling. *Am Psychol* 1998; 53: 440-8.

Received: January 21, 2011

Revised: August 31, 2011

Accepted: August 31, 2011

© Wongpakaran et al.; Licensee *Bentham Open*.

This is an open access article licensed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>) which permits unrestricted, non-commercial use, distribution and reproduction in any medium, provided the work is properly cited.