

Psychometric Properties of the English Version of DASS in a Sample of Malaysian Nurses

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The Malay version of DASS (Depression, Anxiety and Stress Scale) had been tested with samples in the general and clinical population in Malaysia. However, this Malay version was found to have lower sub-scales reliabilities than the comparable English version tested in a non-Malaysian sample. Additionally, the translators observed that there are no cultural-specific issues regarding the scale. Therefore, the English version of DASS might be more appropriate to be used in the Malaysian private hospitals where the use of English is widespread. This study examines the original English version of DASS in a sample of 521 nurses in private hospitals in the Klang Valley area. The psychometric properties will be examined using a measurement model in AMOS. The steps involved are examination of the unidimensionality of the subscales, reliability (alpha Cronbach and AVE), and validity (AVE, Fitness Indices, and Modification Indices). The findings are discussed in terms of the use of different languages in psychological testing.

Keywords: DASS, psychometric, nurses, Klang Valley

DASS (Depression, Anxiety and Stress Scale) is a screening tool for mental health. Specifically it contains 21 items aim to measure the severity range of the core symptoms of depression, anxiety and stress. The DASS-21 is a frequently used assessment tool because of its reliability and ease in administration. However, its psychometric characteristics need to be examined particularly if it is used in a racially diverse samples and populations.

Though the DASS-21 has been translated in various languages including Bahasa Malaysia, the lack of appropriate validation among Asian populations pose

concern over its use (Oei, Sawang, Goh & Mukhtar, 2011). Still, there are many studies conducted to determine its reliability and validity in the Malaysian population (Nur Azma, Rusli, Quek, & Noah, 2014; Oei et al., 2011; Ramli, Salmiah, & Nurul Ain, 2009). Its use in research in Malaysia is quite well accepted. However, the psychometric robustness of the measure is still questionable.

A translation of DASS-21 with non-clinical sample also provides good preliminary psychometric properties (Musa, Fadzil, & Zain, 2007). The Malay

and English versions of DASS had since been tested with samples of secondary school teachers (Hadi, Naing, Daud, Nordin, & Sulong, 2009), patients with diabetes (Ramli & Salmiah, 2009) as well as university students (Nasir, 2011).

A study by Nur Azma et al (2014) shows that an EFA analysis generated a 3-factor solutions on 20 items, which was reliable and valid to the nurse population. This is also supported by another study by Ramli et al (2009) which shows that the BM DASS was reliable and also had good factor loading.

In studies with university students (Shamsuddin, Fadzil, Ismail, Shah, Omar, and Muhammad *et al.*, 2013) and nurses (Lan, Subramanian, Rahmat, & Kar, 2014) the psychometric properties is limited to internal consistencies (Cronbach's alpha).

The Malay version was also found to have lower sub-scales' reliabilities than the comparable English version tested in a non-Malaysian sample (Musa, Fadzil, & Zain, 2007). The authors commented that item 18 (I felt that I was rather touchy; translated into *mudah tersentuh*) may reflect personality traits and loaded more to anxiety rather than stress.

Thus, using the English version of DASS-21 might be more appropriate for English speaking Malaysians in terms of achieving high reliability and validity. This study examines the original English version of DASS-21 in a sample of nurses in private hospitals in the Klang Valley area where the use of English is widespread.

Method

Measure

The English version of DASS-21 was used. Three sub-scales were measured by 7 items each on a 4-point Likert scale (0 = 'did not apply to me' to 3 = 'apply to me very much, or most of the time'). The

higher the score, the more severe the mental health problem experienced by the respondent.

Participants

521 nurses from various branches of a private hospital in Kuala Lumpur. The nurses were participants in training programs organized by the hospital.

Procedure

DASS-21 was administered to each participant up to a month before the training was conducted. 32 groups were tested spanning from April 2014 to July 2016.

Examination of the unidimensionality of the subscales, reliability (alpha Cronbach and AVE), and validity (AVE, Fit Indices, and Modification Indices) via SPSS and AMOS.

Results

In conducting the confirmatory factor analysis, three assessments (Unidimensionality, Validity, and Reliability) were done based on the guidelines provided by Awang (2015).

First, the unidimensionality was assessed via factor loading. A cut-off value of 0.6 was used considering that DASS-21 is an existing scale. All three subscales have items with unsatisfactory factor loading as reported in Table 1. Only four items were considered acceptable with Anxiety having one more item than the other two sub-scales.

Second, three types of validity are included in the analysis; construct, convergent, and discriminant. The construct validity is obtained via assessing the fitness indices (χ^2/df (cut-off point <3.0), RMSEA (cut-off point <.08), and CFI (cut-off point >.9)). Table 1 shows the fitness indices achieved the minimum requirements for all subscales. Meanwhile, the convergent validity for all models were

not demonstrated because the values of AVE did not exceed 0.5 as reported in Table 1. Meanwhile, Table 2 shows the lack of evidence for discriminant validity: the correlations among the subscales is very highly.

Thirdly, reliability was measured via two methods: composite reliability (CR) and Cronbach's alpha. CR is satisfactory given the values for the three subscales are higher than 0.6. As for the internal consistencies, all of them have acceptable Cronbach's alpha values (above 0.7).

The fit indices suggested good fit to a single factor structure for each subscale. The 3-factor solution had good model fit: $\chi^2/df = 2.193$, $p < .001$; RMSEA = .048; CFI = .913. However, the observed problems are:

- 1) Many items have low factor loading to the sub-scale
- 2) The sub-scales are highly correlated
- 3) Examination of the AVE and MSV indicates the existence of a single factor structure

Table 1

Unidimensionality, Validity and Reliability Assessments

	Depression		Anxiety		Stress	
	Item	Factor loading	Item	Factor loading	Item	Factor loading
	D3	.54	A2	.28	S1	.44
	D5	.47	A4	.45	S6	.44
	D10	.51	A7	.48	S8	.64
	D13	.63	A9	.67	S11	.55
	D16	.56	A15	.69	S12	.58
	D17	.59	A19	.51	S14	.46
	D21	.52	A20	.56	S18	.49
χ^2/df		1.777		3.343		1.551
RMSEA		.039		.067		.033
CFI		.981		.944		.985
CR		.746		.727		.719
AVE		.298		.272		.288
α		.744		.722		.723

Table 2

Discriminant Validity Indices: Correlations among Subscales and AVE Squared (in bold)

Sub-Scale	1	2	3
1. Anxiety	.537		
2. Stress	.924	.521	
3. Depression	.829	.962	.546

Discussion

While the internal consistencies of the items, as measured by the Cronbach's alpha, are acceptable, other evidence of

reliability and validity is not up to the expected standards. The results for convergent and discriminant validity are not satisfactory. There is a possibility that the scales are tapping into a common

dimension as in Henry and Crawford's (2005) study with a British non-clinical sample. Their data pointed to a general psychological distress factor. Szabó (2010) also found a general psychological distress factors in a sample of adolescents and the present nurse sample may reflects the same.

Thus, the use of DASS-21 as a mental health screening tool should consider these limitations. It seems that even with the original wordings, the robustness of the measure is questionable. Future studies that plan to use DASS-21 should examine its validity for their sample.

Firdaus and Oei (2011) criticised the lack of robust validation for measures of depression for clinical samples in Malaysia. The present study echoes the sentiment for the wider range of mental health conditions. It seem that DASS-21 still need to be refined for use among non-clinical sample. External validation (e.g. against STAI for the anxiety dimension of DASS-21) should be considered for future research. In addition, other screening tools like the SRQ-20 (Harding, De Arango, Baltazar, Climent, Ibrahim, Ladrido-Ignacio et al., 1980) should be considered for external validation of the DASS-21.

References

- Hadi, A. A., Naing, N. N., Daud, A., Nordin, R., & Sulong, M. R. (2009). Prevalence and factors associated with stress among secondary school teachers in Kota Bharu, Kelantan, Malaysia. *Southeast Asian Journal of Tropical Medicine Public Health*, 40(6), 1359-70.
- Harding, T. W., De Arango, V., Baltazar, J., Climent, C. E., Ibrahim, H. H. A., Ladrido-Ignacio, L., & Wig, N. N. (1980). Mental disorders in primary health care: a study of their frequency and diagnosis in four developing countries. *Psychological Medicine*, 10(2), 231-241.
- Henry, J. D., & Crawford, J. R. (2005). The short- form version of the Depression Anxiety Stress Scales (DASS- 21): Construct validity and normative data in a large non-clinical sample. *British Journal of Clinical Psychology*, 44(2), 227-239.
- Lan, H. K., Subramanian, P., Rahmat, N., & Kar, P. C. (2014). The effects of mindfulness training program on reducing stress and promoting well-being among nurses in critical care units. *Australian Journal of Advanced Nursing, The*, 31(3), 22.
- Mukhtar, F., & Oei, T. P. (2011). A review on assessment and treatment for depression in Malaysia. *Depression Research and Treatment*, 2001, 1-8.
- Musa, R., Fadzil, M. A., & Zain, Z. A. I. N. I. (2007). Translation, validation and psychometric properties of Bahasa Malaysia version of the Depression Anxiety and Stress Scales (DASS). *ASEAN Journal of Psychiatry*, 8(2), 82-9.
- Musa, R., Ramli, R., Abdullah, K., & Sarkarsi, R. (2011). Concurrent Validity Of The Depression And Anxiety Components In The Bahasa Malaysia Version Of The Depression Anxiety And Stress Scales (DASS). *ASEAN Journal of Psychiatry*, 12(1).
- Nasir, M. (2011). Disordered eating behaviors, depression, anxiety and stress among Malaysian university students. *College Student Journal*, 45(2).
- Nur Azma, B. A., Rusli, B. N., Quek, K. F., & Noah, R. M. (2014). Psychometric properties of the Malay version of the Depression Anxiety Stress Scale-21 (M-DASS21) among nurses in public

- hospitals in the Klang Valley. *International Journal of Collaborative Research on Internal Medicine & Public Health*, 6(5), 109-120.
- Ramli, M., & Salmiah, M. A. (2009). Validation and psychometric properties of Bahasa Malaysia version of the Depression Anxiety and Stress Scales (DASS) among diabetic patients. *Malaysian Journal of Psychiatry*, 18(2).
- Ramli, M., Salmiah, M. A., & Nurul Ain, M. (2009). Validation And Psychometric Properties Of Bahasa Malaysia Version Of The Depression Anxiety And Stress Scales (DASS) Among Diabetic Patients. *MJP Online Early*, from http://www2.psy.unsw.edu.au/dass/malaysian/Ramli_DASS_Diabetes.pdf
- Shamsuddin, K., Fadzil, F., Ismail, W. S. W., Shah, S. A., Omar, K., Muhammad, N. A., ... & Mahadevan, R. (2013). Correlates of depression, anxiety and stress among Malaysian university students. *Asian Journal of Psychiatry*, 6(4), 318-323.
- Szabó, M. (2010). The short version of the Depression Anxiety Stress Scales (DASS-21): Factor structure in a young adolescent sample. *Journal of Adolescence*, 33(1), 1-8.