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Exploratory and confirmatory factor validation of the Dysfunctional Attitude Scale for Malays (DAS-Malay) in Malaysia

Firdaus Mukhtar, Tian P.S. Oei

Abstract

The aim of this study was to investigate the factor structure of the Malay version of the Dysfunctional Attitude Scale (DAS-Malay) in clinical and nonclinical populations. The DAS is a self-report inventory derived from Beck's cognitive theory of depression to measure beliefs constituting a predisposition to depression. The 40-item DAS-Malay was completed by 315 university students, 495 members of the general community, 167 medical patients, and 113 patients diagnosed with major depressive disorder. Through principal axis factoring, with varimax rotation, two factors were extracted; performance and self-control. Correlation with depression and other variables indicated that the DAS-Malay held good concurrent validity. In addition, sensitivity and specificity of the total scores of the DAS were evident in this study. The results showed that the DAS-Malay possesses satisfactory psychometric properties suggesting that this instrument is appropriate for use as a cognitive measure in a Malay cultural context although several issues require consideration.

1. Introduction

In Western populations, the Dysfunctional Attitude Scale (DAS) (Weissman and Beck, 1978) has been one of the leading cognitive instruments in clinical research for measuring levels of cognitive vulnerability to depression (Beck et al., 1991; Dozois et al., 2003; Free et al., 1991; Kwon and Oei, 1994; Oei et al., 2006, 1999; Oei and Sullivan, 1999) for more than 20 years. The DAS is one of the cognitive assessments that has a direct link or direction to symptoms of depression (Hill et al., 1989). For instance, when a person encounters a negative life event (e.g. fail in exam) and his/her dysfunctional attitudes include beliefs such as “If I fail the exam, I am a total failure” and “I must past the exam or else life is worthless”, the interaction between the negative life event and dysfunctional attitude will lead to negative thoughts about self, the world and the future which eventually result in the manifestation of depressive symptoms. Valid and reliable cognitive assessments are essential in order to study the relationships among life events and their link between behaviour and emotion (Hollon and Kendall, 1980). Besides that, cognitive assessment is also essential to evaluate treatment outcomes of a cognitive behavioural approach (Beck et al., 1991).

In the West, the psychometric properties of the DAS have been well-established through earlier studies. Internal consistency coefficients for the DAS have yielded results in the range of .79–.93 for university populations (Dobson and Breiter, 1983; Filip et al., 2005; Weissman and Beck, 1978) and .85 for a random adult population (Olive and Baumgart, 1985). Specifically, studies that have utilised these procedures have revealed correlation coefficients of .73 and .97 (Nelson et al., 1992; Olive and Baumgart, 1985). Besides the evidence of reliability, the concurrent validity of the DAS has been supported in the form of positive relationships with other concurrently administered measures of depressive cognition (Dobson and Breiter, 1983; Dobson and Shaw, 1986; Oliver and Baumgart, 1985). For instance, a positive relationship was found between the DAS and the Automatic Thoughts Questionnaire (ATQ) (Chioqueta and Stiles, 2004). In addition, depressed individuals scored higher on the DAS relative to nondepressed individuals (Chioqueta and Stiles, 2004; Hautzinger et al., 1985; Hill et al., 1989; Jutta, 2004).

In terms of factor structure of the DAS, Power et al. (1994) developed a short form of the DAS which consisted of three subscales with 24 items to measure three types of cognitive vulnerability; achievement, dependency, and self-control. Confirmatory Factor Analysis (CFA) confirmed that most of the items loaded onto the hypothesised factors. In a study with both depressed and nondepressed populations, Carro et al. (1998) also found three factors (success/acceptance, perfectionism, and autonomy) among Spanish populations. However, Parker et al.’s (1984)
study of a group of Australian general practice patients found four factors with 25 items, which they termed externalised self-esteem, analytic self-esteem, tentativeness, and need for approval. Since its establishment, it has been investigated in a number of different cultures ranging from Chinese (Chen et al., 1998), Dutch (Filip et al., 2005), Norwegian (Chioqueta and Stiles, 2004), Swedish (Ohr and Thorell, 1998), German (Hautzinger et al., 1985; Jutta, 2004), Spanish (Carro et al., 1998) and Turkish (Sahin and Sahin, 1992), thus exemplifying its worldwide popularity.

In the context of Malaysia, even though Cognitive Behaviour Therapy (CBT) has been practiced in clinical settings, most clinicians only use measures that assess symptoms of depression (e.g. Beck Depression Inventory) predominantly and it seems that other important variables such as cognition is overlooked. In our local study, one other measure of cognition, such as ATQ-Malay, has been validated in Malaysia (Oei and Mukhtar, 2008) with good factor structure and psychometric properties, which give evidence that the area of cognition can be explored among Malays in Malaysia.

To date, no study has been designed to assess the psychometric properties of the Malay version of the DAS (DAS-Malay) in Malaysia. Consequently, valid and reliable cognitive measures are important for two reasons; first, to establish the adequacy of this instrument specially designed to assess depressive cognitions in a Malay cultural context and second, to further investigate the theoretical and empirical validity of the cognitive behavioural approach in Malaysia.

Therefore, in light of the current psychometric status of the DAS, the objectives of the present study were to (a) examine the factor structures of the DAS in the Malay population in Malaysia, and (b) provide evidence of the psychometric properties of this scale in Malaysia so that the DAS could be used with confidence in Malaysia. It is hypothesised that the analyses of the psychometric properties of the DAS will yield a good and reliable measure for the Malays, consistent with nonWestern findings.

2. Method

2.1. Participants

A total of 1090 participants were recruited for this study. The sample consisted of 315 (28.5%) students, 495 (45.4%) members of the general community, 167 (15.3%) patients from a primary care unit, and 113 (10.4%) patients diagnosed with major depressive disorders from a psychiatric clinic. Of the participants, 75.2% of the participants were women. The participants’ ages ranged from 18 to 63 years, with a mean of 26 years. The educational backgrounds of the participants included high school certificate level (47.6%), diploma/certificate level (17.1%), and university degree (32.5%); 1% of participants had only completed primary school and 1.8% did not specify their level of education. All participants answered the questionnaires themselves with minimal guidance from research assistants because the questionnaire was in their own language (i.e. Bahasa Melayu).

2.2. Measures

The DAS is a 40-item measure of the presence of dysfunctional attitudes to life, which predispose an individual to depression (Clark et al., 1999). The items such as “I am nothing if a person I love does not love me; If a person asks for help, it is a sign of weakness” with responses attached to a 7-point Likert scale ranging from “totally agree” to “totally disagree”. Total scores are obtained by summing across the 40 items, yielding scores that range from a minimum of 40 to a maximum of 280. The scale has acceptable internal consistency (Cronbach’s alpha = .86) and concurrent validity and was able to discriminate between depressed and nondepressed samples (Hill et al., 1989). Higher scores indicate a greater propensity for belief in purportedly depressotypic attitudes.

Beck Depression Inventory (BDI)-Malay (Oei and Mukhtar, 2008) is a validated version of the original BDI (Beck et al., 1961) with 20 items that provide an indication of the level of depressed mood. Participants respond to questions in relation to how they felt over the past week. Higher total scores indicate more severe depressive symptoms. The BDI-Malay does not constitute a clinical diagnosis, but has been widely used as a tool in the assessment process, and for discerning changes in mood during treatment. This measure has been reported to possess acceptable psychometric properties with internal consistency (Cronbach’s alpha) ranging from .71 to .91 as well as acceptable validity indices (Oei and Mukhtar, 2008).

The Zung Self-Rating Depression Scale-Malay (Zung SDS-Malay) is a translated version of the original Zung SDS (Zung, 1965), which was designed for assessing depression in patients whose primary diagnosis was of a depressive disorder. The 20 items address each of the four most commonly found characteristics of depression: its pervasive effect, its physiological equivalents, other disturbances, and psychomotor effects, such as “I have trouble sleeping at night” and “I have trouble with constipation”. Ten items are worded positively and 10 items are worded negatively. Each item is scored on a scale of 1–4 (“a little of the time” to “most of the time”) with reverse scaling for the negatively worded items. Range of total score is from 20 to 80, within which most people with depression score between 50 and 69, while a score of 70 and above indicates severe depression (Zung, 1965).

The WHO Quality of Life-BREF (WHOQOL-BREF) version in Bahasa Malaysia (WHOQOL-BREF Malay) (Hasanah et al., 2003), consisting of 26 items, has been validated in Malaysia, with indications of good discriminant validity, construct validity, internal consistency (.64–.80) and test-retest reliability (.49–.88). The scale is a valid and reliable assessment of quality of life, especially for those with illness. Four domains that can be extracted from WHOQOL-BREF are physical and psychological health, social, and environment, which assesses general quality of life.

The Beck Hopelessness Scale-Malay (BHS-Malay) is a translated version of the original BHS (Beck and Steer, 1988) with a 20-item scale for measuring negative attitudes about the future. The scale’s manual claims internal consistency ranging from .82 to .93 and a test–retest reliability of .69 (Beck and Steer, 1988); examples of questions asked are “My future seems dark to me” and “I can’t imagine what my life would be like in ten years”.

2.3. Procedure

Student sample. A total of 315 undergraduates from two universities (studying medicine, dentistry, allied health sciences, and human sciences) participated voluntarily in this study to partially satisfy a research requirement of their course. All data were collected through group administrators. Each subject was provided with questionnaires as described above, with an explanation and accompanying directions for their use. A number
of nonethnically Malay students participated but their data were not included in the analysis to ensure that the conditions of this study were met.

**General community sample.** 495 out of 1500 members of the general public participated in this study by completing questionnaires with signed informed consent and returning these in envelopes supplied. The envelopes were randomly distributed in public places by research assistants.

**Medical patients sample.** The Malay medical patients were recruited from primary care clinics; an obesity clinic; ear, nose and throat clinics; and community care clinics. They completed questionnaires distributed by research assistants and returned them in envelopes supplied. Participants were excluded if they were current drug or alcohol abusers, had a history of organically based cognitive dysfunction, demonstrated reading difficulties, were not fluent in Bahasa Malaysia, or were not ethnic Malays.

**Patients with major depressive disorders.** Malay patients with depression were invited via mail, phone, or through referral from psychiatrists who had been informed of the study. A letter of invitation and information regarding the study was provided and those participants who were willing to participate presented at the psychiatric clinic for the intake procedure assessment. The second author, who works as a clinical psychologist, further evaluated the diagnosis of major depressive disorder using a structured clinical interview from the Diagnosis and Statistical Manual of Mental Disorder-4th Edition (DSM-IV) to ascertain participants’ eligibility. Participants were included if they were diagnosed as suffering from major depression or dysthymia as defined by the DSM-IV. Patients were excluded if their depression was secondary to another major psychiatric disorder (e.g. schizophrenia); if they were currently abusing drugs or alcohol; had a history of an organically based cognitive dysfunction, demonstrated reading difficulties, or were not fluent in Bahasa Malaysia.

**Translating and back-translating procedure.** Four bilingual psychologists with a Master’s degree or higher translated the Malay version of all the instruments (except WHOQOL-BREF) using back-translating procedures. A professional language interpreter was recruited to proofread the translated questionnaires to ensure their overall suitability and to resolve word ambiguity issues after translation. The back-translated versions were similar to the original versions and to each other. Minor differences concerning use of colloquial expressions in both languages were reconciled.

**Ethical Approval.** All participants gave their signed informed consent before undergoing the assessment. Ethical approval was sought from the research ethics committees belonging to the Ministry of Health of Malaysia and all the hospitals and institutions participating in this study.

2.4. Statistical analyses

The Statistical Program for the Social Sciences (SPSS version 14.0) and AMOS version 6.0 were used to analyse data in this study. Cronbach’s alpha coefficients (α) were computed to evaluate the reliability of the questionnaire, and correlations were calculated to examine the concurrent validity of the BDI, using the total sample. The CFA model fit was evaluated using multiple fit indices as suggested by Kline (1998). The selected indices were the chi-square statistics (χ²), the root mean square residuals (RMR; Bentler, 1990), the comparative fit index (CFI) (Bentler, 1990), the goodness of fit index (GFI), and the root mean square error of approximation (RMSEA; Browne and Cudeck, 1993). A good model fit is indicated by values of .90 or higher for the CFI and GFI. RMR values less than .05 reflect a close fit while values of .1 or lower indicate a reasonable fit for the RMR (Bentler, 1990). For the RMSEA, values of .05 or lower indicate a close fit while values less than .08 indicate an acceptable fit (Browne and Cudeck, 1993).

3. Results

3.1. Exploratory Factor Analysis (EFA)

It was decided to divide the total sample (N = 1090) into two groups by using the odd-even split method (Group A [n = 545]; Group B [n = 545]). Group A was used for EFA to establish the factor structure and Group B was used for CFA to confirm the DAS-M factor structures found in Group A. Following Tabachnick and Fidell’s(2001) suggestion, a principal axis factoring with varimax rotation was employed in an initial exploratory analysis. Upon examination of the correlation matrices, a substantial number of correlations lower than .33 were found suggesting favourability of the data set (Tabachnick and Fidell, 2001). Favourable values of the Kaiser–Meyer–Olkin value (.89) and a significant value (p < .001) of Bartlett’s Test of Sphericity also suggested that the data were suitable for factor analysis.

In addition, examination of the multiple correlation squared (R²) indicated that the multicollinearity and singularity were not a threat in this data set. Varimax rotation was utilised to maximise the dispersion of the loadings within factors so that loading a smaller number of variables loaded highly on each factor, thus resulting in more interpretable factor clusters (Field, 2000).

Hence, principal axis factoring with varimax rotation was conducted. A number of criteria were used to determine the most appropriate number of factors to retain: (a) minimum eigen-values of 1, (b) minimum factor loadings of .40, (c) minimal factorial complexity (multiple loading), and (d) meaningful interpretation of factors. The results indicated that two factors rotated to a simple structure using the Direct Oblimin method with Kaiser normalisation.

Using the previous criteria, two factors were extracted. Item descriptions, factor loadings, communality estimates, and factor intercorrelations are presented in Table 1. These two factors accounted for 35.34% of variance in scores. Factor 1, which was labelled performance evaluation, accounted for 26.52% of the variance while Factor 2 accounted for 8.81% of the variance. Factor 2 was subsequently labelled self-control.

3.2. Confirmatory Factor Analysis

Preliminary CFA. CFA was subsequently utilised to examine the construct validity of the two-correlated factor models extracted from EFA analysis. Initially, 20 predictors (i.e., items) were used to test the model (Table 2). However, most of the fit indices suggested a moderate fit (χ² = 517.1, df = 169, p < .001; CFI = .89; GFI = .91; RMR = .16; RMSEA = .06). Given these results, it was deemed that the model required minor respecification. Inspection of R² suggested that the number of specified latent factors was the potential source of the problem. Specifically, a substantial number of R² values less than .5 were found which cast doubt on the extent to which these items contributed to the factor they were designed to measure (Kline, 1998). Strong intercorrelations among the latent factors also suggested that the number of latent factors was also problematic. Further inspection of the standardised residuals covariance revealed several pairs of items with a large residual (>.23.8). Deletion of item 11 resulted in an improved model fit.

Final analysis of CFA. In a subsequent analysis, based on the results of modified indices, 19 items were included in a final CFA to test the fit of the model (Table 2). Using Maximum Likelihood procedures to estimate the model, most of the indices indicated a good fit (χ² = 441.1, df = 151, p < .001; CFI = .90; GFI = .90; RMR = .15; RMSEA = .05). Inspection of nonstandardised regression weights indicated significant loadings for all items. Latent factor intercorrelation of .44 implied an acceptable level of discriminant validity.
Results of the comparison of different factorial models for DAS-Malay.

<table>
<thead>
<tr>
<th>Item</th>
<th>Title</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>If I fail at my work, then I am a failure as a person. (Jika saya gagal dalam pekerjaan, bermakna saya gagal sebagai seorang manusia)</td>
<td>.73</td>
<td>.56</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>If I do not do as well as other people, it means I am an inferior human being. (Kalau saya tak buat sebagai orang lain, bermakna saya manusia yang lemah)</td>
<td>.68</td>
<td>.47</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>If a person asks for help, it is a sign of weakness. (Jika seseorang itu meminta pertolongan, itu tanda orang lemah)</td>
<td>.67</td>
<td>.50</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>I am nothing if a person I love does not love me. (Saya tak boleh gembira kecuali mereka yang saya kenal mengagumi saya)</td>
<td>.48</td>
<td>.25</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>I cannot trust other people because they might be cruel to me. (Saya tak percaya pada sesiapa pun kerana mereka mungkin akan berlaku kejam pada saya)</td>
<td>.47</td>
<td>.18</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>If someone disagrees with me, it probably indicates he does not like me. (Kalau seseorang tak setuju dengan saya, kemungkinan itu tanda dia tak suka saya)</td>
<td>.42</td>
<td>.18</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Happiness is more a matter of my attitude towards myself than the way other people feel about me. (Kegembiraan lebih bergantung pada sikap diri saya berbanding apa yang orang lain rasa terhadap saya)</td>
<td>.71</td>
<td>.52</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>I do not need the approval of other people in order to be happy. (Saya tak perlu kebenaran daripada orang lain untuk rasa gembira)</td>
<td>.52</td>
<td>.29</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>I can be happy even if I miss out on many of the good things in life. (Saya masih boleh bergembira walaupun terlepas banyak perkara baik dalam hidup ini)</td>
<td>.50</td>
<td>.26</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>It is possible for a person to be scolded and not get upset. (Boleh jadi seseorang itu upah dimarah dia tidak akan marah)</td>
<td>.48</td>
<td>.25</td>
<td></td>
</tr>
</tbody>
</table>

Eigen-values

A All 19 items (.86) 26.52 8.82

χ², chi-square statistic; df, degree of freedom; CFI, comparative fit index; GFI, goodness of fit index; RMR, root mean square residual; RMSEA, root mean square error of approximation.

<table>
<thead>
<tr>
<th>Model</th>
<th>No of items/factors</th>
<th>χ²</th>
<th>df</th>
<th>χ²/df ratio</th>
<th>CFI</th>
<th>GFI</th>
<th>RMR</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parker et al. (1984)</td>
<td>25 (4 factor)</td>
<td>1178.36</td>
<td>274</td>
<td>4.30</td>
<td>.66</td>
<td>.83</td>
<td>.22</td>
<td>.08</td>
</tr>
<tr>
<td>Power et al. (1994)</td>
<td>26 (3 factor)</td>
<td>1277.71</td>
<td>298</td>
<td>4.29</td>
<td>.64</td>
<td>.82</td>
<td>.21</td>
<td>.08</td>
</tr>
<tr>
<td>Cane et al. (1986)</td>
<td>25 (2 factor)</td>
<td>1267.67</td>
<td>274</td>
<td>4.63</td>
<td>.69</td>
<td>.82</td>
<td>.21</td>
<td>.08</td>
</tr>
<tr>
<td>Group A</td>
<td>20 (2 factor)</td>
<td>517.11</td>
<td>169</td>
<td>3.06</td>
<td>.89</td>
<td>.91</td>
<td>.16</td>
<td>.05</td>
</tr>
<tr>
<td>Group A</td>
<td>19 (2 factor)</td>
<td>441.11</td>
<td>151</td>
<td>2.92</td>
<td>.90</td>
<td>.92</td>
<td>.15</td>
<td>.05</td>
</tr>
<tr>
<td>Group B</td>
<td>19 (2 factor)</td>
<td>451.2</td>
<td>151</td>
<td>2.98</td>
<td>.90</td>
<td>.90</td>
<td>.16</td>
<td>.05</td>
</tr>
</tbody>
</table>

χ², χ²/df ratio, CFI, GFI, RMR, and RMSEA for each model.

Group B. The two-factor model was further evaluated using an independent (i.e., Group B) validation sample (N = 545). Results of the CFA for Group B are also displayed in Table 2. Using Maximum Likelihood estimation procedures, good fit indices were obtained (χ² = 483.8, df = 118, p < .001; CFI = .92; GFI = .90; RMR = .04; RMSEA = .07), suggesting the stability of its factor structure. These findings confirmed the CFA results from Group A and suggest that the factor structure for the DAS-Malay is valid and stable. CFA testing for Parker et al.'s (1984) model. The first model examined was Parker et al.'s (1984) four-factor model. Results of the fit indices were obtained (χ² = 1178.36, df = 274, p < .001; CFI = .66; GFI = .83; RMR = .22; RMSEA = .08) and the model provided a poor fit to the data. The analyses showed that Parker et al.'s (1984) four-orthogonal factors model with 25 items was not a good fit to the data set. CFA testing for Power et al.'s (1994) model. The second model tested was Power et al.'s (1994) three-orthogonal factors model. Results of the fit indices were obtained (χ² = 1277.71, df = 298, p < .001; CFI = .64; GFI = .82; RMR = .21; RMSEA = .08) and the model provided a poor fit to the data. The analyses showed that Power et al.'s (1994) three-factor model with 26 items was not a good fit to the data.

CFA testing for Power et al.'s (1994) model. The second model tested was Power et al.'s (1994) three-orthogonal factors model. Results of the fit indices were obtained (χ² = 1277.71, df = 298, p < .001; CFI = .64; GFI = .82; RMR = .21; RMSEA = .08) and the model provided a poor fit to the data. The analyses showed that Power et al.'s (1994) three-factor model with 26 items was not a good fit to the data.

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3.3. Reliability and validity of the DAS for the whole sample

(N = 1090)

3.3.1. Internal consistency

Using the whole sample, internal consistency and validity analysis were conducted. The reliability of the two latent factors...
was evaluated. Table 1 shows the internal consistency values of the DAS-Malay. Using Cronbach’s alpha to estimate the reliability coefficient, a moderate to high alpha was obtained for the overall scale (.86) and the subscales (Factor 1 = .86; Factor 2 = .79).

### 3.3.2. Concurrent validity

Concurrent validity was evaluated using the Pearson correlation coefficient. Descriptions of the scales and their intercorrelations are shown in Table 3. Evidence of concurrent validity revealed a significantly marked degree of correlation of the DAS-Malay total scores with the BDI-Malay (r = .64), the Zung SDS (.68), and the QOL (−.68), and moderate correlation with the ATQ-Malay (r = .53) and the BHS (r = .51). Furthermore, the results also revealed a significantly moderate degree of correlation between performance evaluation/dependency and the BDI-Malay (r = .52), the Zung SDS (r = .53), the WHOQOL-BREF (−.53), and the ATQ-Malay (.49) but low correlation with the BHS (r = .33). The final subscale of the DAS-Malay, self-control, showed a significantly marked degree of correlation with the Zung SDS (.61) and the WHOQOL-BREF (−.62), a moderate relationship with the BDI-Malay (.55) and the BHS (.56), and low correlation with the ATQ-Malay (.36). This illustrates that the DAS-Malay has moderate concurrent validity.

### 3.3.3. Discriminant validity

A direct discriminant analysis using all 19 items of the DAS-Malay was performed (see Table 4). Wilks’s LAMBDA, evaluated using the F-test approximation, were significant at .001 for all items. The clinical group demonstrated significantly higher mean scores on the DAS-Malay than subjects in the three nonclinical groups (Table 5). Classification subanalysis used the linear combination of all 19 items. In terms of sensitivity, the analysis indicated that the high total scores of the DAS-Malay detected that 98.2% of the nonclinical group and 56.6% of the clinical group reported high scores in factor one of the DAS-Malay. As expected, 98.2% of the nonclinical group and 56.6% of the clinical group were consistent with Western study (Cane et al., 1986) and Eastern (Mukhtar and Oei, 2000) study where it was called achievement instead. Three items (item 17, 24, and 30) that related to this theme were “One can get pleasure from an activity regardless of the end result”, “My own opinions of myself are more important than other’s opinion of me”, and “It is possible for a person to be scolded and not get upset” where a lesser score in this items means that the more vulnerable that person’s feelings and dysfunctional attitude which could possibly lead to depression. These two factors shared almost 35.34% of the variance with the 19-item subscale. In the CFA, none of the proposed factorial models were consistent with Power et al.’s (1994) study where it was called achievement instead.
from previous studies indicated a good fit to the data set. It is interesting to note that the final CFA results from Group A showed that the 19-item two-factor data provided an acceptable fit compared to other models tested. Cross-validation of Group B in the CFA also showed that the model demonstrated a good fit to the data.

The DAS-Malay proved to have sufficient internal consistency and reliability, although the Cronbach’s alpha value is lower than found in previous studies (Chen et al., 1998; Chioqueta and Stiles, 2004; Filip et al., 2005; Ohrt and Thorrell, 1998; Oliver and Baumgart, 1985; Weissman and Beck, 1978). Two subscales of the DAS-Malay, performance evaluation and self-control, yielded satisfactory reliability coefficients. The results of the present study further verified the concurrent validity of the DAS (Filip et al., 2005; Nelson et al., 1992; Ohrt and Thorrell, 1998; Weissman and Beck, 1978). Chioqueta and Stiles (2004) and Chen et al. (1998) also reported a positive relationship between the DAS and the BDI in the Norwegian and Chinese population. Our findings in the current study also showed that the total DAS-Malay scores have good sensitivity and specificity in discriminating clinical and nonclinical patients (Chioqueta and Stiles, 2004; Hautzinger et al., 1985; Jutta, 2004).

This is one of the first studies to validate the DAS-Malay for use with large and different populations and to subject two subscales to factor analysis. It presents clear evidence that the DAS-Malay is sufficiently reliable and a valid measure of depression symptoms. The major strengths of the present study include the use of a large sample (N = 1090 for both Group A and B), the use of EFA and CFA methodology and the direct application of a theoretically derived measure to a clinical setting and a specific sample. Furthermore, cross-validation of different samples using CFA strengthens the findings of this study. The limitation of this study was that the participants were mainly female and further investigation for gender differences is warranted.

In terms of application of cognitive behavioural approach in Malaysia, findings of this study have its uniqueness. This may be an influence from Malay culture where all of them are Muslim and in Islamic teaching states that followers should be responsible for their action as that will be asked for justification by Allah in the hereafter. Therefore, the new version of the DAS is more relevant and applicable to measure the dysfunctional assumptions that lead to depression with less repetition and redundancy of the items. In addition, assessment of dysfunctional assumptions of self, others and the world could give more avenues for a person to explore and validate their perception of depression that is occupied by cultural beliefs such as evil spirits or black magic. On top of this, this tool could assist clinician and researcher to offer more appropriate treatment and service to patients with mood disorders.

In conclusion, the findings show that the DAS-Malay is marginally acceptable and has satisfactory psychometric properties for both CFA and reliability results. Hence, further validation is worthy of attention in future research in order to measure cognitive vulnerabilities of depression among Malays in Malaysia in a more precise and culturally sensitive way.

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Contributors

Second author designed the study and provides professional advice and guidance on statistical analysis. First author managed the literature searches, data collection, prepare analyses and wrote the first draft of manuscript. All authors contributed to and have approved the final manuscript.

Conflict of interest

There are no conflicts of interest in this study as far as the authors are concerned.

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