Research Article

Psychometric Properties of the Anxiety Attitude and Belief Scale in an Asian Community Group

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Abstract

Background: This study examined the psychometric properties of the Anxiety Attitude and Belief Scale (AABS), a measure of attitudes and beliefs intended to index a psychological vulnerability to anxiety problems, in an Asian context.

Methods: Exploratory factor analysis was performed on sample of 434 community participants from Singapore, who were predominantly ethnic Chinese.

Results: A revised factor structure of the scale (AABS-A) comprising of three factors, namely Catastrophising, Vigilance/Avoidance, and Reasonable Anxiety-Related Beliefs, was found. Internal consistency was satisfactory for the total scale and the three factor scales derived. Concurrent and discriminate validity of the AABS-A were also good.

Conclusion: Study results suggest that the AABS-A is a valid and reliable instrument for assessing anxiety-related attitudes and beliefs in Asian, in particular Singaporean, community samples.

Keywords: Anxiety; Attitude; Belief; Reliability; Validity; Asia

Introduction

Psychometric Properties of the Anxiety Attitude and Belief Scale (AABS) in an Asian Sample. The role of cognition is underscored in the development and maintenance of anxiety problems, specifically pertaining to the chronic over-activity of schemas involving beliefs organized around themes of danger, harm to self, and personal vulnerability or inability to cope [1,2]. Despite playing a central role in cognitive theories of anxiety, anxiety-related beliefs/attitudes have remained less researched relative to alternative cognitive models of anxiety such asanxiety-related transitory situational automatic thoughts (e.g., Cognition Checklist, Scale A) and Agoraphobic Cognitions [3]. Also, few measures are available to assess enduring beliefs/attitudes that predispose individuals to anxiety reactions and symptoms [4]. Pinpointing predisposing anxious attitudes/beliefs may contribute towards current understanding of processes leading up to overt manifestations of anxiety symptoms [4].

In view of the above, Brown et al. [4] argued that a gross assessment of conscious verbal productions may overlook the contributions of anxiety-related cognitions in an individual's presentation of anxiety symptoms such as fear and worry. Therefore, using Exploratory Factor Analysis (EFA), Brown and colleagues [4] developed the Anxiety Attitude and Belief Scale (AABS; with its 3 subscales: Catastrophising, Vigilance/Avoidance, and Reasonable Anxiety-Related Beliefs) to assess enduring attitudes/beliefs that potentially predisposes one to anxiety symptoms. Good psychometric properties and adequate reliability were demonstrated for the AABS [4].The psychometric properties of the AABS have yet to be replicated by other independent researchers or validated with other cultural populations. It is necessary to generalize the study findings to populations beyond that of the original research. Replication in support of findings from Brown et al. would strengthen confidence in the use of AABS in further research.

Previous studies have noted higher pessimism in Asians residing in western countries, which relate positively with self-reported anxiety and depression symptoms [5]. Studies have also noted higher self-reported mean scores on anxiety and depression measures, lower levels of global happiness and life satisfaction, and less frequencies of positive affect among East Asian than North American populations [6,7]. Some cross-cultural and social psychological theories have been proposed to explain these findings. For instance, the Japanese have been suggested to experience lower positive self-regard than western populations, possibly from the practice of self-criticism and perfectionism [6,8]. Considering these cross-cultural differences, the significance of identifying anxiety-related attitudes/beliefs as previously discussed, and also the importance of measurement equivalence in assessing psychological constructs across cultures, is critical [7]. Possibly, processes of change in the development and maintenance of anxiety symptoms that are unique to the Asian setting could be highlighted [7].

Based on the National Mental Health Survey of Adults in Singapore [9], prevalence rates of anxiety disorders in Singapore are higher than that of other Asian countries like China (1.2%) and Japan (1.2%) [10]. Considering this, as well as a potential risk for anxiety among Asian populations as highlighted above, the development of a reliable and valid instrument for assessing anxiety-related beliefs/attitudes in an Asian-dominated population such as Singapore is useful and necessary [6,7]. Identifying a pattern of anxiety-related beliefs/attitudes in a sample of Singaporeans may reveal important

cognitions and schemas unique to this group, which may also be helpful in therapeutic settings [4]. Thus, the present study sought to establish the psychometric properties of the AABS in a Singaporean community sample [11]. In view of possible cultural differences in the experiences and presentation of anxiety symptoms between Asian and western samples, a different factor structure of the AABS could emerge for the Singaporean sample [12]. However, as there have not been any past studies evaluating the AABS in the Singapore population, the study did not make any specific hypotheses on the factor structure and adopted an open-ended approach towards the examination of the factor structure of the AABS. In addition, the study also investigated the concurrent and discriminate validity of the AABS.

Methods

Participants

434 participants (age range = 21 to 74 years; M = 43.14; SD = 14.48) participated. The sample consisted of 157 males (M= 44.55 years, SD = 15.18) and 277 females (M= 42.32 years, SD = 14.04). Consistent with the multi-ethnic composition of Singapore, 85.7% of the participants were Chinese, 8.1% were Malays, 4.8% were Indians, and 0.9% was of other ethnic groups. The majority of the participants (53.2%) indicated that English was their first language, followed by Mandarin (37.1%), Malay (5.8%), Hindi/Tamil (0.9%), and other languages (2.5%).

Procedure

Participants were recruited through advertising in the local community and by word of mouth. Each participant provided written consent prior to study participation, and was assured of their confidentiality and right to withdraw from participation at any stage of the study. Study questionnaires were given by hand or mailed to each participant who returned the completed questionnaire anonymously using pre-paid envelopes. Instruments were administered to all participants. Each participant took an average of 30 minutes and received no incentives to complete the questionnaires. The study was cleared in accordance with the ethical review process of the University of Queensland. Study procedures conformed to the provisions of the Declaration of Helsinki in 1995 (as revised in Edinburgh 2000) [13].

Measures

Demographic information questionnaire: Data on gender, age, marital status, race, religion, first language, country of birth, highest education level attained, employment status, and occupation were gathered in a one-page questionnaire developed by the researcher.

Anxiety Attitude and Belief Scale (AABS): The AABS is a 36-item self-report inventory measuring attitudes and beliefs intended to index a psychological vulnerability to anxiety problems. Respondents indicate a score (from 1 to 7) on each item and the total score is the summation of item scores, with higher scores representing greater maladaptive thinking. Initial psychometric properties of the AABS, including reliability, and discriminant, concurrent and predictive validities were established in an undergraduate sample [4].

Dysfunctional Attitudes Scale (DAS): The DAS is a 40-item, self-report inventory designed to assess attitudes or beliefs (e.g., concerns about approval from others, prerequisites for happiness,

and perfectionistic standards) associated with a vulnerability to depression [14,15]. Respondents indicate a score (from 1 to 7) on each item and the total score is the summation of item scores, with higher scores representing greater maladaptive thinking. The DAS demonstrated good reliability and validity in both clinical and community populations and has also been validated in different language and cultural samples [16]. A Chinese version of the DAS also demonstrated sound psychometric properties (i.e., test-retest r = .87; Cronbach's alpha coefficient=.95) in an adult sample in Hong Kong [17].

Anxiety Control Questionnaire (ACQ): The ACQ is a 30-item, self-report inventory designed to assess perceptions of control over potentially threatening internal and external events. After reverse scoring 18 items, the total score is obtained by the summation of all items, with higher scores representing higher levels of perceived control. Good internal consistency has been demonstrated in clinical samples and an undergraduate sample [18-20].

Anxious Self-Statements Questionnaire (ASSQ): The ASSQ is a 32-item self-report inventory measuring the frequency of anxiety-related, cognitive self-statements experienced by the respondent [21]. Respondents indicate a score choosing from 1("Not at all") to 5 ("All the time") to rate the frequencies of anxious self-statements that occurred to them over the past week. The Asian version of the ASSQ (ASSQ-A) was used in this study, which has been shown to possess good internal consistency with Cronbach's alpha coefficient of .91 [22].

Depression Anxiety and Stress Scales (DASS-21): The DASS-21 is a 21-item self-report inventory measuring negative emotional states of depression, anxiety and stress [23]. Very good reliability estimates were found in psychiatric and non-clinical samples and good construct, convergent, and discriminant validities have also been demonstrated [24-26]. The DASS-21 is valid and reliable in Asian samples [27].

Results

Preliminary Data Analyses

Preliminary data screening was conducted with Statistical Package for the Social Sciences (SPSS) 15.0. Missing data (< 5%) were randomly scattered throughout the data set and was treated using the Expectation Maximization (EM) algorithm. Positive skewness was noted for the DASS total score, and the ASSQ total score. This was not unexpected given the use of non-clinical subjects. Transformation of the variables did not alter the interpretation of results significantly. Therefore, results of analyses with untransformed data were interpreted. An investigation of Mahalanobis' distances revealed 15 multivariate outliers, which were removed for further analysis. Multicollinearity was not evinced in the data. Examination of the residuals scatter plot and the normal probability plot indicated normality, linearity, and homoscedasticity of the residuals.

Exploratory Factor Analysis

As the AABS has not been validated using an Asian sample previously, exploratory factor analysis was employed to establish the factor structure of the AABS appropriate for the current Singapore sample. The 36 items of the AABS were subjected to Principal

Components Analysis (PCA) using SPSS 15.0. Prior to performing PCA, the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of several coefficients of .3 and above. The Kaiser-Meyer-Oklin value was .86, exceeding the recommended value of .6, indicating sampling adequacy [28]. Barlett's Test of Sphericity [29] reached statistical significance ($p <$ .001), indicating that relationships existed between at least some of the items and thus, supporting the factorability of the data.

An investigation of the loading matrices suggested the removal of four items due to low factor loadings (minimum factor loading = 0.40). 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 0.40, and (c) meaningful interpretation of individual factors. An investigation of the loading matrices suggested the removal of four items due to low factor loadings. The results indicated that the model most concordant with these criteria was a three-factor solution rotated to simple structure using the Varimax method with Kaiser normalization. The screen test and number of eigen values greater than one supported the decision to accept a three-factor solution. Together, the three factors explained 39% of the variance in the items, with factor 1 to factor 3 contributing 15.1% (eigen value = 6.86), 14.7% (eigen value=3.29), and 9.2% (Eigen value = 2.33), respectively. The factor loadings and communalities were good, suggesting that the items were satisfactorily explained by the three underlying factors (conceptual fit). Item content, factor loadings, and communalities of the remaining 32 items are shown in Table 1.

The first factor consisted of 11 items that reflected an anticipation of catastrophic outcomes, and was labeled the 'Catastrophising' subscale. The second factor consisted of 13 items that reflected vigilance/avoidance of danger and was labeled the 'Vigilance/ Avoidance' subscale. The third factor emerged with nine items, which reflected reasonable/adaptive beliefs of perceived danger. As one of the items on Factor 3 (i.e., "If I see something bad happening to someone else, I think it could happen to me too") also cross-loaded on Factor 1, the item was excluded from the final factor structure (see Table 1, Item 24). Thus, the third factor contains eight items reflecting reasonable/adaptive beliefs of perceived danger and was labeled 'Reasonable Anxiety-Related Beliefs'. The conceptual interpretations of Factors 1 and 2 (but not Factor 3) were consistent with two of the three factors in the original AABS [4]. All the 13 items of Factor 2 in the present results were fully identical to all the 13 items that made up the 'Vigilance/Avoidance' subscale of the AABS [4]. Furthermore, six out of the 11 items that made up Factor 1 in the present results were identical to the 12-item 'Catastrophising' subscale of the AABS [4]. It is notable that about 4 out of 12 items from the original AABS 'Catastrophising' subscale loaded onto Factor 3 ('Reasonable Anxiety-Related Beliefs') and 5 out of 11 items from the original AABS 'Imagination' subscale loaded onto Factor 1 ('Catastrophising'). Findings suggest possibilities of similarities between the two AABS subscales especially when the AABS is applied to a different cultural group, and these are further discussed in the Discussion section Table 1.

Reliability of the Anxiety Attitude and Belief Scale-Asian Version (AABS-A)

The Cronbach's alpha values for the AABS-Asia (AABS-A) total and the three subscales are presented in Table 1. From Table 1, the AABS-A total scale possessed good internal consistency, with a Cronbach's alpha coefficient of .87 in the current sample. The Cronbach's alpha values were also high for the 'Catastrophising' and 'Vigilance/Avoidance' subscales, both with a Cronbach's alpha coefficient of .84.

Inter-correlations of the three AABS-A factors

Correlations between the three factors ranged from low to moderate (see Rows 1 to 3, Columns 1 to 3 in Table 2). Specifically, the Catastrophising factor was significantly and positively correlated with (i) Vigilance/Avoidance ($r = .39$, $p < .001$); and (ii) Reasonable Anxiety-Related Beliefs ($r = .44$, $p < .001$). The Vigilance/Avoidance factor was significantly and positively related with Reasonable Anxiety-Related Beliefs ($r = .22$, $p < .001$). Hence, the factors measured by the AABS-A appeared to be conceptually distinct Table 2.

Concurrent validity

The results showed that the AABS-A total and the DAS total were significantly and positively correlated ($r = .62$, $p < .001$). All three subscales of the AABS-A were also significantly and positively correlated with DAS total score (i.e., Catastrophising: $r = .62$, $p < .001$; Vigilance/Avoidance: $r = .42$, $p < .001$; and Reasonable Anxiety-Related Beliefs: $r = .24$, $p < .001$).

Further evidence of concurrent validity was also indicated. AABS-A total score significantly and positively correlated with (i) psychological status as indicated by the DASS total score ($r = .34$, $p < .001$); (ii) anxiety symptoms as indicated by DASS-A score ($r = .31$, $p < .001$); (iii) stress symptoms as indicated by the DASS-S score ($r = .28$, $p < .001$); and (iv) anxiety self-statements as indicated by the ASSQ-A score ($r = .28$, $p < .001$). The AABS-A total was also significantly and negatively correlated with scores on the Anxiety Control Questionnaire ($r = -.45$, $p < .001$).

At the subscale level, the AABS-A Catastrophising subscale significantly and positively correlated to (i) DASS total score ($r = .39$, $p < .001$); (ii) DASS-A score ($r = .38$, $p < .001$); (3) DASS-S score ($r = .31$, $p < .001$); and (iii) ASSQ-A score ($r = .38$, $p < .001$). The AABS-A Catastrophising subscale also significantly and negatively correlated with anxiety control, $r = -.49$, $p < .001$.

For the AABS-A Vigilance/Avoidance subscale, it was significantly and positively correlated with (i) DASS total score ($r = .15$, $p < .001$); (ii) DASS-A score ($r = .12$, $p < .001$); (iii) DASS-S score ($r = .14$, $p < .001$); and (iv) ASSQ-A score ($r = .05$, $p < .001$). The AABS-A Vigilance/Avoidance subscale was also significantly and negatively correlated with ACQ total scores, $r = -.23$, $p < .001$. However, this is to be interpreted with caution in view of the strength of the correlations. Findings are further discussed in the Discussion section.

Finally, the AABS-A Reasonable Anxiety-Related Beliefs subscale was significantly and positively related to (i) DASS total score ($r = .25$, $p < .001$), (ii) DASS-A score ($r = .24$, $p < .001$), (iii) DASS-S score ($r = .18$, $p < .001$), and (iv) ASSQ-A score ($r = .26$, $p < .001$); and significantly and negatively correlated with ACQ total scores, $r = -.32$, $p < .001$.

Discriminate validity

Table 1: Factor Loadings, Communalities, Cronbach's Alphas, % Variances, Means and Standard Deviations for the 32-item AABS-A.

	Items	Communalities	Catastrophising	Vigilance/ Avoidance	Reasonable Anxiety-Related Beliefs
22	If I'm feeling relaxed, I'm suspicious that there's something I should be concerned about that I'm not aware of.	.60	.75	--	--
17	If things are going right, then something is bound to go wrong.	.47	.68	--	--
23	There are any number of problems aroundthe corner that are just about to happen.	.52	.66	--	--
20	It is possible to go crazy in an instant.	.47	.66	--	--
27	If I can imagine something undesirable happening, it might make it come true.	.40	.63	--	--
28	I need to avoid thinking about the bad things that I hear of happening to others as it will cause the same thing to happen to me.	.43	.62	--	--
18	Doctors don't always tell you the truth about serious illnesses.	.30	.54	--	--
29	Thinking negative thoughts means I am a bad person.	.42	.53	--	--
33	If I feel an unusual physical sensation, there must be something serious causing it.	.37	.51	--	--
14	It is possible that I could suddenly lose control and begin to behave in a way that is completely different from my usual behaviour.	.26	.49	--	--
34	If I feel anxious, something must be wrong.	.32	.45	--	--
2	I'd rather keep things that way they are than risk a disaster.	.47	--	.68	--
9	My life will be safer id I completely avoid anything dangerous.	.55	--	.67	--
10	To avoid disasters, you need to be prepared for anything.	.44	--	.61	--
12	It is better not to rock the boat than to make changes.	.52	--	.61	--
13	It is better to be over-prepared for a potential disaster than to be caught unprepared.	.44	--	.60	--
6	Other people should not see you losing control of yourself in any way.	.36	--	.58	--
7	You should take your time and think long and hard about a decision or you will make the wrong choice.	.37	--	.57	--
5	One should always be on the lookout for trouble that might be developing.	.42	--	.53	--
3	If I can anticipate something bad that might happen in the future I have a better chance of avoiding it or trying to prevent it from happening.	.44	--	.53	--
1	Other people should not see you acting strangely.	.25	--	.50	--
4	I prefer to carry out my activities when nobody is watching me.	.28	--	.46	--
11	If I ignore my worries then I am irresponsible.	.26	--	.42	--
21	A catastrophe can happen to anyone at any time.	.39	--	--	.62
15	A medical catastrophe can happen to me anytime.	.40	--	--	.57
16	What starts out as a small difficult can easily develop into a major catastrophe.	.44	--	--	.55
26	Just because I can imagine something happening doesn't mean that it will come true.	.33	--	--	.50
32	It is better to face uncertain situations than to avoid them and continue to worry about them.	.24	--	--	.45
24	If I see something bad happening to someone else, I think it could happen to me too.	.39	.43	--	.45
19	If I feel something unusual happening in my body, it might not be anything dangerous now, but could develop into something serious later.	.30	--	--	.44
30	Not every unusual physical sensation is a sign of something seriously wrong with my body.	.22	--	--	.43
	% Variance		15.12	14.68	9.19
	Cronbach's Alpha		.84	.84	.67
	Mean		39.41	61.97	33.07
	(Standard Deviation)		11.25	12.07	5.30

Note: All factor loadings ≥.40 are shown.

The AABS-A subscale and total scores were tested for their ability to differentiate between the high versus low anxiety groups involved in the current study. Participants were divided into two groups: Group 1 (i.e., DASS-Anxiety subscale score ≤ 7) and Group 2 (i.e., DASS-A subscale score >7). This cutoff was chosen based on the mean DASS-A subscale score (i.e., 6.86) in the current sample and the cut-off of 7 was also consistent with the DASS scoring interpretation with a score > 7 falling within the clinical range [23]. Independent-samples t-tests were conducted to compare the AABS-A subscale and total scores of respondents from the high-versus low-anxiety groups. Results are presented in Table 3. Significant differences were revealed between the groups in total AABS-A score, t (431) = -5.45, $p < .001$,

Table 2: Correlations between the Three AABS-A Subscales, DAS total, DASS Depression, Anxiety, Stress Subscales and Total, ASSQ-A Total, and ACQ-A Total.

	AABS-A Catastrophising	AABS-A Vigilance/ Avoidance	AABS-A Reasonable Anxiety-Related Beliefs	DAS Total	DASS - Depression	DASS - Anxiety	DASS - Stress	DASS Total	ASSQ-A Total	ACQ-A Total
AABS-A Catastrophising	1	.39**	.44**	.62**	.37**	.38**	.31**	.39**	.38**	-.49**
AABS-A Vigilance/ Avoidance	-	1	.22**	.42**	.14**	.12**	.14**	.15**	0.05	-.23**
AABS-A Reasonable Anxiety-Related Beliefs	-	-	1	.29**	.25**	.24**	.18**	.25**	.26**	-.32**

*p< 05. ** p< .01

Table 3: Mean differences between High versus Low Anxiety, Stress, and Depression Groups on the AABS-A Subscales and Total Scale.

	Low anxiety (n=263)		High anxiety (n=171)		Low stress (n=247)		High stress (n=187)		Low depression (n=247)		High depression (n=187)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AABS-ACatastrophising	36.78	10.86	43.46	10.65	37.28	11.18	42.22	10.74	36.33	11.09	43.48	10.13
AABS-A Vigilance/ Avoidance	60.96	12.33	63.55	11.53	60.91	12.68	63.39	11.09	60.52	12.56	63.89	11.15
AABS-A Reasonable Anxiety-Related Beliefs	32.31	5.25	34.39	5.11	32.62	5.42	33.66	5.08	32.33	5.34	34.04	5.08
AABS-A Total	129.94	21.73	141.40	20.77	130.81	22.57	139.26	20.44	129.15	22.11	141.40	20.01

and scores on the AABS-A factors: Catastrophising, $t(432)= -6.31$, $p < .001$; Vigilance/Avoidance, $t(431) = -2.19$, $p< .05$; and, Reasonable Anxiety-Related Beliefs, $t(432) = -4.29$, $p< .001$. High-anxiety respondents scored significantly higher on the total AABS-A and three subscales than low-anxiety respondents. Hence, the AABS-A total and its three subscales were able to discriminate between high versus low anxiety respondents in the current sample providing support for the theoretical construct of anxious attitudes and beliefs in the AABS Table 3.

Given significant findings on the relationships between anxiety attitudes/beliefs, and depression and stress in previous studies, the above analyses were repeated to investigate the ability of the AABS-A to differentiate between high versus low stress, and high versus low depression groups [18,30,31]. Mean DASS-Stress and DASS-Depression subscale scores in the current sample were used to divide the participants into the respective groups. A similar pattern of results was demonstrated, i.e., the AABS-A total scale [Stress: $t(431)= -4.02$, $p < .001$; Depression: $t(431)= -5.95$, $p < .001$] and its three subscales were able to discriminate between high versus low stress [Catastrophising, $t(432) = -4.63$, $p < .001$;Vigilance/Avoidance, $t(431) = -2.13$, $p< .05$; and Reasonable Anxiety-Related Beliefs, $t(431) = -4.02$, $p< .001$], and high versus low depression [Catastrophising, $t(432) = -6.90$, $p < .001$; Vigilance/Avoidance, $t(431) = -2.90$, $p< .05$; and Reasonable Anxiety-Related Beliefs, $t(432) = -3.36$, $p< .001$] respondents in the current sample (Table 2). Hence, the AABS-A total and its three subscales were able to discriminate between individuals scoring high or low on stress, and individuals scoring high or low on depression, providing additional support to the construct validity of the AABS-A in view of relationships between anxiety attitudes/beliefs, and depression and stress established previously [18,30,31].

Gender differences

Significance tests of mean differences using *t*-tests were conducted to examine gender differences in the AABS-A subscale and total scores. Results showed no significant differences in mean scores between gender groups and this was also noted for all subscale and total scores of the AABS-A.

Discussion

The present study examined the psychometric properties of the AABS in an Asian, in particular, Singaporean sample. The results showed that the AABS-A is a suitable measure for assessing anxiety-related attitudes and beliefs in a Singapore community sample. The Catastrophising and Vigilance/Avoidance factors of the AABS-A were generally consistent with results from Brown et al. [4]. However, some differences were observed in the content of the third factor. While Brown et al. [4] identified the factor of "Imagination", which contained items loading on metacognitive beliefs regarding the relationship between thoughts and danger, the present study revealed a third factor labeled as "Reasonable Anxiety-Related Beliefs", which contained items reflecting relatively reasonable and less dysfunctional beliefs of perceived danger. This may be influenced by cultural differences in the conception of anxiety-related beliefs/attitudes. For instance, higher depression and anxiety scores and lower positive affect have previously been observed in various East Asian cultural groups than in North American populations [7]. Relating this to the current study sample, participants may also have presented with pre-existing negative emotional valence, and so were inclined to endorse certain anxiety-related beliefs (e.g., "A catastrophe can happen to anyone at any time") that might have been normalized and perceived as more reasonable/acceptable than other attitudes/beliefs in the scale. On the other hand, related with their Asian heritage, current participants might also have held fatalistic philosophies/ attitudes towards life events or have adopted Buddhist religious beliefs that present suffering as the result of sins committed in earlier incarnations [32]. This might explain for items that have loaded on the "Catastrophising" factor in the AABS-A (despite belonging to the "Imagination" factor in the original AABS), as individuals of Asian heritage have been suggested to adopt definite and fatalistic thinking towards unusual life events [6,8].This is a possibility to note when therapy professionals work with populations of Asian heritage on anxiety problems.

The present results also demonstrated positive correlations between the AABS-A, and dysfunctional attitudes, anxious self-

statements, anxiety control, and anxiety, depression and stress symptoms, which support the concurrent validity of the scale. It is to note that the AABS-A factor, "Vigilance/Avoidance", presented with the weakest (albeit significant)set of correlations with the abovementioned constructs, as compared with the "Catastrophising" and "Reasonable Anxiety-related Beliefs" (see Row 2 in Table 2).Thus, the factor "Vigilance/Avoidance" could potentially measure a unique aspect of anxiety beliefs that pertains to acts of avoidance or staying vigilant to avoid negative events (e.g.,"If I can anticipate something bad that might happen in the future, I have a better chance of avoiding it or trying to prevent it from happening.") and is differentiated from traditional understanding of anxiety as negative self-cognitions. Providing further support, responses on the AABS-A "Vigilance/Avoidance" factor did not correlate significantly with the ASSQ total scores measuring anxiety self-statements, and was most strongly correlated DAS total scores measuring attitudes on seeking others' approval or setting pre-requisites for happiness (ref. Row 2 in Table 2).

Somewhat consistent with findings from Brown et al. [4], the present study also demonstrated discriminate validity of the AABS-A and all its three subscales between low versus high anxiety individuals in the current sample. As such, the results add on to current literature supporting the roles of beliefs/attitudes in the maintenance of anxiety symptoms/problems [1,2,4].

The implications of present findings include the use of the AABS-A in assessing attitudes/beliefs that may predispose anxiety symptoms among individuals residing in the Singaporean/Asian setting. Further validation of the AABS-A using samples of clinically anxious individuals may render the tool useful as an overt measure of anxiety-related attitudes/beliefs in the research of anxiety-related cognitions and/or the monitoring of treatment progress. Identifying prior attitudes/beliefs that may lead to the development of anxiety symptoms may be useful for preventive efforts in the greater Singapore population, especially for individuals at risk of developing anxiety disorders.

Conclusion

The study findings suggested good psychometric properties of the AABS-A and its suitability for assessing anxiety-related attitudes/beliefs in a Singaporean/Asian community sample.

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