

ATTITUDES	7 TOTALLY AGREE 6 AGREE VERY MUCH 5 AGREE SLIGHTLY 4 NEUTRAL	3 DISAGREE SLIGHTLY 2 DISAGREE VERY MUCH 1 TOTALLY DISAGREE
1. I can find happiness without being loved by another person.		
2. People will probably think less of me if I make a mistake.		
3. People who have the marks of success (good looks, fame, wealth) are bound to be happier than people who do not.		
4. There is no value in getting upset about making mistakes.		
5. It is best to give up your own interests in order to please other people.		
6. Criticism need not upset the person who receives the criticism.		
7. I must be a useful, productive, creative person or life has no purpose.		
8. I can find greater enjoyment if I do things because I want to, rather than to please other people.		
9. By controlling the way I interpret situations, I can control my emotions.		
10. I should be happy all the time.		
11. Turning to someone else for advice or help is an admission of weakness.		
12. If people consider me unattractive it need not upset me.		
13. If you cannot do something well, there is little point in doing it at all.		
14. I can be happy even if I miss out on many of the good things in life.		

ATTITUDES	7 TOTALLY AGREE	3 DISAGREE SLIGHTLY
	6 AGREE VERY MUCH	2 DISAGREE VERY MUCH
	5 AGREE SLIGHTLY	1 TOTALLY DISAGREE
	4 NEUTRAL	

15. If someone performs a selfish act, this means he is a selfish person.	
16. What other people think about me is very important.	
17. An unpleasant event does not make me sad. I make myself sad by what I tell myself.	
18. If I ask a question, it makes me look inferior.	
19. If a person is indifferent to me, it means he does not like me.	
20. People should prepare for the worst or they will be disappointed.	
21. Happiness is more a matter of my attitude towards myself than the way other people feel about me.	
22. People should have a reasonable likelihood of success before undertaking anything.	
23. I should be able to please everybody.	
24. If I demand perfection in myself, I will make myself very unhappy.	
25. Even though a person may not be able to control what happens to him, he can control what he thinks.	
26. It is possible to gain another person's respect without being especially talented at anything.	
27. You can be a happy person without going out of your way to please other people.	
28. It is shameful for a person to display his weakness.	

ATTITUDES	7 TOTALLY AGREE	3 DISAGREE SLIGHTLY
	6 AGREE VERY MUCH	2 DISAGREE VERY MUCH
	5 AGREE SLIGHTLY	1 TOTALLY DISAGREE
	4 NEUTRAL	

29. It is not necessary to stop myself from doing something for my own welfare simply because it might displease another person.	
30. If a person has to be alone for a long period of time, it follows that he has to feel lonely.	
31. A person should try to be the best at everything he undertakes.	
32. I can take responsibility only for what I do, not what other people do.	
33. People who have good ideas are more worthy than those who do not.	
34. Just because I believe I deserve something, I have no reason to expect that I will get it.	
35. If a person is not a success, then his life is meaningless.	
36. If others dislike you, you cannot be happy.	
37. Taking even a small risk is foolish because the loss is likely to be a disaster.	
38. It is not necessary to become frustrated if one finds obstacles to getting what he wants.	
39. If I do not do as well as other people, it means I am an inferior human being.	
40. I may be able to influence other people's behavior but I cannot control it.	
41. I should be upset if I make a mistake.	
42. If I make a foolish statement, it means I am a foolish person.	

ATTITUDES	7 TOTALLY AGREE	3 DISAGREE SLIGHTLY
	6 AGREE VERY MUCH	2 DISAGREE VERY MUCH
	5 AGREE SLIGHTLY	1 TOTALLY DISAGREE
	4 NEUTRAL	

43. A person cannot change his emotional reactions even if he knows they are harmful to him.	
44. I should always have complete control over my feelings.	
45. My life is wasted unless I am a success.	
46. If people whom I care about do not care for me, it is awful.	
47. If I fail at my work, then I am a failure as a person.	
48. I can enjoy myself even when others do not like me.	
49. If I don't set the highest standards for myself, I am likely to end up a second-rate person.	
50. I do not need other people's approval for me to be happy.	
51. If I do not do well all the time, people will not respect me.	
52. A person should think less of himself if other people do not accept him.	
53. One should look for a practical solution to problems rather than a perfect solution.	
54. My value as a person depends greatly on what others think of me.	
55. If I do well, it is probably due to chance: if I do badly, it is probably my own fault.	
56. A person should do well at everything he undertakes.	

ATTITUDES	7 TOTALLY AGREE	3 DISAGREE SLIGHTLY
	6 AGREE VERY MUCH	2 DISAGREE VERY MUCH
	5 AGREE SLIGHTL	1 TOTALLY DISAGREE
	4 NEUTRAL	

57. If someone disagrees with me, it probably indicates that he does not like me.	
58. The way to get people to like you is to impress them with your personality.	
59. I cannot be happy unless most people I know admire me.	
60. My own opinions of myself are more important than others' opinions of me.	
61. If I do not treat people kindly, fairly, and considerately, I am a rotten person.	
62. People should be criticized for making mistakes.	
63. It is possible for a person to be scolded and not get upset.	
64. If I try hard enough I should be able to excel at anything I attempt.	
65. It is difficult to be happy unless one is good looking, intelligent, rich, and creative.	
66. I cannot trust other people because they might be cruel to me.	
67. I do not need the approval of other people in order to be happy.	
68. It is necessary to have help in order to cope with life's problems.	
69. It is not possible for a person to accomplish everything he wants.	
70. There's no value in criticizing myself for my mistakes.	

ATTITUDES	7 TOTALLY AGREE	3 DISAGREE SLIGHTLY
	6 AGREE VERY MUCH	2 DISAGREE VERY MUCH
	5 AGREE SLIGHTL	1 TOTALLY DISAGREE
	4 NEUTRAL	

71. It is awful to be disapproved of by people important to you.	
72. If you don't have other people to lean on, you are bound to be sad.	
73. People will like me even if I am not successful.	
74. A person cannot survive without the help of other people.	
75. I should set higher standards for myself than other people.	
76. If other people know what you are really like, they will think less of you.	
77. Making mistake is fine because I can learn from them.	
78. If I put other people's needs before my own, they should help me when I want them to do something for me.	
79. Whenever I take a chance or risk I am only looking for trouble.	
80. If a person avoids problems, the problems tend to go away.	
81. I have to impress new acquaintances with my charm, intelligence, or wit or they won't like me.	
82. People can learn to be completely independent.	
83. People should be criticized for their mistakes.	
84. No one can hurt me with words. I hurt myself by the way I choose to react to their words.	

ATTITUDES	7 TOTALLY AGREE	3 DISAGREE SLIGHTLY
	6 AGREE VERY MUCH	2 DISAGREE VERY MUCH
	5 AGREE SLIGHTLY	1 TOTALLY DISAGREE
	4 NEUTRAL	

85. Others can care for me even if they know all my weaknesses.	
86. I should try to impress other people if I want them to like me.	
87. If I fail partly, it is as bad as being a complete failure.	
88. I am nothing if a person I love doesn't love me.	
89. People will reject you if they know your weaknesses.	
90. A person should be able to control what happens to him.	
91. I can reach important goals without slave driving myself.	
92. My happiness depends on other people more than it does on me.	
93. One can get pleasure from an activity regardless of the end result.	
94. A person doesn't need to be well liked in order to be happy.	
95. If a person I love does not love me, it means I am unlovable.	
96. Being isolated from others is bound to lead to unhappiness.	
97. If a person asks for help, it is a sign of weakness.	
98. If I am to be a worthwhile person, I must be truly outstanding in at least one major respect.	

at

ATTITUDE	7 TOTALLY AGREE	3 DISAGREE SLIGHTLY
	6 AGREE VERY MUCH	2 DISAGREE VERY MUCH
	5 AGREE SLIGHTLY	1 TOTALLY DISAGREE
	4 NEUTRAL	

99. I ought to be able to solve my problems quickly and without a great deal of effort.	
100. To be a good, moral, worthwhile person, I must help everyone who needs it.	

NAME: _____

DAS

This inventory lists different attitudes or beliefs which people sometimes hold. Read **EACH** statement carefully and decide how much you agree or disagree with the statement.

For each of the attitudes, show your answer by using the number code given below that **BEST DESCRIBES WHAT YOU THINK**. Be sure to choose only one number for each attitude. Because people are different, there is no right answer or wrong answer to these statements.

To decide whether a given attitude is typical of your way of looking at things, simply keep in mind what you are like **MOST OF THE TIME**.

Example:

ATTITUDES	7 TOTALLY AGREE	3 DISAGREE SSLIGHTLY
	6 AGREE VERY MUCH	2 DISAGREE VERY MUCH
	5 AGREE SLIGHTLY	1 TOTALLY DISAGREE
	4 NEUTRAL	
1. Most people are OK once you get to know them	5	

Look at the example above. To show how much a sentence describes your attitude, you can respond from totally agree to totally disagree. In the above example, the number "5" (agree slightly) indicates that this statement is somewhat typical of the attitudes held by the person completing this inventory.

Remember that your answer should describe the way you think **MOST OF THE TIME**.

NOW TURN THE PAGE AND BEGIN

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100-ITEM DYSFUNCTIONAL ATTITUDE SCALE (DAS)*

Scoring Instructions

The score is the sum of the answers given for certain items plus the sum of the reverse answers for the remaining items.

Items scored in reverse

(i.e. 1=7, 2=6, 3=5, 4=4, 5=3, 6=2, 7=1):

1, 4, 6, 8, 9, 12, 14, 17, 21, 24, 25, 26, 27, 29, 32, 34, 38, 40, 48, 50, 53, 60, 63, 67, 69, 70, 73, 77, 82, 84, 85, 91, 93 and 94.

Items which are scored as answered:

2, 3, 5, 7, 10, 11, 13, 15, 16, 18, 19, 20, 22, 23, 28, 30, 31, 33, 35, 36, 37, 39, 41, 42, 43, 44, 45, 46, 47, 49, 51, 52, 54, 55, 56, 57, 58, 59, 61, 62, 64, 65, 66, 68, 71, 72, 74, 75, 76, 78, 79, 80, 81, 83, 86, 87, 88, 89, 90, 92, 95, 96, 97, 98, 99, 100.

If more than one answer is given for any one item, score only the one with the highest point value.

ATTITUDES	TOTALLY AGREE	AGREE VERY	AGREE	NEUTRAL	DISAGREE	DISAGREE VERY	TOTALLY DISAGREE
REMEMBER, ANSWER EACH STATEMENT ACCORDING TO THE WAY YOU THINK <u>MOST OF THE TIME</u>							
1. It is difficult to be happy unless one is good looking, intelligent, rich and creative.							
2. Happiness is more a matter of my attitude towards myself than the way other people feel about me.							
3. People will probably think less of me if I make a mistake.							
4. If I do not do well all the time, people will not respect me.							
5. Taking even a small risk is foolish because the loss is likely to be a disaster.							
6. It is possible to gain another person's respect without being especially talented at anything.							
7. I cannot be happy unless most people I know admire me.							

ATTITUDES	TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE
8. If a person asks for help, it is a sign of weakness.							
9. If I do not do as well as other people, it means I am an inferior human being.							
10. If I fail at my work, then I am a failure as a person.							
11. If you cannot do something well, there is little point in doing it at all.							
12. Making mistakes is fine because I can learn from them.							
13. If someone disagrees with me, it probably indicates that he does not like me.							
14. If I fail partly, it is as bad as being a complete failure.							
15. If other people know what you are really like, they will think less of you.							
16. I am nothing if a person I love does not love me.							

ATTITUDES	TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY	TOTALLY DISAGREE
17. One can get pleasure from an activity regardless of the result.							
18. People should have a reasonable likelihood of success before undertaking anything.							
19. My value as a person depends greatly on what others think of me.							
20. If I don't set the highest standards for myself, I am likely to end up a second-rate person.							
21. If I am to be a worthwhile person, I must be truly outstanding in at least one major respect.							
22. People who have good ideas are more worthy than those who do not.							
23. I should be upset if I make a mistake.							
24. My own opinions of myself are more important than others' opinions of me.							
25. To be a good, moral, worthwhile person, I must help everyone who needs it.							
26. If I ask a question, it makes me look inferior.							

ATTITUDES	TOTALLY AGREE	AGREE VERY	AGREE SLIGHTLY	NEUTRAL	DISAGREE	DISAGREE VERY	TOTALLY DISAGREE
27. It is awful to be disapproved of by other people important to you.							
28. If you don't have other people to lean on, you are bound to be sad.							
29. I can reach important goals without slave driving myself.							
30. It is possible for a person to be scolded and not get upset.							
31. I cannot trust other people because they might be cruel to me.							
32. If others dislike you, you cannot be happy.							
33. It is best to give up your own interests in order to please other people.							
34. My happiness depends more on other people than it does on me.							
35. I do not need the approval of other people in order to be happy.							
36. If a person avoids problems, the problems tend to go away.							

ATTITUDES	TOTALLY AGREE	AGREE VERY	AGREE SLIGHTLY	NEUTRAL	DISAGREE	DISAGREE VERY MUCH	TOTALLY DISAGREE
37. I can be happy even if I miss out on many of the good things in life.							
38. What other people think about me is very important.							
39. Being isolated from other people is bound to lead to unhappiness.							
40. I can find happiness without being loved by another person.							

ATTITUDES	TOTALLY AGREE	AGREE VERY	AGREE	NEUTRAL	DISAGREE	DISAGREE VERY	TOTALLY DISAGREE
REMEMBER, ANSWER EACH STATEMENT ACCORDING TO THE WAY YOU THINK <u>MOST OF</u> THE TIME							
1. You can be a happy person without going out of your way to please other people.							
2. I have to impress new acquaintances with my charm, intelligence or wit or they won't like me.							
3. If I put other peoples' needs before my own, they should help me when I want them to do something for me.							
4. It is shameful for a person to display his weaknesses.							
5. People will like me even if I am not successful.							
6. People who have the marks of success (good looks, fame, wealth) are bound to be happier than people who do not.							
7. I should try to impress other people if I want them to like me.							

ATTITUDES	TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE
8. If a person I love does not love me it means I am unloveable.							
9. I ought to be able to solve my problems quickly and without a great deal of effort.							
10. If a person is indifferent to me, it means he does not like me.							
11. I should be able to please everybody.							
12. Others can care for me even if they know all my weaknesses.							
13. If people whom I care about do not care for me, it is awful.							
14. Criticism need not upset the person who receives the criticism.							
15. My life is wasted unless I am a success.							
16. People should prepare for the worst or they will be disappointed.							

ATTITUDES	TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY	TOTALLY DISAGREE
17. I must be a useful, productive, creative person or life has no purpose.							
18. A person should think less of himself if other people do not accept him.							
19. I do not need other people's approval for me to be happy.							
20. I can enjoy myself even when others do not like me.							
21. My value as a person greatly depends on what others think of me.							
22. If I make a foolish statement, it means I am a foolish person.							
23. If a person has to be alone for a long period of time, it follows that he has to feel lonely.							
24. A person should be able to control what happens to him.							
25. If a person is not a success, then his life is meaningless.							
26. A person doesn't need to be well liked in order to be happy.							

ATTITUDES	TOTALLY AGREE	AGREE VERY	AGREE SLIGHTLY	NEUTRAL	DISAGREE	DISAGREE VERY	TOTALLY DISAGREE
27. If someone performs a selfish act, this means he is a selfish person.							
28. I should always have complete control over my feelings.							
29. I should be happy all the time.							
30. If people consider me unattractive it need not upset me.							
31. Whenever I take a chance or risk I am only looking for trouble.							
32. A person cannot change his emotional reactions even if he knows they are harmful to him.							
33. I may be able to influence other people's behavior, but I cannot control it.							
34. People will reject you if they know you weaknesses.							
35. People should be criticized for their mistakes.							
36. One should look for a practical solution to problems rather than a perfect solution.							

ATTITUDES	TOTALLY AGREE	AGREE VERY	AGREE SLIGHTLY	NEUTRAL	DISAGREE	DISAGREE VERY MUCH	TOTALLY DISAGREE
37. If I do well, it probably is due to chance; if I do badly, it is probably my own fault.							
38. The way to get people to like you is to impress them with your personality.							
39. Turning to someone else for advise or help is an admission of weakness.							
40. A person should do well at everything he undertakes.							

NAME: _____

DAS-A&B Instructions

This inventory lists different attitudes or beliefs which people sometimes hold. Read **EACH** statement carefully and decide how much you agree or disagree with the statement.

For each of the attitudes, show your answer by placing a checkmark under the column that BEST DESCRIBES WHAT YOU THINK. Be sure to choose only one answer for each attitude. Because people are different, there is no right answer or wrong answer to these statements.

To decide whether a given attitude is typical of your way of looking at things, simply keep in mind what you are like **MOST OF THE TIME**.

Example:

ATTITUDES	TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE
1. Most people are OK once you get to know them			x				

Look at the example above. To show how much a sentence describes your attitude, you can check any point from "totally agree" to "totally disagree." In the above example, the checkmark at "agree slightly" indicates that this statement is somewhat typical of the attitudes held by the person completing this inventory.

Remember that your answer should describe the way you think **MOST OF THE TIME**.

NOW TURN THE PAGE AND BEGIN

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DAS SCORING

1. Every item on the DAS (Form A or Form B) is scored from 1 to 7. Depending on the content, either totally agree or totally disagree will be the anchor point of 1 and each category from that point will be one more, i.e., if "totally agree" = +1 then the next category, "agree very much," will be = +2, etc. to totally disagree which will be = +7.
2. There are 30 "dysfunctional" and 10 "functional" items in each scale. The total score thus reflects the aggregate and intensity of dysfunctional beliefs. The DYSFUNCTIONAL ITEMS are scored in the descending order: totally agree = +7; totally disagree = +1. The functional items are scored in the reverse direction.
3. The following FUNCTIONAL ITEMS are scored in ascending order. That is, "totally agree" = +1; "agree very much" = +2; "agree slightly" = +3; "neutral" = +4; "disagree slightly" = +5; "disagree very much" = +6; "totally disagree" = +7.

FORM A

#2 #29
#6 #30
#12 #35
#17 #37
#24 #40

FORM B

#1 #20
#5 #26
#12 #30
#14 #33
#19 #36

4. The Total Score on DAS-A or DAS-B is obtained by summing up the item scores for each individual.
5. Omits have been coded as zero (missing data). However, if by some chance, the individual omits a large proportion of the items, the test should be ignored.

Measuring Dysfunctional Attitudes in the General Population: The Dysfunctional Attitude Scale (form A) Revised

L. Esther de Graaf · Jeffrey Roelofs ·
Marcus J. H. Huibers

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Abstract The Dysfunctional Attitude Scale (DAS) was designed to measure the intensity of dysfunctional attitudes, a hallmark feature of depression. Various exploratory factor analytic studies of the DAS form A (DAS-A) yielded mixed results. The current study was set up to compare the fit of various factor models. We used a large community sample ($N = 8,960$) to test the previously proposed factor models of the DAS-A using confirmatory factor analysis. The retained model of the DAS-A was subjected to reliability and validity analyses. All models showed good fit to the data. Finally, a two-factor solution of the DAS-A was retained, consisting of 17 items. The factors demonstrated good reliability and convergent construct validity. Significant associations were found with depression. Norm-scores were presented. We advocate the use of a 17-item DAS-A, which proved to be useful in measuring dysfunctional beliefs. On the basis of previous psychometric studies, our study provides solid evidence for a two-factor model of the DAS-A, consisting of ‘dependency’ and ‘perfectionism/performance evaluation’.

Keywords Dysfunctional attitude scale · Depression · General population · Psychometric analysis · Factor structure

Introduction

According to Beck’s view of depression (Beck 1972; Beck et al. 1979), individuals vulnerable to depression have

maladaptive schemas, which remain dormant until triggered by stressful life events. Dysfunctional beliefs reflect the content of these relatively stable schemas. In the past, many studies were unsuccessful in demonstrating this cognitive vulnerability; dysfunctional beliefs seemed to covary with depressive symptoms, suggesting state dependency rather than vulnerability (for an overview of studies See Ingram et al. 1998). Building on Beck’s cognitive model, Teasdale (1988) then suggested that dysfunctional beliefs in vulnerable individuals could only be measured in the presence of a trigger (i.e., a dysphoric mood state). During the first episode of depression, an association between dysfunctional beliefs and depressed mood is created, and dysfunctional beliefs can then be easily activated during a subsequent depressed mood (e.g., Teasdale 1988). Several studies have indeed found support for this ‘differential activation hypothesis’ using mood priming methods (Ingram et al. 1998; Lau et al. 2004; Miranda et al. 1990).

The measurement of the presence and intensity of dysfunctional beliefs in depression was advanced by the development of the Dysfunctional Attitude Scale (Weissman and Beck 1978). The DAS was originally designed as a measure that would reflect a general cognitive vulnerability factor to depression. However, there is some evidence to suggest that individuals vulnerable to depression may have dysfunctional beliefs only in a few, but not all, areas of their lives (e.g., Dyck 1992; Power et al. 1995, 1994; Sheppard and Teasdale 2000). Moreover, the DAS might be too general to adequately test Beck’s cognitive diathesis-stress theory. Beck (1987) later proposed that specific dysfunctional beliefs will interact with particular stressors. Therefore, it is important to focus on specific rather than general dysfunctional beliefs, in research and clinical practice. If the DAS is to be used as a marker of specific vulnerabilities, subscales of the DAS measuring

L. E. de Graaf (✉) · J. Roelofs · M. J. H. Huibers
Department of Clinical Psychological Science, Maastricht
University, P.O. Box 616, 6200 MD Maastricht, The Netherlands
e-mail: E.deGraaf@dmkep.unimaas.nl

specific patterns of maladaptive thinking need to be identified.

Several studies have aimed to investigate the factor structure of the DAS. It is noteworthy to mention that the original form of the DAS, which consists of 100 items, has been refined into two 40-item parallel forms (i.e., DAS-A and DAS-B) by Weissman (1979). Previous research has predominantly relied on the DAS-A. Consequently, most research on the psychometric properties of the DAS has been done with the DAS-A.

The DAS-A has been subjected to exploratory factor analysis by various researchers, which yielded mixed results. Two-factor (e.g., Cane et al. 1986; Imber et al. 1990; Raes et al. 2005; Vaglum and Falkum 1999), three-factor (e.g., Power et al. 1994), and four-factor (e.g., Chioqueta and Stiles 2006; Oliver and Baumgart 1985; Parker et al. 1984) solutions of the DAS-A have been proposed. Moreover, some studies experienced difficulties in determining the number of factors to retain (e.g., Floyd et al. 2004). There are a number of methodological issues that might explain the variability in results from psychometric studies. First, most studies relied on the eigenvalue >1.0 or the Scree test to determine the number of factors to retain (e.g., Chioqueta and Stiles 2006; Floyd et al. 2004; Raes et al. 2005; Vaglum and Falkum 1999). These methods have been criticized for being too subjective and possibly leading to an over-extraction of the number of factors (See Zwick and Velicer 1986). Second, the reversely keyed items in the DAS-A might be problematic. In different factor models (i.e., Chioqueta and Stiles 2006; Oliver and Baumgart 1985; Power et al. 1994) these items load on one-factor, possibly representing a ‘method’ factor rather than a content factor. Third, some studies have included too few individuals to properly conduct exploratory factor analysis (e.g., Floyd et al. 2004; Oliver and Baumgart 1985; Parker et al. 1984; Power et al. 1994; Raes et al. 2005). It has been recommended to have at least 300 cases, and 1,000 cases is regarded as excellent (Comrey and Lee 1992; Field 2000). Regarding confirmatory factor analysis, many fit indices are favorably influenced by having larger sample sizes, desirably more than 200 cases (Marsh et al. 1988, 1998). However, it has been difficult for researchers to determine a rule of thumb regarding the ratio of sample size to number of indicators (e.g., See Meade and Bauer 2007). Despite this variability, there seems to be some consistency with respect to the content of the obtained factors across studies. That is, there are two strong factors representing ‘performance or achievement’ and ‘(need for) approval by others’.

Taken together, there is a need for large-scale studies that rely on more stringent methods for examining the psychometric properties of the DAS-A. Confirmatory factor analysis is a more stringent procedure for testing the factor

structure of an instrument than exploratory factor analysis, since it relies on a priori information and provides multiple goodness-of fit indices. Therefore, we will subject previously proposed factor models to confirmatory factor analysis with data from a large community sample. To the authors’ best knowledge this is the first confirmatory factor analytic investigation of the DAS-A. We will subject the best fitting model of the DAS-A to reliability and validity analyses. We will establish the internal consistency and convergent construct validity. Norm-scores will be assessed and we will explore the extent to which the final model of the DAS-A is associated with depression, controlling for demographic factors. We will use demographic factors that were found to be significant correlates of depression in a large epidemiological community-based study conducted in the Netherlands (NEMESIS, Bijl et al. 1998). In line with other studies (e.g., Blazer et al. 1994; Kessler et al. 1997), they found female sex, middle age (35–44), low educational level, being occupationally disabled or without paid employment, and living without a partner to be associated with depression.

Method

Participants and Procedure

Data were collected as part of a large-scale screening program to recruit participants for a study, in which the effectiveness of computerized cognitive behavioral therapy for depression will be investigated. A random selection of individuals in the general population (age 18–65) was sent an invitation letter to complete a screening questionnaire via the Internet. Six municipalities in the Southern part of the Netherlands cooperated by providing names and addresses of their residents. The online screening was only accessible by using the unique log-in codes provided in each invitation letter, which could be used just once. This large Internet-based screening was completed by 8,960 (full response rate 8%) individuals in the Dutch general population. We compared the demographic variables of our sample and the population in the Southern part of the Netherlands (Statistics Netherlands; www.cbs.nl). No major discrepancies on demographic variables could be detected.

The screening questionnaire consisted of variables concerning depression, dysfunctional attitudes and demographic data. The Medical and Ethical Committee approved the study protocol. Individuals were not compensated for participation.

Measures

Data collection was cross-sectional and took place via the Internet. All participants completed the Dysfunctional

Attitude Scale form A, the Diagnostic Inventory for Depression, and completed questions concerning demographic variables (i.e., age, gender, nationality, marital status, education and employment status).

Dysfunctional Attitude Scale form A

The Dysfunctional Attitude Scale form A (DAS-A) is a self-report scale designed to measure the presence and intensity of dysfunctional attitudes. The DAS-A consists of 40 items and each item consists of a statement and a 7-point Likert scale (7 = fully agree; 1 = fully disagree). Ten items are reversely coded (2, 6, 12, 17, 24, 29, 30, 35, 37 and 40). The total score is the sum of the 40-items with a range of 40–280. The higher the score, the more dysfunctional attitudes an individual possesses (Weissman and Beck 1978). Internal consistency, test-retest reliability, and average item-total correlations of the DAS-A were satisfactory in different samples (e.g., Cane et al. 1986; Oliver and Baumgart 1985). We used the Dutch version of the DAS-A translated by Raes et al. (2005) which has good psychometric properties.

Diagnostic Inventory for Depression

The Diagnostic Inventory for Depression (DID) is a 38-item self-report scale designed to measure DSM-IV symptom inclusion criteria for a major depressive episode. The DID consists of 19 symptom severity items, 3 symptom frequency items, 8 items measuring interference in daily functioning due to depression, and 8 quality-of-life items. Specified cut-offs to determine the presence or absence of each DSM-IV criterion can be used to diagnose major depressive episode. By adding up the 19 symptom severity items, the severity of depression can be assessed, ranging from 0 (no depression) to 76 (severely depressed) (Sheeran and Zimmerman 2002; Zimmerman et al. 2004). Psychometric properties of the DID are good in terms of internal consistency, test-retest reliability, convergent and discriminant validity, and diagnostic performance (Sheeran and Zimmerman 2002; Zimmerman et al. 2004, 2006).

Using the specified cut-offs of the DID (See Zimmerman et al. 2004), which follow the DSM-IV algorithm, we were able to determine the prevalence of major depressive episode in the current sample.

Analyses

Confirmatory Factor Analysis

The robustness of previously published factor models was examined by conducting confirmatory factor analysis by means of LISREL (version 8.54, Jöreskog and Sörbom

1999). First the one-factor model of the DAS-A was tested, followed by the following seven factor models: the two-factor models of Imber et al. (1990, details were provided by Paul A. Pilkonis), Vaglum and Falkum (1999), Cane et al. (1986), and Raes et al. (2005), the three-factor model of Power et al. (1994), and the four-factor models of Chioqueta and Stiles (2006) and Parker et al. (1984). A maximum-likelihood estimation method was adopted. A number of fit indices was used to evaluate the goodness-of-fit, including (a) the Root Mean Square Error of Approximation (RMSEA); (b) the Comparative Fit Index (CFI); (c) the Non-Normed Fit Index (NNFI); (d) the Goodness-of-Fit Index (GFI); and (e) the Expected Cross-Validation Index (ECVI). Kelloway (1998) indicates that RMSEA values of <0.10 represent a good fit, while values below .05 represent a very good fit to the data. Furthermore, a well-fitting model should have CFI, NNFI and GFI values above .90 (values above .95 are indicative of a good to very good fit) (Kelloway 1998). The ECVI is a relative measure to compare competing models; the model with the lowest value has the best fit. However, since the models show a large variability in number of items, it is risky to rely on the ECVI only. Thus, based on all fit indices, the best fitting model was retained in all following analyses.

Since many studies, especially treatment studies, rely on total scores of cognitive measures, we then subjected the one-factor model of the retained DAS-A to confirmatory factor analysis. A likelihood ratio test (LRT), then, was used to compare a more complex model (the retained factor solution) with a simpler model (one-factor solution). The simpler model is a special case of the more complex model (i.e., “nested”). More specifically, under the null-hypothesis that the special model fits as well as the more general one, the difference between their Chi-square-values is itself Chi-square distributed with degrees of freedom equal to the difference between their degrees of freedom.

Reliability, Validity, and Normative Data of the Factors

SPSS (version 12.0.1 for Windows) was used for all analyses, and the alpha was set to .01 to decrease the likelihood of type I error. Cronbach’s alpha and corrected item-total correlations of the factors and of the total score of the retained DAS-A were computed. Convergent construct validity was obtained by computing Pearson correlation coefficient with the severity of depression (DID). The degree to which dysfunctional attitudes could discriminate between depressed and non-depressed individuals was examined by comparing the means of the factors of the retained DAS-A. Normative data were calculated by computing quintiles of the factors as well as for the DAS-A total score.

Associations of the DAS Factors with Depression Severity

To examine the unique association between dysfunctional attitudes and the severity of depression, multiple linear regression analysis was performed. The outcome variable was the severity of depression as measured with the 19 symptom severity items of the DID. First, scores of the factors of the retained DAS-A were entered in the first step, controlling for demographical variables (gender, age, partner, education and occupational status) in the second step. Second, to determine the unique additional variance of the DAS-A after the variance of demographic variables has been partialled out, these analyses were performed in reverse order (i.e., demographical variables in the first step followed by DAS-A scores in the second step). All variables were standardized prior to the analyses and standardized coefficients were interpreted.

Results

Sample Characteristics

The sample consisted of 8,960 participants. The sample distribution on socio-demographic variables is shown in Table 1. Individuals were predominantly Caucasian and in the older age groups. The number of females participating was slightly higher than the number of males. The majority had received at least 11 years of education, and was currently employed. Mean DAS-A score was 137.8 (SD = 23.6; range 40–256). The mean DID depression severity score was 8.9 (SD = 9.7; range 0–76). According to the specified cut-offs of the DID, 719 (8%) individuals currently suffered from a major depressive episode.

Confirmatory Factor Analysis

First, we tested the goodness-of-fit of various factor models. Table 2 shows that the results are fairly similar for all tested models. For all models, the RMSEA values were reasonable (all values less than .10 and close to .05). The other indicators were good to very good for all models; NNFI, CFI and GFI were generally well above .90. Although sufficient, the one-factor model seemed to show the least satisfying fit. Since, the differences in fit between the other models were only marginal, we preferred retaining the most parsimonious model, i.e., a two-factor model. Another reason to retain two factors is that the three- and four-factor models might be the result of over-extraction and seemed to contain ‘method’ factors consisting of reversely keyed items. Inspection of the items in our sample revealed that all ten reversely keyed items showed negative and low item-total correlations (range

Table 1 Demographic characteristics of the sample ($N = 8,960$)

Variable	<i>N</i>	(%)
Gender		
Male	3,965	(44.3)
Female	4,995	(55.7)
Age (years)		
18–25	1,052	(11.8)
26–35	1,276	(14.3)
36–45	2,148	(24.0)
46–55	2,682	(30.0)
56–65	1,795	(20.0)
Nationality		
Dutch	8,743	(97.6)
Other	217	(2.4)
Partner ^a		
Yes	7,901	(89.1)
No	969	(10.9)
Education (in years) ^b		
0–10	2,519	(28.6)
11–14	3,067	(34.8)
15 +	3,226	(36.6)
Occupational status ^c		
Employed	5,462	(64.9)
Homemaker	828	(9.8)
Student	673	(8.0)
Occupational disability/unemployed	1,063	(12.6)
Retired	395	(4.7)

^a Data missing for 90 participants

^b Data missing for 148 participants

^c Data missing for 539 participants

–.40 to –.13). Although Cronbach’s alpha was high for all 40 items (.86), the item-total correlations clearly showed conflicting results. Participants may have answered questions on autopilot. Therefore, we excluded the reversely keyed items in all next steps.

In the next step, we closely inspected the factors and item loadings in the tested models. Two factors have emerged consistently in six of these models (i.e., Cane et al. 1986; Chioqueta and Stiles 2006; Imber et al. 1990; Power et al. 1994; Raes et al. 2005; Vaglum and Falkum 1999): ‘perfectionism and performance evaluation’ and ‘dependency’. For the item selection, the first step was to list the items from these six studies that loaded on either one of these two factors. We only interpreted items with loadings greater than .32, which is in line with recommendations of Comrey and Lee (1992). In case of double loadings, we accepted the various author’s choices regarding which item belonged to which factor. In the final step, we retained 19 items that loaded uniquely on one-factor in at least five of the six studies. Although we

Table 2 Goodness-of-fit indicators of various factor models of the DAS-A in a large community sample ($N = 8,960$)

Model	RMSEA (90% CI)	ECVI (90% CI)	NNFI	CFI	GFI
One-factor model	.072 (0.71–0.72)	3.95 (3.88–4.02)	.96	.96	.84
<i>Two-factor models</i>					
1. Vaglum and Falkum (1999)	.069 (.068–.071)	1.14 (1.10–1.18)	.97	.97	.91
2. Imber et al. (1990)	.073 (.072–.074)	1.62 (1.57–1.66)	.97	.97	.89
3. Cane et al. (1986)	.066 (.065–.067)	1.25 (1.21–1.29)	.97	.97	.91
4. Raes et al. (2005)	.062 (.061–.062)	1.83 (1.78–1.87)	.97	.97	.90
<i>Three-factor model</i>					
5. Power et al. (1994)	.065 (.064–.066)	1.28 (1.24–1.32)	.97	.97	.91
<i>Four-factor models</i>					
6. Parker et al. (1984)	.067 (.066–.068)	1.25 (1.21–1.29)	.96	.97	.91
7. Chioqueta and Stiles (2006)	.062 (.061–.062)	2.89 (2.83–2.95)	.97	.97	.87

RMSEA root mean square error of approximation; ECVI expected cross-validation index; NNFI non-normed fit index; CFI comparative fit index; GFI goodness-of fit index

Bold indicates the best fit indices

preferred being stringent in deciding which items to retain, we did not select items that loaded on these factors in all models. Due to multiple testing, the chance increases that an item that is expected to belong to a specific factor does not load on that factor in some models.

To test the robustness of this two-factor model, we subjected the 19-item DAS-A to confirmatory factor analysis. The goodness-of-fit indicators were as follows: RMSEA = 0.074 (0.072–0.075), ECVI = 0.84 (0.81–0.88), NNFI = .97, CFI = 0.98, and GFI = 0.92. Closer inspection of the results showed that within the first factor items 3 and 4, and items 20 and 21 had residual correlation, indicating that these items have something in common that is not shared with the remaining items of the scale. Because our purpose was to derive the most parsimonious model, we excluded item 3 and item 20 based on their lower factor loadings compared with items 4 and 21.

In the final step, we subjected the remaining 17 items of the two-factor model of the DAS-A to confirmatory factor analysis. The results were as follows: RMSEA = 0.065 (0.063–0.066), ECVI = 0.52 (0.49–0.54), NNFI = 0.98, CFI = 0.98, and GFI = 0.94. We also tested the goodness-of fit of the DAS-A-17 as a one-dimensional model. The indicators for the one-factor model were: RMSEA = 0.097 (0.095–0.099), ECVI = 1.14 (1.10–1.18), NNFI = 0.96, CFI = 0.96, and GFI = 0.88. Chi-square difference between the one-factor model ($\chi^2(119) = 7,316, p < .001$) and the two-factor model ($\chi^2(118) = 3,987, p < .001$) was 3,329 ($df = 1, p < .05$), indicating that the two-factor model fit the data significantly better than the one-factor model. Moreover, the two-factor model had the lowest ECVI value, also indicating a better fit to the data. In Table 3 the items and factor loadings of the retained 17-item DAS-A (DAS-A-17) are shown. We labelled the first factor ‘perfectionism/performance evaluation’. This factor

consisted of 11 items and contained items about perfectionism and concerns about being negatively evaluated by others on the basis of their performance. The second factor, named ‘dependency’, contained 6 items.

The items were about a need to lean on and be supported by others, and about the dependency of approval and judgments by others in the context of interpersonal relations.¹

Reliability, Validity, and Normative Data of the Factors

Table 4 depicts Pearson correlation coefficients (corrected for attenuation, i.e., corrected for the reliability coefficient of the instruments) between the DAS-A-17 (factors and total score) and the severity of depression (DID). With respect to the reliability, the correlation between both factors was moderate. In addition, acceptable Cronbach’s alpha values were obtained for ‘perfectionism/performance evaluation’, ‘dependency’, and the DAS-A-17 total score, respectively .90, .81 and .91. The mean corrected item-total correlations were sufficient, .64 (range .51 to .77) and .58 (range .44 to .66) respectively, for ‘perfectionism/performance evaluation’ and ‘dependency’.

Regarding the convergent construct validity, ‘perfectionism/performance evaluation’ factor and the DAS-A-17

¹ An anonymous reviewer suggested that the factor structure of the DAS-A might differ in depressed and non-depressed individuals. We therefore subjected the two-factor model of the DAS-A-17 to confirmatory factor analysis in a depressed and non-depressed subgroup separately. Depression status was based on the criteria of the DID. The results are fairly similar in both subgroups. The results for the depressed subgroup ($N = 719$) were as follows: RMSEA = .054 (.048–.060), ECVI = 0.61 (0.53–0.69), NNFI = .99, CFI = .99, and GFI = .94. For the non-depressed subgroup ($N = 8241$) the results were: RMSEA = .065 (.063–.066), ECVI = 0.51 (0.49–0.54), NNFI = .97, CFI = .98, and GFI = .94.

Table 3 Item descriptions and their factor loadings of the DAS-A-17

Item	Item description	Factor loading
<i>Perfectionism/performance evaluation</i>		
1.	It is difficult to be happy, unless one is good looking, intelligent, rich and creative.	.52
4.	If I do not do well all the time, people will not respect me.	.68
8.	If a person asks for help, it is a sign of weakness.	.58
9.	If I do not do as well as other people, it means I am an inferior human being.	.82
10.	If I fail at my work, then I am a failure as a person.	.76
11.	If you cannot do something well, there is little point in doing it at all.	.57
13.	If someone disagrees with me, it probably indicates that he does not like me.	.68
14.	If I fail partly, it is as bad as a complete failure.	.74
15.	If other people know what you're really like, they will think less of you.	.66
21.	If I am to be a worthwhile person, I must be truly outstanding in at least one major respect.	.70
26.	If I ask a question, it makes me look inferior.	.68
<i>Dependency</i>		
19.	My value as a person depends greatly on what others think of me.	.82
27.	It is awful to be disapproved of by people important to you.	.55
28.	If you don't have other people to lean on, you are bound to be sad.	.45
32.	If others dislike you, you cannot be happy.	.63
34.	My happiness depends more on other people than it does on me.	.70
38.	What other people think about me is very important.	.70

DAS-A-17 dysfunctional attitude scale with 17 items

Table 4 Correlation matrix of dysfunctional attitudes and depression severity ($N = 8,960$)

Scale	1	2	3	4
DID	–	.61	.51	.60
DAS-A-17-P		–	.79	.95
DAS-A-17-D			–	.87
DAS-A-17-T				–

DAS-A-17 dysfunctional attitude scale with 17 items, *P* perfectionism/performance evaluation, *D* dependency, *T* total score; *DID* total score of the 19 symptom severity items of the diagnostic inventory for depression

Correlations are corrected for attenuation (i.e., corrected for reliability coefficient of the scales)

total score were more strongly correlated with depression severity compared with 'dependency' ($ps < .001$; See Table 4). Furthermore, Table 5 shows that the depressed subgroup scored significantly higher on both factors and on the total score than the non-depressed individuals.

Finally, Table 6 presents normative data of the DAS-A-17 factors and total score.

Associations of Dysfunctional Attitudes With Depression Severity

Results of the multiple linear regression analysis are summarized in Table 7. The results show that the 'perfectionism/performance evaluation' and 'dependency'

Table 5 Means and standard deviations of the DAS-A-17 factors and total score for the non-depressed ($N = 8,241$) and depressed ($N = 719$) subgroups

	Non-depressed		Depressed		<i>t</i> (<i>df</i>)
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
DAS-A-17-P	26.3	9.6	41.1	13.1	–29.6 (787)*
DAS-A-17-D	20.0	6.6	27.0	7.1	–25.5 (829)*
DAS-A-17-T	46.3	14.7	68.1	18.5	–30.7 (799)*

DAS-A-17 dysfunctional attitude scale with 17 items, *P* perfectionism/performance evaluation, *D* dependency, *T* total score

* $p < .001$

together account for 31% of the total variance in depression severity ($F(2) = 1,863.7$, $p < .001$). 'Perfectionism/performance evaluation' was significantly and substantially associated with depression. After controlling for demographic variables in the second step ($F(14) = 375.9$, $p < .001$), this factor remained to have the strongest association with depression. In contrast, the association between 'dependency' and depression was much smaller. It should be noticed that when demographic variables were added to the model in the second step, unemployment/occupational disability appeared more strongly associated with depression than 'dependency'.

To determine the unique additional variance of the DAS-A-17 after the variance of demographic variables has been partialled out, we repeated these analyses in reverse

Table 6 Norm-scores for the DAS-A-17 factors and total score ($N = 8,960$)

Quintile	Standardization	DAS-A-17-P	DAS-A-17-D	DAS-A-17-T
1	Low	19	15	35
2	Below average	23	18	42
3	Average	27	22	49
4	Above average	35	27	60
	High			

Normative data were calculated by computing quintiles; *DAS-A-17* dysfunctional attitude scale with 17 items, *P* perfectionism/performance evaluation, *D* dependency, *T* total score

Table 7 Multiple linear regression analysis with depression severity as outcome variable: associations with dysfunctional attitudes and demographic variables ($N = 8,960$)

Variable	<i>B</i>	SE (<i>B</i>)	β
<i>Step 1</i>			
DAS-A-17-P	.464	.012	.472*
DAS-A-17-D	.119	.012	.121*
<i>Step 2</i>			
DAS-A-17-P	.405	.012	.412*
DAS-A-17-D	.129	.012	.131*
Gender, female	.041	.009	.042*
Age (compared to 18–25)			
26–35	.002	.015	.002
36–45	.012	.018	.012
46–55	–.008	.019	–.008
56–65	–.091	.018	–.092*
Partner, yes	–.039	.009	–.039*
Education in years (compared to 0–10)			
11–14	–.043	.010	–.043*
15 +	–.086	.011	–.088*
Occupational status (compared to employed)			
Homemaker	.017	.009	.018
Student	–.016	.013	–.016
Occupational disability/unemployed	.246	.009	.251*
Retired	–.008	.010	–.008

R^2 .31 for step 1; ΔR^2 .08 for step 2 ($ps < .001$)

Outcome variable is the severity of depression as measured with the 19 symptom severity items of the diagnostic inventory for depression *DAS-A-17* dysfunctional attitude scale with 17 items, *P* perfectionism/performance evaluation, *D* dependency

* $p < .001$

order. In the first step, demographic variables explained 15% of the total variance in depression ($F(12) = 115.8$, $p < .001$). By adding both factors of the DAS-A-17 to the

model an extra 25% of the total variance could be explained ($F(14) = 375.9$, $p < .001$). Thus, in both regression analyses, the DAS-A-17 factors explained a substantial and significant proportion of the variance in depression.

Since it has generally been argued that ‘dependency’ is mainly salient in women and ‘perfectionism/performance evaluation’ is more often exhibited by men (Beck 1983), gender differences might be present. Therefore, ancillary analyses were performed. First, we compared the mean scores on both factors by performing independent samples *t*-tests. Both factor scores were significantly higher in women than in men ($ps < .05$). Second, we conducted regression analyses to test interaction effects between gender and both DAS-A-17 factors as predictors of depression. The full model (i.e., demographic variables and both factors) was entered in the first step, followed by two interaction terms (i.e., gender \times ‘perfectionism/performance evaluation’, and gender \times ‘dependency’) in the second step. The interactions were non-significant (p values well above .05).

Discussion

Main Findings

The present study sought to examine the psychometric properties of the DAS-A in a large community sample ($N = 8,960$). Specifically, we were able to conduct confirmatory factor analysis, which provides a methodological advance in factor analysis. We compared the fit of seven competing models of the factor structure of the DAS-A. Since all models had a good fit, we retained the most parsimonious model. Seventeen items of the original 40-item DAS-A were retained and comprised a two-factor solution: ‘perfectionism/performance evaluation’ and ‘dependency’. Confirmatory factor analysis indicated that this two-factor solution produced good fit to the data based on several goodness-of-fit indicators. Psychometric properties of the obtained factors were sufficient, in terms of internal consistency, item-total correlations and convergent construct validity. Both factors were significantly associated with depression, controlling for demographic variables. Surprisingly, the association between ‘dependency’ and depression was relatively small.

Previous Factor Analytic Studies

One of the aims of the current study was to discern meaningful subscales of the DAS-A, which can be used as measures of specific cognitive vulnerabilities in order to more adequately test the cognitive diathesis-stress theory

of Beck (1972). Therefore, we have tested several previously suggested models of the DAS-A (i.e., Cane et al. 1986; Chioqueta and Stiles 2006; Imber et al. 1990; Parker et al. 1984; Power et al. 1994; Raes et al. 2005; Vaglum and Falkum 1999). Although, all tested models had a good fit, we suggest adopting a two-factor solution for several reasons. First, two factors (i.e., ‘performance or achievement’ and ‘(need for) approval by others’) have emerged across different populations in earlier studies. Second, these two factors were most interpretable and are theoretically meaningful; they have been suggested as appropriate specific dimensions of dysfunctional attitudes (Beck 1983). Finally, factors in three- and four-factor solutions (i.e., Chioqueta and Stiles 2006; Oliver and Baumgart 1985; Parker et al. 1984; Power et al. 1994) were more difficult to interpret, and they might be the result of over-extraction due to methodological shortcomings.

While most studies focused on the psychometric properties of the DAS-A, others have examined the structure of the full 100-item DAS and the DAS-B (e.g., See Beck et al. 1991; Power et al. 1994). The authors of these two studies have both found other important factors next to ‘perfectionism/performance evaluation’ and ‘dependency’. First, a factor labeled ‘self-control’ was found in the DAS-B, but did not appear in the DAS-A (Power et al. 1994). To date, ‘self-control’ has received relatively little attention in research on cognitive vulnerability of depression. It might be interesting for future research to elaborate more on this. Second, Beck et al. (1991) have found a general symptom factor, named ‘vulnerability’, reflecting a general negative view of the world. However, this factor seemed rather state dependent as compared with the ‘need for approval’ and ‘perfectionism’ factors. When specifically interested in vulnerability of depression, one might prefer to use more stable factors.

Reliability

A few comments should be made regarding the reliability of the obtained factors of the DAS-A-17. First, both factors appear to be reliable measures of specific constructs of dysfunctional attitudes. However, comparable to previous findings (e.g., Cane et al. 1986; Imber et al. 1990) the internal consistency is relatively smaller for ‘dependency’ than for ‘perfectionism/performance evaluation’. The smaller number of items in the ‘dependency’ factor might explain this. The number of items on a scale influences Cronbach’s alpha; when the number of items decreases Cronbach’s alpha decreases. However, item-total correlations were also relatively smaller for ‘dependency’ than for ‘performance evaluation’. This may suggest that dependency is a rather heterogeneous factor and may still be too broad (e.g., Mazure et al. 2001).

Second, since total scores are often used in research and in clinical practice, the reliability of the total score of the DAS-A-17 was examined and appeared satisfactory. As the inter-correlation between both factors of the DAS-A-17 was moderate, it can even be argued that the DAS-A should preferably be used as a one-dimensional measure of dysfunctional attitudes. Moreover, the results of the confirmatory factor analysis showed that the one-factor model, of both the 40-item and 17-item DAS-A, fit the data sufficiently. Therefore, it seems justified to use the DAS-A as a one-dimensional construct. The total score might reflect a higher order construct measuring dysfunctional thinking in general. Still, the two-factor solution produced better fit to the data than the one-factor solution of the DAS-A-17.

Third, a point should be made regarding the reversely keyed items. Although usually used to prevent response tendencies, the present results suggest that reversely keyed items endorse contradictory statements. Sahin and Sahin (1992) expressed their concerns about the reversely keyed items of the DAS-A as well. In a student sample, they found that the reversely keyed items of the DAS-A formed a factor. The same problem may have emerged in previous factor analytic studies (e.g., Chioqueta and Stiles 2006; Oliver and Baumgart 1985; Power et al. 1994). Since participants had difficulties grasping the concept of these reversely keyed items, we decided to omit those items from the DAS-A. However, if the use of reversely keyed items is preferred in a questionnaire, one could elaborate the instructions for the reader and draw the participant’s attention to negatively and positively stated items.

Validity

Regarding the validity, both factors showed sufficient convergent construct validity and could distinguish the depressed subgroup from the non-depressed group. Depression was significantly explained by both factors, controlling for demographic determinants of depression (See Bijl et al. 1998). The content of the obtained factors of the DAS-A-17 largely resemble two specific dimensions of cognitive vulnerability to depression: sociotropy and autonomy (Beck 1983). Whereas sociotropy refers to a need for intimacy, affiliation and dependency, autonomy refers to as a need for goal achievement and fear of failure (Beck 1983). Previous studies generally found stronger indications for sociotropy as risk factor to depression compared with autonomy. The present results suggest the opposite. Methodological differences may in part explain these contrasting results. First, we used a cross-sectional design, which makes it difficult to distinguish vulnerability from its manifestation in depression. ‘Perfectionism/performance evaluation’ may covary more closely with symptom state than ‘dependency’ (Beck et al. 1991; Coyne

and Whiffen 1995). This is supported by the high correlation we found between ‘perfectionism/performance evaluation’ and depression severity. Second, poor scale reliability can attenuate the correlation between two variables. Since the alpha of the ‘dependency’ factor was relatively lower than for ‘perfectionism/performance evaluation’, this might explain its lower correlation with depression. However, we corrected for this attenuation-effect. Third, previous studies relied on other instruments to measure autonomy and sociotropy, which may differ from the DAS-A in terms of their contents (e.g., See Pincus and Gurtman 1995). It might be interesting to directly compare the two factors of the DAS-A-17 with the scales of the Sociotropy-Autonomy Scale. This might further support its validity. Finally, a possible explanation would have been that gender interacted with the obtained factors. It has been argued that sociotropy mainly acts as a vulnerability factor in women and autonomy in men (Beck 1983). Some studies indeed found an interaction effect for gender and sociotropy on depression, but not for autonomy (e.g., Sato and McCann 1998; Shih 2006). Although our findings suggest that there are gender differences in mean scores on both factors, the association between both factors of the DAS-A-17 and depression did not differ significantly as a function of gender. We need further research, since only few studies have examined the role of gender differences.

Methodological Limitations

Several limitations of the present study should be noted. First, a potential problem in the use of online data collection is that of providing false (demographic) information and that of multiple submissions. However, our sampling method (i.e., written invitations with unique log-in codes) made it possible to more reliably identify the population. Second, our full response rate was very low (8%). Since no major discrepancies on demographic variables arose between our sample and the population in the Southern part of the Netherlands (Statistics Netherlands; www.cbs.nl), this might not be a reason for concern. However, as in most previous psychometric studies of the DAS-A, predominantly Caucasian individuals were assessed. The usefulness of the DAS-A(-17) and its factors needs to be investigated in samples representing different demographic and cultural backgrounds. Third, because of the cross-sectional nature of the study we were not able to investigate the predictive value of the obtained factors of the DAS-A. Consequently, the present study is lacking validity research. To address this issue, experimental or longitudinal designs are needed rather than cross-sectional designs. Fourth, the generalizability of the present findings might be limited due to our recruitment method. Only individuals with access to the

Internet were able to participate. In line with this, one may question the equality of computerized questionnaires and paper-and-pen versions. However, there are sufficient indications that computerized and paper-and-pen questionnaires show similar construct validity (Butcher et al. 2000, 2004). However, when a questionnaire is placed on the Internet this might subtly affect expected score distributions, perhaps due to increased self-disclosure or increased negative affect induced by the computer situation (Buchanan 2003; Peterson et al. 1996). The normative data presented here might not be appropriate for the offline version of the DAS-A-17. Fifth, we relied on self-report measures and did not use a diagnostic interview. Information on past episodes of depression and other disorders, such as dysthymia, is lacking. Sixth, we used a rather heterogeneous community sample and one might question whether the factor structure of the DAS-A is similar in depressed and non-depressed individuals. However, we showed that the fit of the two-factor solution was fairly similar in a depressed and non-depressed subgroup. We think that dysfunctional attitudes can best be conceptualized as reflecting quantitative rather than qualitative differences among individuals (See also Gibb et al. 2004). Moreover, we were able to find a good fit despite the variability in depression status. Finally, in our proposed factor model we selected nineteen items that loaded on two common factors in at least five of six studies. Although this was carefully considered, we admit this is as a somewhat arbitrary choice. Nevertheless, we believe this is a fair approach to derive two meaningful and uniform factors.

Conclusion

In conclusion, we advocate the use of a 17-item DAS-A, which proved to be useful in defining and measuring dysfunctional beliefs in the general population. Although the 40-item DAS-A has good psychometric properties, the DAS-A-17 has several advantages over the full version. The DAS-A-17 consists of two theoretically meaningful subscales, which can be of great use in future research on cognitive vulnerability factors in depression. Furthermore, we have demonstrated that the DAS-A-17 possesses good psychometric properties in terms of model fit, reliability, and convergent construct validity. And finally, for practical reasons, many researchers and clinicians might favour a shortened version. The 17-item version can shorten administration time, while its psychometric quality is maintained. Thus, together with results from previous psychometric studies, our study provides a solid evidence-base for a specific two-factor structure of the DAS-A across settings and populations, consisting of ‘dependency’ and ‘perfectionism/performance evaluation’.

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The Dysfunctional Attitude Scale (DAS)
A Comparison of Forms A and B and Proposals
for a New Subscaled Version

M. J. POWER

*MRC Social and Community Psychiatry Unit, London, United Kingdom, and Department
of Psychology, Royal Holloway, University of London, London, United Kingdom*

R. KATZ

Department of Psychology, Toronto General Hospital, Toronto, Ontario, Canada

P. MCGUFFIN

*Department of Psychological Medicine, University of Wales College of Medicine, Cardiff,
United Kingdom*

C. F. DUGGAN

*Genetics Section, Department of Psychological Medicine, Institute of Psychiatry, London,
United Kingdom*

D. LAM

Department of Psychology, Institute of Psychiatry, London, United Kingdom

AND

A. T. BECK

Department of Psychiatry, University of Pennsylvania

In the first study, a combined sample of mature students, depressed and formerly depressed patients, and the patients first degree relatives completed either Form A or Form B of the Dysfunctional Attitude Scale (DAS). Factor analyses of the two sets of data suggest that, contrary to the original proposals, the two versions of the DAS are not equivalent when a wide range of respondents are sampled. A second study presents preliminary information about a 24-item DAS which can be used to derive three subscale ratings related to Achievement, Dependency, and Self-Control. It is proposed that such subscales may be the preferred way of pursuing possible vulnerability factors rather than seeking more global effects.

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INTRODUCTION

The Dysfunctional Attitude Scale (DAS) was developed by Weissman and Beck, (1978; Weissman, 1979) in order to measure the beliefs or assumptions by which individuals organise their lives. The scale was designed to test certain predictions from Beck's cognitive theory of depression (e.g., Beck, Rush, Shaw, & Emery, 1979), in particular, the predictions that depressives subscribe to more extreme beliefs and that these constitute part of an enduring cognitive vulnerability to depression.

The DAS was originally designed as a 100-item scale, but Weissman (1979) developed two parallel 40-item scales (DAS-A and DAS-B) on the basis of factor analyses of data collected from college students. Beck and his colleagues have continued to use the 100-item version at the Center for Cognitive Therapy in Philadelphia, though following a recent factor analytic study, Beck, Brown, Steer, and Weissman (1991) have recommended the use of a reduced 80-item version of the original scale. However, the DAS-A 40-item scale has come to be more frequently used by other researchers (e.g., DeRubeis, Evans, Hollon, Garvey, Grove, & Tuason, 1990; Dobson & Breiter, 1983; Eaves & Rush, 1984; Peselow, Robins, Black, Barouche, & Fieve, 1990; Silverman, Silverman, & Earldley, 1984; Simons, Murphy, Levine, & Wetzal, 1986; Zimmerman & Coryell, 1986). Given that the scale is being increasingly used in cognitive therapy research and practice, it is important to ascertain whether the two forms of the DAS are equivalent; for example, do the two forms possess similar factor structures? Evidence that they may not be equivalent is suggested by the results from two previous studies (Oliver & Baumgart, 1985; Parker, Bradshaw, & Blignault, 1984) though neither of these studies presented the factor analyses for the DAS-B, and the factor analytic study

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by Cane, Olinger, Gotlib, and Kuiper (1986) considered only the DAS-A version of the scale.

It is also important to consider whether there are *theoretical* grounds for grouping sets of dysfunctional attitudes together, rather than deriving factors on statistical grounds alone. These theoretical groupings are essential for progress to occur in cognitive theories of depression (cf. Safran, Vallis, Segal, & Shaw, 1986); thus, previous research has suggested that beliefs about achievement, interpersonal relations, and self-control may provide one potential sub-grouping (e.g., Power, 1987).

The hope that global measures such as the DAS would assess vulnerability to emotional disorders has not been upheld; reviews suggest that these global measures act more like episode markers rather than true vulnerability factors (see Power, 1990, for a summary of DAS data). One somewhat pessimistic interpretation may be that self-report measures can never assess vulnerability (e.g., Andrews & Brown, 1993), but an alternative possibility is that measures such as the DAS include a mixture of episode-related and vulnerability-related items. One way forward therefore is to produce meaningful subscaled versions of these self-report measures (cf. Beck *et al.*, 1991) in order to test more content-specific versions of the vulnerability hypothesis. The two studies in the present paper present a preliminary attempt to produce a scaled version of the DAS.

STUDY 1

The purpose of the first study was to begin to compare the structures of the DAS-A and the DAS-B when these scales were completed by a broad range of the population.

Method

A set of postal questionnaires were sent to a sample of formerly depressed patients of the Maudsley Hospital who had taken part in a previous study plus a number of their first degree relatives (Bebbington, Brugha, MacCarthy, Potter, Sturt, Wykes, Katz, & McGuffin, 1988; Katz & McGuffin, 1987; McGuffin, Katz, Aldrich, & Bebbington, 1988). The same set of questionnaires was also sent to the members of the South East branch of the Open University Psychology Society, who were primarily mature part-time students. A total of 277 completed questionnaires were obtained in this way, 46.2% of which were from the Open University sample and 53.8% from the Maudsley sample. Replies were obtained from 42.8% of the sample canvassed, 60.2% of these replies being from women.

Some of the demographic characteristics of the two samples are as follows: The mean age of the Maudsley sample was 40.3 years (range 18–64 years) and was very similar to the mean age of the mature students 41.5 years (range 22–65 years). A total of 60.4% of the Maudsley sample were married, 22.8% single, and 16.8% separated, divorced, or widowed; the figures for the mature students showed that 63.3% were married, 16.4% single, and 20.3% separated, divorced or widowed. Whereas 37.2% of the Maudsley sample were unemployed, a total of 14.8% of the students were unemployed with the remainder being in part-time or full-time employment (it should be pointed out that Open University courses

are taken on a part-time basis). Finally 60.3% of the Maudsley sample were women, and 70.3% of the student sample.

The DAS-A and the DAS-B were sent with a number of other questionnaires, which included a general symptom measure, namely, the GHQ-28 (Goldberg & Hillier, 1979). Half of the sample were sent the A-form and half were sent the B-form of the DAS. Each version of the scale consists of a set of 40 statements of the form "If I fail at my work, then I am a failure as a person" (see Tables 1 and 2) which the respondents rate on a 7-point Likert-type scale from 1 = Totally Agree, to 7 = Totally Disagree. The range of scores on each scale therefore is from 40 to 280, with higher scores being indicative of greater dysfunctionality. Weissman (1979) reported mean scores of 119.4 ($SD = 27.2$) for a sample of 355 undergraduates who completed both the DAS-A and the DAS-B forms.

RESULTS

General

The results for the general symptom measure the GHQ-28 showed that the two samples were very similar for both total scores and for the depression subscale. The Maudsley sample scored 3.93 for total symptoms ($SD = 6.26$, range 0–28) in comparison to the student mean of 4.13 ($SD = 5.66$, range 0–26); the equivalent scores for the depression subscale were 2.18 ($SD = 4.07$, range 0–21) for the Maudsley sample and 2.14 ($SD = 3.76$, range 0–26) for the mature students.

Comparisons of DAS-A and DAS-B

The combined DAS-A and DAS-B values for the Maudsley sample (mean = 111.6, $SD = 29.1$) did not differ significantly from the equivalent values for the Open University sample (mean = 115.0, $SD = 27.4$), nor did *t*-tests reveal any significant differences for separate DAS-A and DAS-B analyses (all t s < 1). The fact that the Maudsley and Open University samples do not differ significantly suggests that their scores can be combined for the purposes of the factor analyses. In contrast the scores for DAS-A (mean = 109.6, $SD = 29.7$) were on average lower than those for DAS-B (mean = 117.2, $SD = 26.1$) ($t(246) = 2.14$, $p = 0.034$, two-tailed). This difference provides some indication that the two forms of the DAS may not be equivalent. Tests of the internal consistency of each scale showed that Cronbach's alpha equalled 0.898 for DAS-A and 0.860 for DAS-B.

Factor Analyses

Separate factor analyses were carried out for the DAS-A ($N = 144$) and the DAS-B ($N = 133$) data. Principal components analyses were followed by varimax rotation using the SPSSX program. A number of imposed factor solutions were inspected, and the three-factor solution appeared to be the most interpretable. The three-factor solution for DAS-A is presented in Table 1; only items that loaded uniquely on one factor

TABLE 1
ITEMS FROM THE DAS-A ACCORDING TO WHICH OF THE THREE FACTORS ON WHICH THEY
LOADED MOST CLEARLY

Factor label and item number	Item	Factor loading
Factor 1: Achievement		
10	If I fail at my work, then I am a failure as a person.	0.76
14	If I fail partly, it is as bad as being a complete failure.	0.75
9	If I do not do as well as other people, it means I am an inferior human being.	
4	If I do not do well all the time, people will not respect me.	0.68
20	If I don't set the highest standards for myself, I am likely to end up a second rate person.	0.68
3	People will probably think less of me if I make a mistake.	0.68
22	People who have good ideas are more worthy than those who do not.	0.66
21	If I am to be a worthwhile person, I must be truly outstanding in at least one major respect.	0.62
1	It is difficult to be happy unless one is good looking, intelligent, rich, and creative.	0.56
7	I cannot be happy unless most people I know admire me.	0.54
15	If other people know what you are really like, they will think less of you.	0.54
8	If a person asks for help, it is a sign of weakness.	0.53
13	If someone disagrees with me, it probably indicates he does not like me.	0.53
23	I should be upset if I make a mistake.	0.43
Factor 2: Dependency		
34	My happiness depends more on other people than it does on me.	0.69
32	If others dislike you, you cannot be happy.	0.67
27	It is awful to be disapproved of by people important to you.	0.62
38	What other people think about me is very important.	0.51
40	I can find happiness without being loved by another person.	0.45
29	I can reach important goals without slave-driving myself.	0.40
28	If you don't have other people to lean on, you are bound to be sad.	0.40
Factor 3: Self-control/Dependency		
6	It is possible to gain another person's respect without being especially talented at anything.	0.67
17	One can get pleasure from an activity regardless of the end result.	0.60
30	It is possible for a person to be scolded and not get upset.	0.49
24	My own opinions of myself are more important than others' opinions of me.	0.47
5	Taking even a small risk is foolish because the loss is likely to be a disaster.	0.42

at 0.4 or higher are shown. The first factor accounted for 22.5% of the total variance. The items loading on this factor are primarily about achievement and fear of failure, therefore the factor is labeled Achievement. The second factor accounted for 6.2% of the variance and contains items concerned with issues about dependency and approval; it is labeled Dependency. The third factor accounted for 5.4% of the variance, but is slightly harder to interpret than the first two. The items seem to include issues about dependency and self-control and is labeled Self-control/Dependency accordingly.

The results for the imposed three-factor solution for the DAS-B are presented in Table 2. The first factor accounted for 17.7% of the variance; it too is centered around issues about achievement, but it seems to contain a greater number of dependency items than the equivalent DAS-A Achievement factor. The second factor accounted for 10.1% of the total variance; the items reflect issues about self-control and seem far more clear-cut than the nearest DAS-A equivalent factor (i.e., Factor 3). The third factor accounted for 6.1% of the variance. The items which loaded most clearly on this factor were mainly to do with dependency, though the first item ("One should look for a practical solution to problems rather than a perfect solution") somewhat complicates this interpretation.

Finally, the correlations between the DAS and the GHQ-28 (total symptom scores, and depression and anxiety sub-scales) were all positive and mostly significant (Pearson r range 0.284–0.443). The only correlation that did not reach significance was that between the GHQ depression scale and the DAS-B for the Maudsley sample ($r = 0.195$, $p > 0.05$); given that the equivalent value for the DAS-A was highly significant ($r = 0.443$, $p < 0.001$), this result further illustrates that the two forms of the DAS do not seem to be equivalent.

STUDY 2

The purpose of the second study was, first, to collect data using both the DAS-A and the DAS-B with the same sample and, second, to test a rationally derived scaled version of the DAS with this population. As stated earlier, the three-factor solution for the factor analyses seemed most interpretable and, together with the available literature, these pointed to three potential subscales that reflected issues about achievement, dependency, and self-control (Beck & Emery, 1985, highlight self-control issues in particular in relation to anxiety).

Method

Preliminary steps. The first step was to select 12 items for each of the 3 subscales, partly on the basis of their loadings on the earlier factor analyses (Tables 1 and 2), and partly on the actual content of the items so that they reflected the intended content of the subscale

TABLE 2
ITEMS FROM THE DAS-B ACCORDING TO WHICH OF THE THREE FACTORS ON WHICH THEY
MOST CLEARLY LOADED

Factor label and item number	Item	Factor loading
Factor 1: Achievement		
2	I have to impress new acquaintances with my charm, wit, or intelligence or they won't like me.	0.70
15	My life is wasted unless I am a success.	0.63
21	My value as a person depends greatly on what others think of me.	0.63
7	I should try to impress other people if I want them to like me.	0.59
30	If other people consider me unattractive it need not upset me.	0.55
17	I must be a useful, productive, creative person or life has no purpose.	0.50
13	If people whom I care about do not care for me, it is awful.	0.48
6	People who have the marks of success (good looks, fame, wealth) are bound to be happier than people who do not.	0.47
10	If a person is indifferent to me, it means he does not like me.	0.43
Factor 2: Self-control		
28	I should always have complete control over my feelings.	0.64
29	I should be happy all the time.	0.62
24	A person should be able to control what happens to him.	0.49
37	If I do well, it is probably due to chance; if I do badly, it is probably my own fault.	0.45
9	I ought to be able to solve my problems quickly and without a great deal of effort.	0.45
11	I should be able to please everybody.	0.45
31	Whenever I take a chance or risk I am only looking for trouble.	0.44
40	A person should do well at everything he undertakes.	0.42
16	People should prepare for the worst or they will be disappointed.	0.41
Factor 3: Dependency		
36	One should look for a practical solution to problems rather than a perfect solution.	0.66
12	Others can care for me even if they know all my weaknesses.	0.63
18	A person should think less of himself if other people do not accept him.	0.56
33	I may be able to influence other people's behaviour but I cannot control it.	0.52

(i.e. face validity). One additional item was included from the DAS-100, because of the under-representation of self-control items on the DAS-A. These 36 items were given to 121 undergraduate students. The 8 items on each subscale that had the best item-total correlations for that subscale were then selected to form a 24-item DAS that was actually used in the study proper. The selected items were as follows:

Achievement: A14, A3, B15, A20, A21, B17, A4, A22.

Dependency: A32, A34, A38, A16, A28, A40, A35, B26.

Self-Control: B29, B28, B9, B24, A30, B40, B31 + Item 64 from the DAS-100 ("If I try hard enough, I should be able to excel at anything I attempt").

Main study. Again, two different examples were collected for the second study. The first was another group of Maudsley depressed patients and their relatives; the patients had taken part in an earlier study (Kendell, 1968) and were now being followed up some years later (see, e.g., Duggan, Lee, & Murray, 1990; Lee & Murray, 1988). A total of 152 patients and first-degree relatives were collected in this way. The second sample was a group of respondents obtained from the register of a General Practice in South London. A further 142 respondents were obtained in this way.

Both samples were given the DAS-24; in addition, it was possible to include the remaining items from the DAS-A and the DAS-B for the GP sample in order to test the comparability of the A and B forms in the same sample.

Further details of the Maudsley sample are presented in Power, Duggan, Lee, & Murray (1994).

Results

General. The comparisons of the GP and the Maudsley sample showed that both had similar Beck Depression Inventory (BDI) scores, the mean for the GP sample being 7.0 ($SD = 6.4$) and for the Maudsley sample 7.5 ($SD = 8.6$). The average age of the GP sample was 37.7 years ($SD = 12.8$, range 18–62); 40.8% were married, 55.6% single, and the remainder were separated, divorced, or widowed. There were approximately equal numbers of men and women.

The average age of the Maudsley sample was 50.7 years ($SD = 16.8$, range 18–22). The average is higher than the GP sample largely because the probands had originally been hospitalised some years ago (see Kendell, 1968) and were now part of a follow-up study (Lee & Murray, 1988). The marital status figures showed that 63.2% were married, 23.7% were single, and 14.5% were separated, divorced, or widowed. Again these figures reflect the fact that they are on average older than the GP sample. There were 38.7% men and 61.3% women.

Comparisons of DAS-A and DAS-B. The GP sample were sent both the DAS-A and the DAS-B. The total scores were 112.1 ($SD = 31.5$) for the DAS-A, and 115.0 ($SD = 31.7$) for the DAS-B. Although the DAS-A was again numerically lower than the DAS-B, the scores were not significantly different ($t < 1$). However, the overall correlation of the A and B scores although significant was not high given that they are supposedly parallel forms ($r = 0.745$) and, in fact, the new DAS-24 numerically correlated more highly with the A form ($r = 0.901$) and the

TABLE 3
RESULTS FROM A CONFIRMATORY FACTOR ANALYSIS OF THE SCALED DAS-24

Scale and item	Factor	Loading	Beck <i>et al.</i> (1991) factor
Achievement			
19	F1	0.78	F3
10	F1	0.71	F3 (second highest)
7	F1	0.71	F3 (highest)
4	F1	0.67	F3
1	F1	0.64	—
13	F1	0.63	F3
16	F1	0.61	F3
22	F1	0.53	F3
Dependency			
23	F3	0.68	F2
17	F3	0.58	F9 (lowest)
5	F3	0.55	—
20	F3	0.52	F2 (second highest)
8	F3	0.46	F2
2	F1/F3	0.40	F2
11	F1	[0.56]	F1
14	F1	[0.49]	F1
Self-control			
3	F2	0.76	F5 (second highest)
6	F2	0.73	F5
9	F2	0.63	F5
21	F2	0.57	F5 (highest)
18	F2	0.52	F5
12	F2	0.45	F5
15	F2	0.35	—
24	F1	[0.57]	F1 (highest)

Note. Also shown is the factor that the item loaded on in the Beck *et al.* (1991) factor analysis of the DAS-100

B form ($r = 0.839$) than the A and B forms did with each other, reflecting the fact that the DAS-24 includes items from both forms.

Factor analyses. In order to see if there was statistical support for the rationally derived sub-scales a confirmatory factor analysis was carried out for the combined sample ($N = 294$). A three-factor solution was imposed on the analysis, which as in the first study consisted of a Principal Components Analysis followed by a Varimax rotation. The Kaiser-Meyer-Olkin measure showed that the data were suitable for factor analysis ($KMO = 0.783$).

The results of the factor analysis are shown in Table 3. The table shows that all of the 8 Achievement items loaded on the correct factor, as did

TABLE 4
COMPARISONS BETWEEN THE GP AND THE MAUDSLEY SAMPLES ON THE SUBSCALES AND THE
TOTAL SCORE FOR THE DAS-24

DAS-24 scale	GP sample (<i>N</i> = 142)	Maudsley sample (<i>N</i> = 152)	<i>t</i>	<i>p</i>
Achievement	21.67 (9.38)	25.74 (11.01)	3.37	.001
Dependency	27.48 (9.61)	30.41 (8.82)	2.74	.006
Self-control	26.57 (7.91)	29.43 (8.32)	3.11	.002
Total score	75.71 (20.76)	85.59 (22.81)	3.90	.001

7 out of 8 of the Self-Control items, and 5 out of 8 of the Dependency items on their appropriate factors. As a more formal measure of agreement, Cattell's salient similarity index, *s*, was used to compare the theoretical pattern of loadings against the obtained pattern (see Tabachnick & Fidell, 1989, for details). The values of this statistic were for Achievement, *s* = 0.80, Dependency, *s* = 0.77, and for Self-Control, *s* = 0.93; all of these values were highly significant at *p* < 0.001.

Table 3 also presents data from the major factor analysis of the DAS-100 carried out by Beck *et al.* (1991). This comparison shows that 7 out of 8 of the Achievement items loaded on Beck *et al.*'s Factor 3 (labeled "Success-Perfectionism"), that 6 out of 8 of the Self-Control items loaded on Beck *et al.*'s Factor 5 (labeled "Imperatives"), and that 4 out of 8 of the Dependency items loaded on Beck *et al.*'s Factor 2 (labeled "Need for Approval"). In fact, the overlap is improved for all 3 scales if the closest worded item is also included, because Beck *et al.* included only 66 of the 100 possible items in their reported factor analysis.

Reliability and other analyses. The analysis of the internal consistencies of the subscales gave acceptable Cronbach alpha values of 0.847, 0.737, and 0.681 for the Achievement, Dependency, and Self-Control scales, respectively. The Pearson *r* intercorrelations for the subscales were Achievement-Dependency, 0.570, Achievement-Self-Control, 0.506, and Dependency-Self-Control, 0.248, all of which were significant at *p* < 0.001 with the sample size of *N* = 294.

A surprising result from the first study was that the first Maudsley sample did not differ from the mature student sample on the DAS-A or the DAS-B, which either reflects the problems with the 40-item versions of the DAS or the problems of being a mature student. However, the second Maudsley sample did significantly differ from the GP sample on all three subscales and on the total score for the DAS-24, scoring significantly higher each time (see Table 4).

GENERAL DISCUSSION

The analyses of the data for the DAS-A and DAS-B do not appear to support Weissman's (1979) claim that these are parallel forms that can be substituted for each other. From the factor analyses in the first study perhaps the clearest factor that did emerge for the two scales was that of Achievement, though the DAS-B Achievement factor included more dependency items than did the DAS-A form. However, the relatively clear-cut DAS-B factor labelled Self-Control did not appear so clearly in the DAS-A analysis, and, equivalently, the DAS-A factor of Dependency did not appear so clear-cut in the DAS-B. Furthermore, the scores on the DAS-B were significantly greater than those on the DAS-A. The safest conclusion therefore is that the two short forms of the DAS are not equivalent (cf. Oliver & Baumgart, 1985), a conclusion that is further supported by the relatively low correlation obtained between the two forms in the second main study.

One of the questions that must also be considered is how the present factor analyses compare with previous factor analyses of the DAS. First, it must be reiterated that there are no published factor analyses of the DAS-B, and only Cane *et al.* (1986) and Parker *et al.* (1984) have published their analyses of the DAS-A (Oliver & Baumgart, 1985, do not present the relevant data). Cane and his colleagues (1986) selected a two-factor solution to be most interpretable; these two factors are extremely similar in content and item loadings to the first two factors presented earlier. Although Parker *et al.* (1984) opted for a four-factor solution, again the first two factors were very similar in content to the first two factors identified here. In sum, the published analyses of the DAS-A concur that the first two factors are concerned with personal achievement and with issues of dependency and approval.

Before, however, we accept Parker *et al.*'s (1984) conclusion that use of the DAS-A is continued and the DAS-B abandoned, an analysis of the 100-item DAS collected from over 2000 outpatients at the Center for Cognitive Therapy (Beck *et al.*, 1991) shows that there is a third more important factor than either the achievement or approval factors that appear in the DAS-A data. This primary factor (with items such as "Whenever I take a chance or risk I am only looking for trouble" being of most importance) could possibly represent a general symptom factor, that is, a general factor that is especially sensitive to the depression level of the respondents; thus, whereas Beck *et al.*'s sample were all outpatients attending a clinic with a mixture of emotional disorders, the present studies included substantial numbers of normal individuals in addition to depressed cases. It is an empirical question therefore whether the general

vulnerability factor obtained by Beck *et al.* would be obtained with a recovered depressed sample or with a normal population.

The fact that in Study 1 the Maudsley sample did not differ from the Open University sample (in fact, the mature students unexpectedly scored in the more dysfunctional direction) suggested that a preferable way forward with the DAS was to produce a number of theoretically and empirically derived subscales that captured certain types of depressive themes. There is no reason why depression-prone individuals should subscribe to dysfunctional beliefs in all areas of their lives, but these beliefs may be limited to one or two highly valued areas. The relevant themes that have been identified as appropriate for different types of cognitive vulnerability (e.g., Beck, 1983; Beck & Emery, 1985; Power, 1987) provided a good basis from which to develop a scaled DAS. For example, depressive concerns that centre around achievement and interpersonal problems have been identified as significant by a number of writers (Arieti & Bemporad, 1978; Beck, 1983; Blatt, Quinlan, Chevron, McDonald, & Zuroff, 1982), and to a lesser extent the area of self-control has also received some consideration (Arieti & Bemporad, 1978; Beck & Emery, 1985; Power, 1987).

In Study 2, therefore, a 24-item version of the DAS was developed with items loading on the three subscales of Achievement, Dependency, and Self-Control, in addition to the total score. This study was designed partly to test the subscales in a confirmatory factor analysis and partly to further assess the relationship between the DAS-A and the DAS-B. The factor analysis provided very strong support for the proposed subscales, with over 83% of the items loading primarily on the predicted sub-scale. Although the mean scores for the DAS-A and the DAS-B were, in contrast to the first study, not significantly different, the correlation of 0.74 between the two forms was not sufficiently high to suggest that these forms could be treated as parallel. In fact, the new DAS-24 was found to correlate more highly with the DAS-A and the DAS-B than they did with each other.

It will, of course, now be necessary to include the scaled or factored versions of the DAS in the studies of onset of, and recovery from, emotional disorders in order to evaluate whether or not the more specific subscales act as true vulnerability factors. An initial study with the DAS-24 (Power *et al.*, 1994) has provided preliminary evidence that the Dependency subscale might be tapping into a depression-specific vulnerability factor, though, as ever, further research is necessary.

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FACTOR STRUCTURE OF THE DYSFUNCTIONAL ATTITUDE SCALE IN A STUDENT POPULATION

DOUGLAS B. CANE, L. JOAN OLINGER, IAN H. GOTLIB AND NICHOLAS A. KUIPER

*University of Western Ontario
London, Ontario, Canada*

The Dysfunctional Attitude Scale-Form A (DAS-A) was completed by 664 university students and the results were factor-analyzed. Approximately 61% of the variance was accounted for by two factors, labelled Performance Evaluation and Approval by Others. Analyses conducted on two subsamples indicated that the obtained factor solution was stable. The present results are discussed with respect to personality subtypes hypothesized to be vulnerable to depression.

The Dysfunctional Attitude Scale (DAS; Weissman, 1980; Weissman & Beck, 1978) is a self-report inventory derived from Beck's (1976) cognitive model of depression to measure the presence of attitudes hypothesized to predispose an individual to depression. Previous studies have reported internal consistency coefficients for the DAS in the range of .79 to .93 for a university population (Dobson & Breiter, 1983; Weissman, 1980; Weissman & Beck, 1978) and .85 for an unselected adult population (Oliver & Baumgart, 1985). Test-retest reliabilities of .84 for a 2-month period and .74 for a 3-month period were reported by Weissman (1980) and Kuiper, Olinger, and Air (1985), respectively, for university student populations. With respect to construct validity, depressed individuals score higher on the DAS than do nondepressed individuals (Gotlib, 1984; Kuiper & Olinger, *in press*), and the DAS has been found to successfully predict subsequent depressive episodes (Eaves & Rush, 1984; Rholes, Riskind, & Neville, 1985).

Although the DAS has been used widely in research, and its psychometric properties investigated, relatively little is known about the factor structure of the DAS. Of particular interest is the possibility that different vulnerability factors may underlie an individual's total DAS score and that such differences may contribute to varying types of vulnerability for depression. Beck (1983), for example, has suggested that two different personality subtypes, autonomous and socially dependent, may be particularly vulnerable to depression. The purpose of the present study was to investigate the factor structure of the DAS with respect to these proposed vulnerabilities to depression.

METHOD

Subjects and Procedure

Participants were 664 undergraduates at the University of Western Ontario. Subjects completed the DAS-A as part of a larger battery of tests and received course credit for their participation. A description of the sample and additional information about the procedure have been reported elsewhere (Gotlib, 1984; Kuiper & Olinger, *in press*).

RESULTS

In general, moderate item-total correlations were obtained for the DAS-A; 33% of the items had item-total correlations greater than .30, and 73% of the items had item-total correlations greater than .20. An alpha coefficient of .87 was obtained for the DAS-A, which indicates a high degree of internal consistency.

Please address all correspondence to Ian H. Gotlib, Department of Psychology, University of Western Ontario, London, Ontario, Canada N6A 5C2.

A principal factors factor analysis with Varimax rotation was conducted, and a two-factor solution was found to be most interpretable. Factor 1, labelled Performance Evaluation, accounted for approximately 47% of the variance, while Factor 2, labelled Approval by Others, accounted for an additional 14% of the variance.

Table 1
Factor Structure of the DAS-A

Factor 1: Performance Evaluation

- 9. If I do not do as well as other people, it means I am an inferior human being (.67).
- 10. If I fail at my work, then I am a failure as a person (.65).
- 4. If I do not do well all the time, people will not respect me (.60).
- 14. If I fail partly, it is as bad as being a complete failure (.58).
- 15. If other people know what you are really like, they will think less of you (.52).
- 21. If I am to be a worthwhile person, I must be truly outstanding in at least one major respect (.50).
- 3. People will probably think less of me if I make a mistake (.50).
- 22. People who have good ideas are more worthy than those who do not (.49).
- 11. If you cannot do something well, there is little point in doing it at all (.48).
- 26. If I ask a question, it makes me look inferior (.48).
- 8. If a person asks for help, it is a sign of weakness (.45).
- 31. I can not trust other people because they might be cruel to me (.44).
- 13. If someone disagrees with me, it probably indicates that he does not like me (.42).
- 1. It is difficult to be happy, unless one is good looking, intelligent, rich and creative (.40).
- 12. Making mistakes is fine because I can learn from them (.40).

Factor 2: Approval by Others

- 19. My value as a person depends greatly on what others think of me (.61).
 - 38. What other people think about me is very important (.61).
 - 32. If others dislike you, you cannot be happy (.51).
 - 27. It is awful to be disapproved of by people important to you (.46).
 - 34. My happiness depends more on other people than it does on me (.45).
 - 35. I do not need the approval of other people in order to be happy (.45).
 - 28. If you don't have other people to lean on, you are bound to be sad (.45).
 - 40. I can find happiness without being loved by another person (.42).
 - 7. I cannot be happy unless most people I know admire me (.40).
 - 39. Being isolated from others is bound to lead to unhappiness (.40).
-

Note. — Factor loadings are presented in parentheses. Only items with factor loadings of .40 or greater are presented.

Of the 40 original items, 25 items had a loading of .40 or greater on one of the two factors, and no item loaded substantially on both factors. The items associated with each factor and their factor loadings are presented in Table 1. Moderate item-total correlations were obtained for both factors and ranged from .39 to .60 for Factor 1 and from .33 to .57 for Factor 2. Alpha coefficients for scales comprised of items with factor loadings that exceeded .40 were .84 and .76 for Factors 1 and 2, respectively.

The robustness of the obtained factor solution was examined by randomly dividing the sample and conducting two separate factor analyses. The factorial similarity of the resulting factor solutions was examined by computing coefficients of congruence (Harman, 1976). For Factors 1 and 2, coefficients of .987 and .974, respectively, were obtained, which indicates a high degree of congruence for the two-factor solutions.

DISCUSSION

Two major factors, Performance Evaluation and Approval by Others, were found to account for a large proportion of the variance in DAS-A scores. Similar factors, labelled need for approval and perfectionism, were identified by Oliver and Baumgart (1985) as the first two factors in a four-factor solution. These factors, then, appear to be quite stable and have been found in populations of both university students and adult community members. In the present study these factors also were obtained for two independent subsamples.

The finding of factors that represent concerns about performance evaluation and interpersonal approval is of interest in light of recent formulations of different vulnerabilities to depression. As noted earlier, Beck (1983) has described two personality subtypes relevant to depression, autonomous and socially dependent, for which different events may precipitate depression. The events hypothesized to precipitate depression for the autonomous and for the socially dependent subtypes (failure to meet personal goals or standards and disruption of personal relationships, respectively) are similar to the two factors found for the DAS-A. Future research, therefore, might examine the utility of employing the DAS to identify these subtypes and examine their relationship with specific types of life events in precipitating depression.

The present results are limited, of course, by the nature of the sample used. Additional research is required to establish the factor structure of the DAS for both community and clinical populations.

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