

MEASURE NAME:	Beck Anxiety Inventory
Acronym:	BAI



Basic Description

Author(s):	Beck, Aaron T., M.D., & Steer, R.A.												
Author Contact:	Aaron T. Beck Psychopathology Research Unit 3535 Market Street, Room 2032 Philadelphia, PA 19104 Fax: (215) 573-3717 Contact first author via e-mail.												
Author Email:	abeck@mail.med.upenn.edu												
Citation:	Beck, A.T., & Steer, R.A. (1993). Beck Anxiety Inventory Manual. San Antonio, TX: Psychological Corporation.												
To Obtain:	Harcourt Assessment, Inc. 19500 Bulverde Road San Antonio, Texas 78259 Phone: 1-800-211-8378 Fax: 1-800-232-1223												
E-mail:	customer_service@harcourt.com												
Website:	www.harcourtassessment.com												
Cost per copy (in US \$):	\$1.64												
Copyright:	Yes												
Description:	<p>The Beck Anxiety Inventory (BAI) is a widely used 21-item self-report inventory used to assess anxiety levels in adults and adolescents. It has been used in multiple studies, including in treatment-outcome studies for individuals who have experienced traumas. Although the age range for the measure is from 17 to 80, the measure has been used in peer-reviewed studies with younger adolescents aged 12 and older (see Notes under "Construct Validity" for studies and ages of adolescents).</p> <p>In a comparative analysis of the research output on clinical measures of anxiety (PsychInfo citation analysis for 1991-1998), the "BAI ranks third, behind the State-Trait Anxiety Inventory and the Fear Survey Schedule, in terms of use in research" (Piotrowski, 1999).</p>												
Theoretical Orientation Summary:	Items were selected based upon their consistency with DSM-III-R criteria for anxiety disorders, with an emphasis on panic disorder and generalized anxiety disorder.												
Domains Assessed:	<table border="1"> <tr><td>1.</td><td>Anxiety (child)</td></tr> <tr><td>2.</td><td>Anxiety (cgiver)</td></tr> <tr><td>3.</td><td></td></tr> <tr><td>4.</td><td></td></tr> <tr><td>5.</td><td></td></tr> <tr><td>6.</td><td></td></tr> </table>	1.	Anxiety (child)	2.	Anxiety (cgiver)	3.		4.		5.		6.	
1.	Anxiety (child)												
2.	Anxiety (cgiver)												
3.													
4.													
5.													
6.													
Languages Available:	Arabic, Chinese, English, Farsi, Finnish, French, German, Korean, Norwegian, Portuguese, Spanish, Swedish, Turkish												

Age Range:	12.0 - 80.0	Measure Type:	Screening
# of Items:	21	Measure Format:	Questionnaire
Time to Complete (min):	10	Reporter:	Self
Time to Score (min):	5	Education Level:	0.00
Periodicity:	Unknown		
Response Format:	4-point Likert-type scale: Not All (0), Mildly (1), Moderately (2), Severely (3)		

Materials Needed: <i>(check all that apply)</i>	Yes	Paper and pencil	Testing stimuli
	Optional	Computer	Physiological equipment
		Video equipment	Other

Material Notes:	<p>Measure can be administered as an interview if necessary.</p> <p>The manual gives the age range as 17-80, but because the measure has been frequently used and validated with adolescents age 12 and older, we list the age range as 12-80.</p> <p>Standardized scoring forms must be ordered through the Psychological Corporation. Spanish record forms are also available. Computerized scoring is also available.</p> <p>Materials available (as of 6/05) include:</p> <ol style="list-style-type: none"> 1. Complete kit with Manual and 25 Record Forms: \$75 2. BAI Manual: \$40 3. Record Forms (pkg/100): \$150 (Pricing is based on purchase of this item.) 4. Spanish Record Forms (pkg/100): \$150 5. Scannable Record Forms (pkg/100): \$150
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Sample Items:		
Domains	Scale	Sample Items
Anxiety		not available
Notes (additional scales and domains):		

Information Provided: (check all that apply)			
	Diagnostic information DSM-III	Yes	Standard Scores
	Diagnostic information DSM-IV	Yes	Percentile
	Strengths		Graph (e.g., of elevated scale)
Yes	Areas of concerns/risks		Dichotomous assessment
	Program evaluation information		Clinical friendly output
Yes	Continuous assessment		Written feedback
Yes	Raw Scores		Other



Training

Training to Administer: (check all that apply)		None		Must be a psychologist
	Yes	Via manual/video		Training by experienced clinician (<4 hours)
		Prior experience psych testing & interpretation		Training by experienced clinician (≥4 hours)
Training to Interpret: (check all that apply)		None		Must be a psychologist
	Yes	Via manual/video		Training by experienced clinician (<4 hours)
	Yes	Prior experience psych testing & interpretation		Training by experienced clinician (≥4 hours)
Training Notes:	The BAI can be administered and scored by paraprofessionals, but requires interpretation by professionals with the appropriate clinical training and experience as determined by the American Psychological Associations Standards for Educational and Psychological Tests.			



Parallel or Alternate Forms

Parallel Forms?	No
Alternate Forms:	No
Forms for Different Ages:	Yes
If so, are forms comparable:	
Any Altered Versions of Measure:	No
Describe:	The Beck Anxiety Inventory for Youth is for use with children aged 7-14.



Population Used to Develop Measure

Beck, A.T., Epstein, N., Brown, G., & Steer, R.A. (1988) drew three successive samples of psychiatric outpatients. A total of 1,086 patients included 456 men (42%, mean age = 36.4 years, SD=12.4) and 630 women (58%, mean age = 35.7 years, SD=12.1). The patients were predominantly diagnosed with mood and anxiety disorders, but other non-specific disorders were also represented. Less than 1% of the sample was diagnosed as psychotic. The ethnic composition of the sample is unknown.



Psychometrics

Global Rating (scale based on Hudall Stamm, 1996):

Psychometrically matured, used in multiple peer reviewed articles by different people

Norms: Yes

For separate age groups: No

For clinical populations: No

Separate for men and women: No

For other demographic groups: No

Notes: T-scores and percentiles are available based on Psych Corp's normal sample of community adults. Normative BAI scores are also presented in Gillis, Haaga, & Ford (1995), which included a sample of 242 individuals aged 18-65.

The demographic variables for the 393 patients showed that the BAI is significantly related to gender and age, which has been replicated in numerous studies, suggesting the need for separate norms by gender and age.

Clinical Cutoffs: Yes

Specify Cutoffs: Raw scores of 8-15 (mild anxiety), 16-25 (moderate anxiety), & 26-63 (severe anxiety)

Used in Major Studies: Yes

Specify Studies: Beck, A.T., Brown, G., Steer, R.A., Eidelson, J.I., & Riskind, J.H. (1987). Differentiating anxiety and depression: A test of the cognitive content specificity hypothesis. *Journal of Abnormal Psychology*, 96, 179-183.

Reliability:

Type:	Rating	Statistics	Min	Max	Avg
Test-Retest-# days: 7	Acceptable	Correlation			0.75
Internal Consistency:	Acceptable	alpha			0.92
Inter-Rater:					
Parallel/Alternate Forms:					

Notes:

TEST-RETEST

Beck et al. (1988) report a test-retest reliability of .75 in a sample of adult psychiatric outpatients. Creamer, Foran, & Bell (1995) report a test-retest correlation of .62 with an interval of 7 weeks, which they viewed as reasonable, given that they considered the measure to tap state anxiety (versus trait anxiety).

Good test-retest reliability and internal consistency have also been found in adolescent samples (see Notes under “Construct Validity”).

INTERNAL CONSISTENCY

With their diagnostically mixed sample of 160 outpatients, Beck, Epstein, Brown, & Steer (1988) reported that the BAI had high internal consistency reliability (alpha=.92). Fydrich, Dowdall, & Chambless (1992) found a slightly higher level of internal consistency (.94) in 40 patients diagnosed as having DSM-III-R anxiety disorders.

Content Validity:

Items were selected based upon their consistency with DSM-III-R criteria for anxiety disorders, with emphasis on panic disorder and generalized anxiety disorder.

Construct Validity: (check all that apply)

Validity Type	Not known	Not found	Nonclinical Samples	Clinical Samples	Diverse Samples
Convergent/Concurrent			Yes	Yes	Yes
Discriminant			Yes	Yes	No
Sensitive to Change				Yes	No
Intervention Effects				Yes	Yes
Longitudinal/Maturation Effects	Yes				
Sensitive to Theoretically Distinct Groups			Yes	Yes	No
Factorial Validity			Yes	Yes	No

Notes:

Given the large number of published studies using the BAI, the summary of the literature (below) focuses on core psychometric studies and studies conducted with adolescents, trauma-exposed, and diverse populations.

Numerous studies have examined the BAI’s relationship to other measures and have found evidence for its convergent and discriminant validity. The BAI has been found to correlate moderately with the Hamilton Anxiety Rating scale (Beck et al., 1988) and the State-Trait Anxiety Inventory (STAI), with no difference between correlations with Trait and State scales (Creamer et al., 1995). The BAI typically shows lower correlations with the BDI than does the STAI or other measures of anxiety, suggesting it has better discriminant validity (Creamer et

al., 1995; Fydrich, Dowdall, & Chambless, 1992).

However, factor analysis combining both the BAI and STAI-State scale showed that the two scales load on different factors, suggesting that they tap different constructs (Creamer et al., 1995). A number of studies have suggested that the BAI may be tapping more physiological aspects of anxiety and may function best with anxiety disorders with a strong physiological component, such as panic disorder (Cox, Cohen, Dorenfeld, & Swinson, 1996; Creamer et al., 1995). Cox et al. (1996) factor analyzed items from the BAI with items from the Panic Attack Questionnaire (PAQ). They found a 3-factor model best fit the data and was similar to an earlier 3-factor panic model. Items from the BAI and PAQ loaded on each factor. They suggested that the BAI may be measuring panic symptoms and may not tap symptoms associated with other anxiety disorders such as Generalized Anxiety Disorder, PTSD, and Obsessive-Compulsive Disorder.

Osman et al. (2002) examined the factor structure of the BAI with adolescents and suggested that the BAI taps the construct of anxious arousal but not cognitive or behavioral dimensions of anxiety.

Numerous factor analyses have been conducted with the BAI. While many identify a 2-factor structure similar to that reported by Beck et al. (1988), others have found a 4- or 5- factor structure (Beck & Steer, 1991; Borden, Peterson, & Jackson, 1991; Osman, Kopper, Barrios, Osman, & Wade, 2002). A study by Creamer et al. (1995) provides a potential explanation. Maximum likelihood factor analysis using BAI data collected from normal undergrads at a time of presumably low stress (midsemester) resulted in a different factor structure than the same analysis using data collected on the same undergrads two weeks prior to exams. The data collected under more stressful conditions resulted in a factor structure similar to that identified in the original sample and in other clinical samples (Beck et al., 1988).

Numerous studies, including in other cultures, have identified a gender difference, with females scoring higher than males, in both adult and adolescent samples (e.g., Creamer et al., 1995; Jolly, Aruffo, Wherry, & Livingston, 1993; Osman et al., 2002). Osman et al. (2002) suggest that this difference suggests the need for validating the BAI separately by gender.

In a study of older adults, Wetherell & Gatz (2005) found that in normal older adult controls BAI symptoms were associated with measures of health status.

STUDIES WITH ADOLESCENTS

1. Osman et al. (2002) studied the reliability, validity, and factor structure of the BAI with a group of adolescents. They included 125 boys and 115 girls aged 14-17 who were inpatients at a Midwestern state psychiatric hospital. The comparison group included 167 adolescents aged 14 to 18 from a university-affiliated high school. Both groups were predominantly White.

BAI scores differentiated between the psychiatric and comparison groups in both boys and girls. All groups, examined separately by gender, showed good internal consistency ($\alpha > .88$), and the clinical sample showed good 1-week test-retest reliability ($r = .71$). BAI scores correlated with BDI scores (males: $r = .58^{***}$, females $r = .65^{***}$). Examination of BAI correlations with MMPI-A scales provided good evidence of convergent and discriminant validity for boys but low

evidence for discriminant validity for girls (due to correlations with all MMPI-A scales).

Using confirmatory factor analysis they were unable to replicate the 2-factor structure found in other investigations and instead identified a 4-factor structure using exploratory factor analysis. Further analysis identified a higher-order factor structure, which suggested that the BAI taps a single anxiety construct they termed Anxious Arousal. They suggested the BAI may be a useful screener for anxiety but other measures would be needed to comprehensively assess for anxiety.

2. Kumar, Steer, & Beck (1993) evaluated the use of the BAI with 108 adolescent psychiatric inpatients aged 12-17 and reported excellent internal consistency ($\alpha=.91$). Principal factor analysis identified 2 factors, with a factor structure similar to what is found in adult outpatients.
3. Jolly et al. (1993) examined the use of the BAI with 80 adolescent psychiatric inpatients. They found excellent internal consistency ($\alpha=.94$). BAI scores correlated moderately with the Revised Children's Manifest Anxiety Scale ($r=.58$). The BAI also correlated with adolescents' scores on the Children's Depression Inventory ($r=.49$).
4. Steer, Kumar, Ranieri, & Beck (1995) examined the use of BAI in a sample of 105 adolescent outpatients aged 13-17. Using principal factor analysis they found a similar factor structure as that previously found for adolescent inpatients and adult outpatients.

STUDIES WITH TRAUMA-EXPOSED INDIVIDUALS

The BAI has been used in numerous studies with trauma-exposed individuals. A PsychInfo search of "Beck Anxiety Inventory" or "BAI" AND "trauma" yielded 58 peer-reviewed journal articles (6/05).

1. The BAI has been found to be sensitive to intervention effects in numerous randomized trials with individuals with diagnosed PTSD (e.g., Bryant, Moulds, Guthrie, & Nixon, 2005; Ehlers, Clark, Hackmann, McManus, & Fennel, 2005) and continued to show intervention effects at follow-up assessments.
2. In a study of 205 female rape victims aged 15 and older (48% of whom were African American) who were randomly assigned to a standard postrape control condition or an intervention designed to prevent postrape distress, the BAI was sensitive to intervention effects. In addition, postexam BAI scores were associated with 6-week follow-up PTSD scores and depression symptomatology (Resnick, Acierno, Kilpatrick, & Holmes, 2005).

STUDIES WITH OTHER CULTURAL GROUPS

1. Contreras, Fernandez, Malcarne, Ingram, & Vaccarino (2004) examined the reliability and validity of the BAI and BDI in a sample of 1,110 Latino and 2,703 Caucasian undergraduate students. Scales for both groups had good internal consistencies. They also found similar factor structures for both groups, providing evidence of factorial validity. Although they used the original BDI in this study, they suggested that results would generalize to the BDI-II given the overlap between the two.
2. Sanz & Navarro (2003) examined the psychometric properties of the Spanish

BAI with a sample of 590 Spanish university students and found good internal consistency and a similar factor structure as found in other studies. They provided norms for the university students and separate norms for males and females because females scored higher than did males.

3. Robles, Varela, Jurado, & Páez (2001) examined the psychometrics of the Mexican version of the BAI in multiple samples of individuals aged 15-80. They found good evidence of internal consistency, reliability, and convergent validity, and a similar factor structure as that found in English-speaking samples.

4. Cheng, Wong, Wong, Chong, Tak-Po, Chang, Wong, Chan, & Wu (2002) examined the psychometric properties of the Chinese Version of the BAI (BAI-C). They found good internal consistency and a factor structure similar to that found in English-speaking samples.

5. Al-Issa, Al Zubaidi, Bakai, & Fung (2000) examined the psychometric properties of the translated Arabic BAI with a sample of 240 undergraduate students. They compared results to those found in Lebanese and Canadian students and found similar internal consistencies. Arab students scored higher than Canadian students.

6. Yook & Kim (1997) examined the factorial structure of the Korean BAI. They found similar factor structures in patient and nonpatient groups. Patient groups scored significantly higher than nonpatients.

7. Freeston, Ladouceur, Thibodeau, Gagnon, & Rheume (1994) reported good internal consistency, reliability, and convergent, discriminant, and factorial validity using the French-Canadian version with Canadian university students and adults.

8. BAI scores are related to scores on the Adolescent Dissociative Experiences Scale in a sample of Turkish adolescents (Sayar, Kose, Grabe, & Murat, 2005).

Criterion Validity: (check all that apply)

Measures used as criterion:	Not known	Not found	Nonclinical Samples	Clinical Samples	Diverse Samples
Predictive Validity:	No	No	No	Yes	No
Postdictive Validity:	No	No	No	Yes	No

Sensitivity Rate(s):

Specificity Rate(s):

Positive Predictive Power:

Negative Predictive Power:

Notes: There is no known information pertaining to Sensitivity and Specificity.

Limitations of Psychometrics and Other Comments Regarding Psychometrics:

1. In general, scoring is based on raw scores although there are T-scores and percentiles available based on Psych Corp's normal sample of community adults. Research suggests that norms are really needed by age and gender, given age and gender differences found

across samples.

2. The measure was developed without incorporating diverse populations.

Consumer Satisfaction

No formal data are available; however, Chadwick Center therapists and its treatment outcome staff, researchers, clinicians, and physicians have positively commented on this measure. Many have stated preference for using the measure, as it is easy to administer and score.



Languages Other than English

Language:		Translation Quality (check all that apply)						
		1	2	3	4	5	6	7
		1= Has been translated 2= Has been translated and back translated - translation appears good and valid. 3= Measure has been found to be reliable with this language group. 4= Psychometric properties overall appear to be good for this language group. 5= Factor structure is similar for this language group as it is for the development group. 6 = Norms are available for this language group. 7= Measure was developed for this language group.						
1.	Chinese	Yes	Yes	Yes	No	Yes	No	No
2.	Finnish	Yes	Yes	No	No	No	No	No
3.	French (Canadian)	Yes	Yes	Yes	Yes	Yes	No	No
4.	German	Yes	Yes	No	No	No	No	No
5.	Portuguese	Yes	Yes	No	No	No	No	No
6.	Spanish	Yes	Yes	Yes	Yes	Yes	Yes	No
7.	Norwegian	Yes	Yes	Yes	Yes	Yes		
8.	Turkish	Yes	Yes	Yes	Yes			
9.	Arabic	Yes						
10.	Swedish	Yes						



Use with Trauma Populations

Populations for which measure has demonstrated evidence of reliability and validity:					
	Physical abuse		Natural disaster	Yes	Terrorism
Yes	Sexual abuse	Yes	Accidents		Immigration related trauma
	Neglect		Imprisonment		Kidnapping/hostage
	Domestic Violence		Witness death		Traumatic loss (death)
	Community violence	Yes	Assault	Yes	Other
Yes	Medical trauma	Yes	War/combat		



Use with Diverse Populations

USE WITH DIVERSE POPULATIONS RATING SCALE

- 1= Measure is known (personal communication, conference presentation) to have been used with members of this group.
- 2= Studies in peer-reviewed journals have included members of this group who have completed the measure.
- 3= Measures have been found to be reliable with this group.
- 4= Psychometric properties well established with this group.
- 5= Norms are available for this group (or norms include a significant proportion of individuals from this group)
- 6= Measure was developed specifically for this group.

Population Type:	Degree of Usage: (check all that apply)					
	1	2	3	4	5	6
1. Developmental disability	Yes	No	No	No	No	No
2. Disabilities	Yes	No	No	No	No	No
3. Lower socio-economic status	Yes	No	No	No	No	No
4. Rural populations	No	No	No	No	No	No
5. Traumatized Children/Parents	Yes	Yes	No	No	No	No
6. Adolescents	Yes	Yes	Yes	Yes		

Notes (including other diverse populations):



Pros and Cons/Qualitative Impression

Pros:

1. This measure is a quick screening measure used to identify anxiety symptoms in individuals.
2. The measure can either be self-reported or orally administered.
3. The 21 questions are accurate predictors of anxiety disorders, which makes this screening tool useful in diagnosing clients.
4. The BAI is a useful tool to determine client baselines. Throughout the course of therapy, the BAI can be helpful for ongoing assessment of the client's symptomatology.
5. Compared to other measures of anxiety, the BAI better discriminates anxiety symptoms from depression.
6. The measure has been validated in other countries, with studies suggesting that the measure is reliable and valid in numerous cultures.

Cons:

1. While many items tap the somatic symptoms of anxiety, this measure fails to assess other anxiety symptoms that commonly appear in trauma-exposed individuals.
2. A number of researchers have suggested that the BAI may be tapping more physiological aspects of anxiety such as panic. The physiological aspect of anxiety is, however, an important aspect to assess in PTSD, given the high comorbidity of PTSD and panic and research studies showing that many individuals experience panic symptoms during trauma exposure and that such symptoms are related to later symptomatology (Bryant & Panasetis, 2001; Nixon & Bryant, 2003).
3. BAI symptoms have been found to be associated with measures of health status (Wetherell & Gatz, 2005), suggesting that in samples with health problems (e.g., medical trauma) an anxiety measure that taps cognitive rather than somatic aspects of anxiety may

be important.

4. Given the research suggesting that females score higher than males, separate norms are needed by gender.
5. Psychometric studies involving U.S. adolescents have involved predominantly White samples. More research is needed involving samples with greater ethnic and socioeconomic diversity.



References (Representative sampling of publications, presentations, psychometric references)

Published References:

The manual is:

Beck, A.T., & Steer, R.A. (1993). Beck Anxiety Inventory Manual. San Antonio, TX: Psychological Corporation.

A PsychInfo search (6/05) searching for “Beck Anxiety Inventory Manual” or “BAI” anywhere revealed that the measure has referenced in 725 peer-reviewed journal articles. Below is a sampling of these articles:

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14. Creamer, M., Foran, J., & Bell, R. (1995). The Beck Anxiety Inventory in a non-clinical sample. *Behavior Research and Therapy*, 33(4), 477-485.
15. de Beurs, E., Wilson, K.A., Chambless, D.L., Goldstein, A.J., & Feske, U. (1997). Convergent and divergent validity of the Beck Anxiety Inventory for patients with panic disorder and agoraphobia. *Depression and Anxiety*, 6(4), 140-146.
16. Dent, H.R., & Salkovskis, P.M. (1986). Clinical measures of depression, anxiety and obsessionality in nonclinical populations. *Behavioral Research and Therapy*, 24, 689-691.
17. Dobson, K.S. (1985). The relationship between anxiety and depression. *Clinical Psychology Review*, 5, 307-324.
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Number of Published References: (based on author provided information and a PsychInfo search, not including dissertations)	725
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Number of Unpublished References: (based on a PsychInfo search of unpublished doctoral dissertations)	116
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Author Comments:

The author provided comments, which were integrated.

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