

**Technical Manual**  
**for the**  
**Art Therapy Credentials Board Examination**  
**(ATCBE)**

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by the

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## Introduction

“The mission of the Art Therapy Credentials Board (ATCB) is to protect the public by promoting the competent and ethical practice of art therapy through the credentialing of art therapy professionals.” In alignment with this mission, “the ATCB ensures the educational and professional standards needed to be a qualified art therapist are met and maintained” ([www.atcb.org](http://www.atcb.org)). As such, the purpose of the Art Therapy Credentials Board Examination (ATCBE) is to assess the adequacy of examinees’ knowledge of and preparedness to perform the most prevalent occupational activities related to art therapy practice. The ATCBE provides a standardized, uniform opportunity for examinees to demonstrate their ability to meet or exceed the minimal level of knowledge, skill and application defined by the profession, through a job analysis, as important or necessary for safe and effective art therapy practice.

The ATCBE is used by several states as a licensure exam for those who wish to become practicing art therapists. In the future, even more states are likely to adopt the ATCBE as their licensure examination for professionals in the field. It, therefore, seems both appropriate and prudent that the ATCB adopt as its performance standard a description that is consistent with the fundamental purpose of licensure: to ensure that licensees possess the minimal knowledge requisite for safe and effective practice in the field. Once this definition of a performance standard is accepted and operationalized, the remaining task is to define a cut score on the ATCBE that is consistent with that performance standard.

The purpose of this document is to outline assessment development procedures followed by the Center for Credentialing and Education (CCE) for the ATCBE. This document is intended for internal stakeholders who are either affiliated with CCE, the ATCB, or associated authorized organizations. Within the overview provided, the descriptions of statistical processes are limited for suitability with the intended broad and diverse audience.

## Assessment Development

### Validity

An examination is developed on the premise that examinees’ responses, and ultimately their scores, provide evidence of their knowledge, skills, and/or abilities as they relate to the measured examination construct. Related to the purpose of examinations is the concept of validity, defined as the degree to which evidence supports intended interpretations of scores. Because of the implications associated with validity, it is of paramount importance during assessment development and administration procedures.

There are a variety of validity sources utilized during the development of the ATCBE including expert judgment and an array of statistical procedures. Expert judgment is derived from Subject Matter Experts (SMEs) who are members of the ATCB Certification Committee (CertComm). The CertComm is comprised of 8 to 10 SMEs, representing a variety of educational levels and work settings. The CertComm performs the following activities to ensure the validity of the ATCBE:

1. Classify items according to the detailed content outline derived from the job analysis of professional art therapists.
2. Review each item on every form of the examination for content validity, accuracy, quality and appropriacy for the minimally qualified candidate.
3. Enhance the item pool by rejecting items due to poor psychometric functioning or content-level limitations, e.g, items that do not measure the work behaviors and tasks listed on the content outline which are considered to be necessary for a “minimally competent” art therapist.
4. After each administration of the ATCBE, the CertComm is presented with the psychometric properties of each of the items and of the examination as a whole. The committee also reviews all comments from the examinees.

### **Job Analysis**

The primary sources of validity evidence for the ATCBE are derived from the findings of the job analysis. Alignment is made by SMEs between examination content and job analysis results. The knowledge, skills, and/or abilities required to achieve a passing score on the ATCBE must be rated as tasks that are performed frequently by practicing art therapists and are important for safe and effective practice. A national job analysis is conducted every five years, surveying a diverse population of art therapists, to give evidence of content validity by providing a primary basis for the knowledge, skills, and/or abilities measured on the examination. The content reflected on examinations represents current best practices, ensuring that minimally competent practitioners are prepared to enter the art therapy profession.

Statistical analyses are conducted to summarize survey data. Descriptive statistics (frequencies, means, and standard deviations) are used to present trends in respondent and client demographics; work settings; and activities, approaches, assessments, and task ratings. A factor analysis is conducted using task ratings to statistically determine preliminary groupings of tasks. The resultant factors (groupings of tasks) and task ratings are presented to SMEs during secure committee meetings. Upon the presentation of this data, SMEs identify appropriate naming conventions of categories and placement of tasks (knowledge and skills) within groups. This results in a content outline, which is used in the next phase of assessment development.

### **Content Outline**

A primary intention underlying the job analysis is to develop categories of knowledge and skills which are reflected in subscale scores on the ATCBE. Using the number of tasks presented to respondents on the national job analysis and resulting categories, proportions are calculated to ensure that categories on each form of the ATCBE are reflective of the number of tasks in each category, per the categorization of the Certification Committee. A sample proportionate application of this distribution to the 200-item format of the ATCBE is shown in Table 1. In the sample provided in Table 1, 139 tasks were retained from the job analysis survey. Seventeen percent (17%) of the 139 tasks were categorized as *Administrative Functions and Therapeutic Environment*, 8% of the 139 tasks were categorized as *Initial Interview and Evaluation*, 9%

of the 139 tasks were categorized as *Assessment*, 27% of the 139 tasks were categorized as *Art Therapy Treatment and Services*, and 25% of the 139 tasks were categorized as *Professional Practice and Ethics* by the SMEs.

A total of 200 items are presented on the ATCBE. Using the proportion of retained tasks in each category, the number of items on the ATCBE by category is determined. For example, 17% of the retained tasks were categorized as *Administrative Functions and Therapeutic Environment*; therefore, 34 (17% of the 200 items on the ATCBE) items must be coded as *Administrative Functions and Therapeutic Environment*.

Table 1. Sample Proportionate Distribution of Items by Category

Content Outline Category	Number of Tasks	Proportion of Tasks	Unscored Items	Scored Items			Total Items
				Linking	New	Total	
I. Theoretical Approaches	16	12.8 (13)	4	8.8 (9)	13	22.1 (22)	26
II. Intake and Evaluation	27	21.6 (22)	5	15.2 (15)	23	37.4 (38)	44
III. Assessment and Evaluation Instruments	12	9.6 (10)	4	6.8 (7)	10	17	21
IV. Diagnoses and Populations	21	16.8 (16*)	4	10.8 (11)	16	27.2(27)	31
V. Art Therapy Environment	8	6.4 (6)	4	4	6	10.2 (10)	14
VI. Professional Practice and Ethics	17	13.6 (14)	4	9.6 (9*)	15	23.8 (24)	28
VII. Clinical Skills and Application	24	19.2 (19)	5	12.8 (13)	19	32.3 (32)	36
Total	125	100	30	68	102	170	200

Note. Values in parentheses are rounded. In some instances, rounded numbers resulted in values that exceeded the parameters of the specification. In those instances, the value was not rounded to the next whole number and is identified with an asterisk (\*).

Fifteen percent (15%;  $n = 30$ ) of items on each form of the ATCBE are field test items. The field test items do not contribute to the examinee's score; rather, they are new items being tested for possible inclusion on subsequent forms of the ATCBE. This procedure is highly effective to develop new items before they are administered for criterion purposes. Shown in Table 2 are sample proportions, by category, of scored and field test items based on the values presented in Table 1. The same proportions presented in Table 1 are maintained when determining the number of field items presented per category. The difference between the calculations in Table 1 versus Table 2 is that the number of field test items are determined by calculating each proportion using the total number of field test items ( $n = 30$ ). With this approach, the content presented on each form of the exam remains balanced (including field test items) and reflective of job analysis results.

Table 2. Sample Proportionate Distribution of Field Items by Category

Factor/Category	Proportion of Field Items	Field Test Items	Scored Items	Total
Theoretical approaches	.13	4	16	20
Initial and Evaluation	.17	5	27	32
Assessment and Evaluation	.13	4	12	26
Diagnoses and Populations	.13	4	21	25
Art Therapy Environment	.13	4	8	12
Professional Practice and Ethics	.13	4	17	23
Clinical Skills and Application	.17	5	24	29
Total	1.0	30	170	200

### Item Development

Item writers and reviewers (IWR) are contracted based on the requirement of field test items in each content outline category and their expertise in those categories. IWRs are responsible for developing multiple choice questions (MCQ) used to create forms of the ATCBE. Once contracted, IWRs are required to participate in CCE’s item writing training, which prepares experts to write quality items that purposefully measure the knowledge and skills deemed to be the most important per the most recent job analysis survey.

IWRs are encouraged to first identify the knowledge and skills (and category) which they are attempting to measure prior to writing an item. The task of assigning these codes to each item ensures that validity is considered during each phase of development. Once an item is written, it is sent to two independent reviewers before being presented to the Certification Committee for possible use as a field item. Throughout the entire process of item writing to field testing, a system of checks and balances is built to ensure an item is appropriate for measuring the knowledge or skills it is intended (coded) to measure.

All items on the ATCBE go through an extensive evaluation process by the Certification Committee, which includes considerations for content accuracy, clarity, bias, reading level, and content outline alignment. Before an item is approved for field testing, consensus by at least the majority of committee members must be obtained. When consensus is achieved, the item is labeled as a field item and is available for use as a non-scored item on a future form of the examination.

Field items become active items when: (1) item level statistics meet set thresholds (difficulty and discrimination) and (2) consensus is achieved with at least a majority of the committee members. When the aforementioned criteria are met, an item transitions to active status, in which the item contributes toward an examinee’s score. In the event that either of these conditions is not met, the item is revised and its field status is renewed. After an item becomes

active, the aforementioned conditions continue to be considered prior to its inclusion on any form of the ATCBE. Every item and form are reviewed by the ATCB Certification Committee prior to use on any version of the exam.

Proprietary software is used to develop, review, and store ATCB's item bank, as well as develop each form of the exam. Using the most recent content outline (samples provided in Tables 1 and 2), the software uses an algorithm to randomly select field and active items that appear on each form of the exam. The resulting form is presented to and reviewed by the ATCB Certification Committee for approval.

ATCBE certification committee members review each item on every version of the examination prior to its initial administration to ensure that item-level statistics are acceptable, the content is relevant, keyed correctly and align with the current content outline. If there is not consensus between committee members regarding the relevancy or effectiveness of an item, the item is automatically substituted with an appropriate, supplemental item that then undergoes the same approval process.

Supplemental items for each category are also identified for replacement in the event that an item is deemed as suboptimal and does not receive approval from the Certification Committee for use.

## **Psychometric Properties**

### **Item Analyses**

Classical item analyses are conducted for every active form (and corresponding items) of the ATCBE. The focus remains on the psychometric statuses of items that are being considered for inclusion on developing forms of the examination. These data are presented to Certification Committee members, and items that are flagged for suboptimal item statistics are reviewed for ambiguities and flaws. If an item is deemed suboptimal, it is either retired or revised. If it is revised, it becomes a field item again.

Two statistics are of importance when considering item quality: difficulty and discrimination. Difficulty represents the percentage (proportion) of examinees who answers an item correctly. The standard in which items are judged for quality in terms of difficulty is a range between 0.25 and 0.90. These standards suggest that if less than 25% or more than 90% of examinees answer any item correctly, it is recommended that the item does not appear as a scored item on any form of the examination.

Discrimination refers to the relationship between examinees' overall test scores and their tendency to select the correct answer on a given item. Ideally, candidates who achieve lower total scores on the examination answer a given item incorrectly more often than those who achieve higher total scores, and vice versa. It is recommended that any item with a discrimination value less than 0.2 does not appear on any form of the examination as a scored

item. After each administration and during routine review of the ATCBE, committee members are presented with item and exam level statistics, including pass rates. If item-level statistics indicate that an item is not performing well, the item is reviewed, edited and entered into the secure item bank as an unscored field-test item. Item stats for field-test items are continually monitored to determine its appropriateness to become a scored, active item.

### **Establishment of Minimum Criterion Scores**

The passing score for the candidates on the ATCBE is calculated through the modified Angoff method of standard setting. This method requires the standard setting committee of the ATCBE to review and evaluate each question on the first test form published on a new content outline to determine the passing score that would be expected from a Minimally Qualified Candidate.

The passing score obtained through standard setting on the first test form is applied to other ATCBE test forms through statistical equating. Statistical equating adjusts the passing score up or down by accounting for the overall difficulty of each test form. Therefore, statistical equating ensures fairness to all candidates by associating the cut score on a test form with the overall difficulty level of the items on it. With this standard procedure for determining the successful candidates on ATCBE, the passing scores may vary slightly for each ATCBE test form.

To equate test forms, psychometricians use 25 to 40% overlap of items between the base form and the new test form. These common items link the two forms. Psychometricians also maintain the average difficulty level ( $p$ -value) for both the forms in close range. After the base test form is attempted by a sufficient number of candidates, psychometricians use Livingston's formula for linear equating— $Y^* = a(X - c) + d$ —which uses the mean and standard deviation of both base and new forms and the cut score of the base form to reach the cut score of the new form. These measures help the ATCB ensure that the candidates who pass its examination have the knowledge and understanding expected from a board-certified art therapist.

### **Test Equating**

The primary assumption underlying both the linear and item response theory equating methods is score distribution (approximate) equivalence. Linear equating is applicable and appropriate if it can be assumed correctly that the differences between score distributions (from similar forms of an examination) are the actual means and variances, not the natures of the distributions themselves. Data from the ATCBE has shown consistency in forms of the respective score distributions, based on inspection of the score frequency data and plotted distributions of score frequencies.

Because multiple forms are administered across examinees, each form of the ATCBE must be equated. To allow for comparability, items in an item pool have to be "linked." The linkage or equating is made in terms of item difficulty, resulting in an item pool of commonly calibrated items. The item equating procedures add to the validity argument that supports the

appropriateness of the ATCBE and each form's minimum criterion score across administrations. The linear equating method used with the ATCBE involves the use of the following equation:

$$Y^* = a(X - c) + d$$

where:

$Y^*$  = the subsequent (i.e., predicted) cut score

$X$  = the base examination cut score

$a$  = the subsequent total score standard deviation divided by the base examination total score standard deviation

$c$  = the mean of the base examination form of the ATCBE and

$d$  = the mean of the subsequent form of the ATCBE

### **Administration of the ATCBE**

The ATCBE is administered via computer-based testing (CBT) during testing windows approved by ATCB. CBT examinations are administered at sites managed and operated by CCE's contracted partner, Pearson Vue.

### **Score Reporting**

Upon completion of internal scoring procedures of the ATCBE, each examinee receives an individualized score report in approximately eight (8) to ten (10) weeks after participation in the ATCBE. Each item on the ATCBE is worth 1 point; therefore, the highest possible score on any administration of ATCBE is 170. The individual score report lists the examinee's scores on each of the categories outlined in the content outline as subsection scores and a total score, which is a summation of each subsection score. In addition, the score report provides the mean and standard deviation for each subsection and total score for those who took the same form of the ATCBE. The score report also contains the MCS and a statement concerning whether the examinee surpassed the criterion score.

Individual score report data are placed in the examinee's ATCB file. Access to information in the files is restricted to the ATCB administrative staff and the ATCB examination consultants. Individual scores on the ATCBE are confidential and not reported to other parties not listed above unless the test taker provides a written request for release of scores to a specified agency or organization. Deidentified score information is made available to oversight credentialing bodies when required. However, the ATCB reserves the right to withhold scores from persons or agencies when it deems the distribution of scores to be inappropriate or unethical.