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# The DAT and ADAT Programs: Overview of Policies and Procedures Supporting and Promoting Fairness



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# THE DENTAL ADMISSION TEST AND ADVANCED DENTAL ADMISSION TEST PROGRAMS: OVERVIEW OF POLICIES AND PROCEDURES SUPPORTING AND PROMOTING FAIRNESS

## EXECUTIVE SUMMARY

Fairness, diversity, and inclusion are values that are of critical importance to society and the dental profession. The Council on Dental Education and Licensure (CDEL), the Dental Admission Test Committee (DATC), and the ADA's Department of Testing Services (DTS) have devoted and continue to devote considerable time and energy to the DAT and ADAT Programs, to comprehensively consider the relevant issues and implement examination programs that are fair, valid, and reliable, providing candidates with the opportunity to demonstrate their knowledge, skills, and abilities in support of accurate and valid skill measurement. These examinations are constructed in a manner that supports their validity, with the corresponding activities themselves conducted in a manner that embodies the principles of respect and fairness that lie at the heart of current societal concerns.

DAT and ADAT fairness efforts are rooted in the *Standards for Educational and Psychological Testing*, which provide professional guidance on all aspects of testing; these *Standards* specifically note that fairness is fundamental to validity. Documentation in the form of publicly available technical reports, validity studies, and/or user's guides provide strong evidence in support of utilization of these examinations and their effectiveness, as they play a vital role in the protection of the public health and the reputation of the dental profession. This documentation also provides a mechanism for transparency and accountability. The measurement of candidate knowledge, skills, and abilities can be considered separately from the question of how to interpret and use examination results to inform decisions. Educational programs should carefully consider how to best utilize examination results in admission procedures, weighting results appropriately relative to other factors of importance in order to achieve desired outcomes that incorporate fairness considerations.

In summary, fairness considerations are embedded throughout the DAT and ADAT programs, affecting every aspect of how these examinations are constructed, administered, scored, and reported, appropriately recognizing the critical importance of fairness to society and reflecting the core values of those who work closely and care deeply about these examination programs.

## **THE DENTAL ADMISSION TEST AND ADVANCED DENTAL ADMISSION TEST PROGRAMS: OVERVIEW OF POLICIES AND PROCEDURES SUPPORTING AND PROMOTING FAIRNESS**

This document provides a concise overview of the policies and procedures undertaken in support of the fairness of the Dental Admission Test (DAT) and Advanced Dental Admission Test (ADAT) Programs. Detailed information concerning these examination programs can be found in candidate guides, user's guides, technical reports, and various communications available on corresponding examination web sites ([www.ada.org/dat](http://www.ada.org/dat) and [www.ada.org/adat](http://www.ada.org/adat)).

It should further be noted that the ADA is also developing an Admission Test for Dental Hygiene (ATDH), to help inform admissions decisions in Dental Hygiene education programs. The ADA is committed to pursuing the same level of scrutiny to the ATDH Program, as is described below for the DAT and ADAT. Additional information about the ATDH is available on the ATDH website ([www.ada.org/atdh](http://www.ada.org/atdh)).

### **FAIRNESS AND THE DAT AND ADAT PROGRAMS**

**Background.** The DAT and ADAT Programs are overseen by the American Dental Association's Council on Dental Education and Licensure (CDEL), with support from CDEL's Dental Admission Testing Committee (DATC). The DAT and ADAT Programs are implemented by the American Dental Association's (ADA's) Department of Testing Services (DTS), which also implements examinations for other governing bodies such as the Joint Commission on National Dental Examinations (JCNDE) and the Association of Schools and Colleges of Optometry (ASCO).

**ADA Core Values.** CDEL, the DATC, and DTS adhere to ADA Core Values, including those focused on diversity and inclusion. The ADA recognizes the many different dimensions of diversity, including, but not limited to race, ethnicity, national origin, gender identity, age, physical abilities/qualities, sexual orientation, religious and ideological beliefs, professional practice choices and personal lifestyle preferences. As communicated in the ADA's Diversity and Inclusion Plan, the ADA strives to model diversity and inclusion in everything it does. In accordance with these values, all staff members and volunteers are trained on the ADA's Professional Conduct Policy and Prohibition against Harassment, and must treat each other and all others with whom we work on behalf of the ADA with integrity, courtesy, and professionalism. All staff members and volunteers are responsible for assuring that the work place is free from improper harassment, as well as other unprofessional and discourteous actions. In adhering to ADA Core Values and respecting relevant policies, the manner in which staff and volunteers conduct examination program work activities embody the fairness, diversity, and inclusion principles we seek to uphold in these examination programs. In short, CDEL, the DATC, and DTS strive to conduct these examination programs and all corresponding activities in a comprehensive manner that is consistent with the values of fairness, diversity, and inclusion.

**A Focus on Validity and Professional Standards.** In implementing these examination programs, DTS' policies and procedures—described in the sections that follow—are focused on validity and guided by the professional standards contained in the *Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association, and the National Council on Measurement in Education, 2014), hereafter simply referred to as “*Standards*.” The *Standards* emphasize that “Fairness is a fundamental validity issue and requires attention throughout all stages of test development and use” (p49). DTS strives to develop examinations that are free from bias and fair to all candidates. Toward this end, DTS and its partner vendors employ well-defined, industry-standard operating policies and procedures to help ensure that all candidates are treated fairly and equitably before, during, and after administration of an examination.

**Standardized Testing Conditions.** The DAT and ADAT are administered under highly standardized conditions at test centers located throughout the United States and its territories, as well as in Canada. At these test centers, all candidates within an examination program experience the same general test administration conditions and the same test center procedures, regardless of where they choose to attempt the examination. This high degree of standardization helps eliminate any impact that differences in the test administration process might otherwise have on candidate results. Efforts herein are consistent with Standard 3.4 in the *Standards*, which indicates that “Test takers should receive comparable treatment during the test administration and scoring process” (p65).

**Fair and Equitable Treatment of Candidates.** The *Standards* devote an entire chapter to the rights and responsibilities of test takers. In accordance with this guidance, DTS has procedures in place to help ensure that all candidates receive fair, equitable, and respectful treatment while interacting with staff from DTS and its partner vendors. DTS and the governing bodies it serves provide candidates with extensive information about the examination they will be completing, through a comprehensive candidate guide, practice questions, and a comprehensive website providing information about how candidates can prepare for the examination.

**Continuous Monitoring of Candidate Feedback and Service Levels.** After completing the DAT or ADAT, candidates are given an opportunity to provide feedback via a survey, concerning the level of service they received from test administration vendor staff. These surveys consistently show high levels of satisfaction with the testing process. Additionally, candidates who contact DTS staff for assistance are also given an opportunity to provide feedback on their interaction, through a customer satisfaction survey. Management staff in DTS review the results from these surveys on a monthly basis, and work with the test administration vendors and DTS staff to address any issues that are identified. DTS has been fortunate to be recognized for the quality of service it provides to candidates; staff in DTS' Test Administration and Test Security & Fraud Prevention units have received the *Best Customer Service Award* from LiveHelpNow for strong customer service provided to testing candidates. This award is based on survey results, and is given each month to top performing LiveHelpNow clients (the top 1%). As of the date of this report (July 2021), DTS has received this award 18 times since February 2018 (i.e., the month when DTS began using LiveHelpNow).

**Accommodations for Candidates with Disabilities and/or Medical Conditions.** DTS provides DAT and ADAT candidates with reasonable and appropriate testing accommodations in accordance with the Americans with Disabilities Act. These accommodations occur for individuals with disabilities or medical conditions who demonstrate a need for accommodation and submit required supporting documentation. Testing accommodations are offered to those with a qualified disability or a medical condition in order to offer equal access to testing. The *Standards* note that “the flagging of test score reports can be a controversial issue and subject to legal requirements” (p61). Given these types of concerns, information concerning the specific accommodations provided to a candidate are not shared outside of DTS, the test center, and the Examination Program, and are not indicated on examination results. In considering a request from a candidate with a disability, DTS and CDEL are guided by a focus on validity. Testing accommodations are provided so all candidates have a reasonable opportunity to demonstrate their knowledge and skills, as opposed to having the measurement of their knowledge and skills inappropriately reflect a disability.

**Diverse Test Construction Teams.** DAT and ADAT content is developed by subject matter experts who are selected by CDEL based on their qualifications, and the needs of the respective examination programs. Test constructors typically work in groups referred to as Test Construction Teams. DAT and ADAT Test Construction Teams members are highly diverse with respect to geographic location, experience, age, gender, race, and ethnicity, among other characteristics. During test construction meetings, DTS staff strive to create a climate and culture of openness, inclusivity, and respect, so that every test constructor can feel comfortable in sharing their knowledge and perspective, and can also feel free to raise any concerns they might have about examination content. After each test construction meeting DTS staff distribute a survey to test constructors, in order to gauge their satisfaction with test construction meeting activities. Feedback received from the test constructors is then carefully reviewed by DTS staff so that any identified issues can be addressed appropriately.

**Professional Staff and Extensive Staff Training.** DTS employs professionally trained staff, including individuals with advanced degrees in Psychometrics, Educational Psychology, Industrial/Organizational psychology, and Leadership. As part of the extensive educational training they have received, staff who work with candidate data are trained on conceptual and psychological issues pertaining to fairness and bias in testing, as well as relevant corresponding statistical methods for detecting bias. Staff who facilitate meetings with volunteer test constructors also receive training on fairness issues, and the characteristics of items that can lead to bias. On an annual basis, a substantial number of staff across units within DTS (e.g., research and development, test development, and test administration) attend the *Innovations in Testing* conference of the Association of Test Publishers (ATP). Numerous sessions within this conference focus on fairness issues, with many DTS staff attending these sessions and increasing their knowledge in this area. Several DTS staff members are also members of “ADA 4 ALL,” a cross-divisional ADA team that meets regularly to collaborate on the development and communication of diversity and inclusion efforts and initiatives for ADA employees.

**Test Constructor Training and Resources.** During DAT and ADAT test construction meetings, DTS meeting facilitation staff provide test constructors with training to assist them in developing valid examination content. This training includes guidance for developing items that are free from such things as stereotypes, regionalisms, slang, jargon, excess verbiage, and unfocused language, as these have the potential to introduce bias into test scores. DTS meeting facilitation staff are present at each test construction meeting, to guide test constructors during the question development process, and assist them in identifying any examination questions that might contain one or more of the aforementioned undesirable characteristics so they can be eliminated or corrected during the development phase. DTS also maintains a *Fairness and Sensitivity Review Checklist* that DTS staff and/or test constructors can use to scrutinize examination content from a fairness and sensitivity perspective. The checklist focuses on helping test constructors avoid potential sources of Construct Irrelevant Variance (CIV). The *Standards* note the undesirability of the presence of CIV, which is said to be present when factors extraneous to the knowledge, skill, or ability of focus inadvertently impact test results (p12). DTS procedures are designed to reduce CIV as much as possible.

**Fairness and Test Content.** Fairness considerations directly impact how test questions are formatted and presented to candidates. An example of this is the “*Patient Box*,” which appears in a large number of questions appearing on the ADAT. When presenting questions about dental patients in examinations, these questions can be filled with large amounts of text describing events. Since the focus of measurement often involves assessing candidate knowledge of dental conditions, measurement of language skills in this context can be superfluous. By presenting patient information in a standardized format using the *Patient Box*, much of this extraneous text can be eliminated, reducing CIV associated with candidate language skills and providing greater purity of measurement. The *Patient Box* was developed by the JCNDE and its Committee for an Integrated Examination (CIE)—in partnership with DTS—during development of the Integrated National Board Dental Examination (INBDE) for licensure purposes. The effort to develop the *Patient Box* was specifically undertaken with fairness considerations in mind.

**Empirical Evaluation and Statistical Analysis.** Where possible, DTS psychometricians conduct statistical analyses to understand the presence of differential item functioning (DIF) and whether any differences that are detected might also signify the presence of possible bias. DIF occurs when candidates from different groups perform differently on a test question, after controlling for their overall performance on the examination. DTS uses the Mantel-Haenszel statistic (Mantel and Haenszel, 1959) to study DIF, and implements the three-category classification system developed by the Educational Testing Service (Holland & Thayer, 1988) to assess the magnitude of DIF for individual test questions. The Mantel-Haenszel statistic has been extensively researched and is widely used throughout the testing industry due to its simplicity and effectiveness (Li, 2015). DTS has used DIF analyses to verify the appropriateness and effectiveness of its content-based procedures for eliminating items with potential bias. These DIF analyses have supported DTS procedures, indicating that these procedures have been highly effective at yielding fair questions that accurately measure candidate skills and abilities.

**Proven Effectiveness.** These examinations are not only fair, they are also valid, with strong evidence available to support their use. For example, semi-annual validity studies involving the DAT and students enrolled in US dental education programs repeatedly demonstrate that the DAT successfully predicts performance in dental school better than any other available selection tool, including pre-dental GPA. The most recent such study, a meta-analysis, indicated that the corrected correlation ( $\rho$ ) between the DAT overall score scale (Academic Average) and first-year dental school grades was .57 (ADA, 2020). The magnitude of this relationship—which involved 5,429 students from 36 US dental schools—is considered “large” based on well-accepted interpretations of effect sizes (Cohen, 1988). Successful diagnosis, treatment, and oral health care management requires knowledgeable and skilled dentists. Thus, use of these examinations ultimately helps protect the public. These studies have been conducted for many years, with the most recent study always available for public review on the DAT website ([www.ada.org/dat](http://www.ada.org/dat)).

**Transparency, Documentation, and Accountability.** The performance and effectiveness of the DAT and ADAT are documented in technical reports and user’s manuals that are made publicly available to communities of interest. While actual test content cannot be made available for test security reasons<sup>1</sup>, in accordance with the *Standards* DTS provides communities of interest with the opportunity to carefully consider and evaluate information pertaining to the performance and effectiveness of these examinations, to help inform test usage. In so doing, the governing bodies responsible for these testing programs hold themselves accountable to communities of interest, through being transparent concerning the relevant test characteristics (e.g., reliability and error of measurement) and outcomes of measurement (norms, validity studies, etc.).

**Governing Body Review by the Council on Dental Education and Licensure (CDEL).**

Through its Dental Admission Testing Committee (DATC), CDEL provides oversight of the Dental Admission Test and Advanced Dental Admission Test programs. CDEL’s DATC carefully reviews the operations of these examination programs, reviewing material provided to candidates (e.g., candidate guides), content development procedures, psychometric investigations, test administration procedures, scoring and reporting procedures, program policies, testing volume, and the qualifications of test constructor applicants in order to provide recommendations for consideration and approval by CDEL. An example of a policy that was introduced pertaining to fairness, diversity, and inclusion is the partial fee waiver program. In short, the DATC recommended—and CDEL approved—a partial fee waiver program that provides a limited number of fee waivers to assist candidates experiencing severe financial hardship. Many of these candidates can be from disadvantaged groups and backgrounds.

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<sup>1</sup> The *Standards* note that divulging content can “compromise the validity of test score interpretations for the test taker and for others” (p132).



**Fairness in the Handling of Irregularities.** CDEL and its DATC also take fairness considerations into account when dealing with situations involving candidate rule violations (irregularities). This can involve, for example, a candidate trying to covertly review study material during a live test administration session. Irregularity handling procedures are clearly outlined in the DAT and ADAT Candidate Guides, which candidates are required to review before challenging an examination. Candidates involved in a rule violation receive notification of the infraction, a corresponding penalty based on the severity of the violation, and a document providing information about their right to appeal. Irregularities are treated confidentially, with information shared on a need-to-know basis.

**Fairness in Candidate Appeals.** Candidates who receive a violation notification are in turn afforded the opportunity to submit a candidate appeal and share their perspective on events. In so doing, they are free to submit whatever materials they feel support their case and should be considered by the Chair as part of the candidate appeal process. In rendering a decision with respect to appeals—and particularly in situations where candidate results may have been withheld—the touchstone and foremost consideration is the validity of examination results, in alignment with the purpose of the examination. The DATC strives to be fair and objective in its decision making process, avoiding favoritism and striving to ensure that all candidates are treated equally and fairly. Prior to review by the Chair, where possible and reasonable, DTS carefully redacts information in the appeal that would communicate information about the candidate’s identity, school, ethnicity, etc., so that the Chair is not unduly influenced by these factors. The Chair of the DATC reviews these appeals as they occur throughout the year, providing candidates with a reasonable and fair opportunity to rebut.

**Continuous Improvement and Future Initiatives.** CDEL and DTS work together and strive to continuously improve the DAT and ADAT Programs. For example, in 2021, CDEL, DATC, and DTS together advocated for investigating the possible creation of a separate Fairness and Sensitivity Test Construction Team, to evaluate examination content through the lens of the values of diversity, equity, and inclusion, to help ensure that test questions continue to fairly and accurately measure candidate knowledge, skills, and abilities. This idea was proposed as a result of ongoing discussions undertaken in the spirit of continual improvement. The perspective offered was that having a separate group of experts evaluate content from a fairness perspective might help supplement the fairness work of test constructors charged with the task of writing questions. CDEL has approved this effort and directed staff accordingly. With respect to this initiative, DTS is currently investigating questions such as whether fairness review activities would be best pursued individually, as a team, or as some combination thereof, where this review should occur within the content development process, and what qualifications (e.g., background and training) should be necessary for test constructors to serve in this capacity.



## ADDITIONAL CONSIDERATIONS

**Objective and Accurate Information to Inform Decisions.** Examinations are essentially measurement devices—analogue to a ruler or a yardstick—except that psychological characteristics (knowledge, skills, and abilities) are the focus of measurement (as opposed to a physical object). The act of measuring does not create an outcome, it simply provides information that reflects a characteristic of a person or object being measured. In short, the question of “what to do” with measurement results is separate from the question of “what does the measurement tell me?” With regard to the latter point, “you can’t fix what you can’t see;” accurate measurement enables test users to see and understand the situation, so that appropriate action can be taken.

**Group Differences and the Question of Bias.** In recent years society has become increasingly aware that certain groups have been historically disadvantaged, with limited access to resources and opportunities. This has in turn led to corresponding reduced outcomes. As such, the presence of a reduced outcome—for example, a lower average test score for a particular group—represents the manifestation of societal inequities. Given the preceding, it should be understood that the presence of a group difference does not signify that a test is biased; this is echoed within text appearing in the Standards indicating that “subgroup mean differences do not in and of themselves indicate lack of fairness” (p65). In fact, when tests are professionally developed in accordance with the *Standards*, they can provide fair and unbiased information that helps shed light on these types of societal problems. This information can in turn be used in decision making to help address and respond to the underlying issues.

**Appropriate Weighting of Test Results in Decisions.** How should test results be weighted relative to other factors? This question is of particular importance when group differences may be present. In making these decisions, it is important to understand that utilization of the DAT and ADAT help protect the public by helping programs identify those who have the necessary level of skills to benefit from the education provided by dental and advanced dental education programs. These programs provide comprehensive education leading to safe, effective, and professional treatment of patients. Those who do not possess the prerequisite skills would be more likely to struggle with program demands, and some may even choose to drop out of programs—despite the presence of enormous student loans—due to the sheer difficulty of the task they face. In selecting students, programs may wish to consider what educational support mechanisms are in place before, during, and after students’ enrollment, to assist them in acquiring the required knowledge and skills and help them keep up with the evolving demands of the profession.

**Tests Provide Information that is Amenable to Scrutiny.** Due to the methods employed during test construction, scoring, and implementation, examinations are objective and can be placed under psychometric scrutiny to investigate and identify bias. In contrast, other methods of selecting candidates that are commonly used—interviews, letters of reference, etc.—can be highly subjective and prone to bias in ways that are inscrutable. In short, alternatives to testing that are under consideration should be subject to the same level of scrutiny that is being applied to tests themselves, with decision makers thoroughly reviewing the corresponding evidence. When such scrutiny is applied, the merits of testing become even more readily apparent.

## CONCLUDING THOUGHTS

Fairness, diversity, and inclusion are values that are of critical importance to society and the dental profession. CDEL, the DATC, and DTS have devoted and continue to devote considerable time and energy to the DAT and ADAT Programs, to comprehensively consider the relevant issues and implement examination programs that are fair, valid, and reliable, providing candidates with the opportunity to demonstrate their knowledge, skills, and abilities in support of accurate and valid skill measurement. These examinations are constructed in a manner that supports their validity, with the corresponding activities themselves conducted in a manner that embodies the principles of respect and fairness that lie at the heart of current societal concerns.

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In summary, fairness considerations are embedded throughout the DAT and ADAT programs, affecting every aspect of how these examinations are constructed, administered, scored, and reported, appropriately recognizing the critical importance of fairness to society and reflecting the core values of those who work closely and care deeply about these examination programs.

## References

- American Dental Association (2020). Dental Admission Test (DAT) Validity Study: 2016-2018 DATA. Chicago, IL: Author.
- American Educational Research Association, American Psychological Association, National Council on Measurement in Education. (2014). *Standards for Educational and Psychological Testing*. Washington, DC: Author.
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*. New York, NY: Routledge Academic.
- Holland, P. W., & Thayer, D. T. (1988). Differential item performance and the Mantel-Haenszel procedure. In H. Wainer & H. I. Braun (Eds.), *Test validity* (pp. 129-145). Hillsdale, NJ, US: Lawrence Erlbaum Associates, Inc.
- Li, Z. (2015). A power formula for the Mantel–Haenszel test for differential item functioning. *Applied Psychological Measurement, 39*, 373-388.
- Mantel, N., & Haenszel, W. (1959). Statistical aspects of the analysis of data from retrospective studies of disease. *Journal of the National Cancer Institute, 22*, 719-748.