

Using K-12 Lessons Learned About How to Balance Accessibility and Test Security to Inform Licensure, Credentialing, and Certification Exam Policies

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Abstract

This paper explores how to balance test security and accessibility on licensure, credentialing, and certification exams. It examines K-12 test security policies related to educational assessments across states to discover lessons learned about how to meet accessibility needs of individuals with disabilities while minimizing test security risks. It then discusses how licensure and certification programs can adapt those lessons and policies to ensure exam score validity for all candidates without jeopardizing exam security.

Keywords: Accessibility, Accommodations, Disability, Test Security

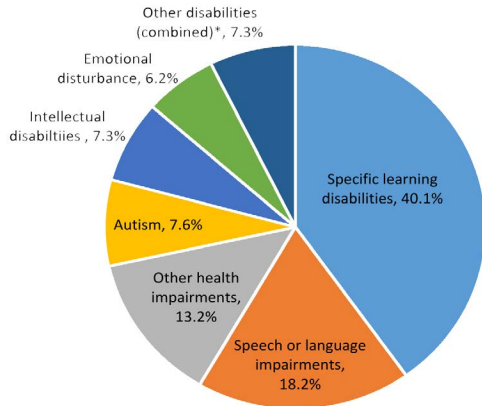
1. Introduction

Test security is typically one of the largest concerns for certification programs. Exam owners must make sure that only candidates with true and sufficient knowledge of the content domain earn the respective certification. Security breaches threaten the exam owner's ability to ensure appropriate certification. When individuals with disabilities take certification exams, it can be challenging to determine how to accommodate these candidates' needs without unduly compromising security. For example, some accommodations such as sign language interpretation and use of scribes require the involvement of another human to administer the accommodation. This can create a conundrum: How can test security and accessibility be balanced?

Statistics are lacking on the number of individuals with disabilities in the population who are likely to be taking certification and licensure exams. According to the U.S. Bureau of the Census (2012), 19% of the people

in the United States had a disability in 2010. However, the Census disability groupings and categories can be somewhat difficult to interpret because many of the reported statistics are for adults, aged 15 years and older.

Although the data are for a younger age group, statistics compiled to comply with the Individuals with Disabilities Education Act (IDEA) may provide the best indicator of how disabilities break out by category. As shown in Figure 1, about 40% of students with disabilities, ages 6 through 21, have specific learning disabilities. The next largest categories are speech or language impairments (18%) and other health impairments (13%). Slightly fewer than 8% of students with disabilities have autism while approximately 7% of students with disabilities have intellectual disabilities (U.S. Department of Education, 2014). Many students in this group have mild intellectual disabilities. This paper explores how accommodations and security policies for students with disabilities in K-12 statewide educational assessment might be applicable to licensure, credentialing, and certification exams.



*Other disabilities combined includes deaf-blindness (less than 0.03%), developmental delay (2.1%), hearing impairments (1.2%), multiple disabilities (2.2%), orthopedic impairments (0.9%), traumatic brain injury (0.4%), and visual impairments (0.4%).

Data Source: U.S. Department of Education (2014)

Figure 1. Percentage of students ages 6 through 21 served under IDEA, part B, by disability category, Fall 2012.

2. Accommodations and State Policies Addressing Accommodations

Accommodations are changes made to what are considered “standardized” test conditions. They enable individuals with disabilities that prevent them from demonstrating their true knowledge and skills to meaningfully access a test. And they help ensure a valid measure of test constructs. This enables individuals with disabilities to demonstrate their knowledge and skills (NCEO, 2015; Thurlow, 2014; Thurlow & Kopriva, 2015; Thurlow, Thompson, & Lazarus, 2006).

As cited in Thurlow et al. (2006), Hollenbeck, Rozek-Tedesco, Tindal, & Glasgrov (2000) have specified four attributes of accommodations:

- **Unchanged construct:** Test alterations must not alter the constructs being measured.
- **Individual need:** The test alteration must be based on individual need and, thus, not chosen haphazardly.
- **Differential effects:** Test alterations must be differential in effect by student or group.
- **Sameness of inference:** Accommodated and standard score must be able to generate the same inferences. (p. 659)

Table 1 shows some common accommodations. A survey of 2,336 special education teachers in one state found that the most commonly used accommodations

included: small group/individual administration (67%), extended time (46%), breaks between subtests/during test (24%), flexible scheduling (19%), and directions interpreted/signed (17%) (Altman et al., 2010).

Table 1. Examples of accommodations

Audio-recorded presentation	Multiple or frequent breaks
Braille	Record response in test booklet
Braille	Change of schedule
Calculation device	Scribe
Extended time	Speech to text
Human reader	Sign language
Location change to increase physical access	Text to speech

2.1 What the Law Says

Section 504 of the Rehabilitation Act of 1973 requires the provision of “reasonable” accommodations to anyone with a disability in a program or activity receiving federal financial assistance. In 1990, the Americans with Disabilities Act (ADA) determined that reasonable accommodations must be provided to individuals with disabilities. When first enacted, the ADA required responses to four questions: (a) Does the individual have an impairment that affects one or more major life activities as identified under the ADA? (b) Does the impairment rise to the level of a disability? (c) What is the effect of the impairment on performance in the area for which accommodations are being considered? (d) What are the appropriate accommodations, given the specific tasks required of the individual? The reauthorization of the ADA in 2008 expanded its interpretation of the definition of disability to include learning disabilities. This expanded definition specifically indicated that a person could be considered as having a disability if the person has a physical or mental impairment that substantially limits one or more major life activities, has a record of this impairment, and is regarded as having an impairment. The expanded definition of major life activities includes such activities as reading, concentrating, and communicating, which were added to the previous list (Cortiella & Kaloi, 2009).

Section 309 of Title 3 of the reauthorized ADA covers courses and assessments, including those outside the K-12 education system. This includes tests and courses for applications, licensing, certification, and credentialing for professions or trades. It addresses the place and the manner in which they are provided. For

example, changes to an examination may include altering the length of time permitted for completion or adjusting the manner in which the examination is given.

Recent technical assistance guidance from the U.S. Department of Justice (2015) more clearly defined what was intended for the provision of testing accommodations. It clarified that the types of tests covered include “exams administered by any private, state, or local government entity related to applications, licensing, certification, or credentialing for secondary or postsecondary education, professional, or trade purposes” (p. 2). It also clarified the nature of documentation that could be required and indicated that the requests for documentation should be reasonable and limited to the need for the requested accommodation. The following were provided as sufficient documentation:

- Past testing accommodations on similar standardized exams or high-stakes tests.
- Formal public school accommodations (e.g., IEP or Section 504 documented accommodations).
- Documentation from a qualified professional.

The technical assistance guidance also noted that the absence of previous formal testing accommodations does not preclude a person from receiving testing accommodations.

Additionally, recent action by the U.S. Equal Employment Opportunity Commission (EEOC) has affected special populations. The Commission began a public comment period on February 24, 2016, on a proposed rule related to Section 501 of the Rehabilitation Act of 1973 that relates to affirmative action in employment for individuals with disabilities. The current Section 501 regulations indicate that the federal government should be a “model employer of individuals with disabilities” but the guidelines regarding the specifics of this statement are weak. The proposed rule would more clearly define this statement to include the percentage representation of individuals with disabilities across the pay levels (to include higher and lower levels of employment) to be employed by the federal government and contractors working on behalf of the federal government. The proposed rule would also require agencies to include disabilities in anti-harassment policies. This proposed rule could require more individuals with disabilities to seek certification in various areas; thus it is critical to address this potential increase in the number of candidates requesting accommodations proactively.

2.2 What Assessment Standards Say

The 2014 revision of the *Standards for Educational and Psychological Testing* brought accommodations to the forefront when it made the three foundational chapters of the standards to be validity, reliability, and fairness. In the chapter on fairness, the American Educational Research Association, American Psychological Association, and National Council on Measurement in Education (AERA, APA, & NCME, 2014) indicated that comparability in the interpretation of scores from accommodated and non-accommodated tests is essential and rests on clear definition of the intended construct to be measured. Other documents laying out best practices for testing (e.g., Association of Test Publishers (ATP) and Council of Chief State School Officers (CCSSO), 2013) have addressed accommodations and other best practices for statewide large-scale assessment programs that are consistent with the *Standards* and are likely to apply as well to certification and licensure examinations.

2.3 What Certification Standards Say

The National Commission for Certifying Agencies (NCCA), the accreditation division of the Institute for Credentialing Excellence (ICE), released a revised version of the *Standards for the Accreditation of Certification Programs* in 2014 for use beginning in 2016. This document contains numerous references to requirements related to accommodations and accommodation requests. Additionally, the American National Standards Institute (ANSI) published the *Guidance on Psychometric Requirements* (2004) to provide guidance related to ISO/IEC 17024 (Section 4.3.6) related to the accreditation standards contained within ISO/IEC. According to these standards, “A policy regarding the implications of testing irregularities, and a policy regarding accommodations, modifications, and adaptations, is essential. Guidelines are required for understanding the most likely effects of irregularities, accommodations, or changes upon the interpretation of resultant scores” (ANSI, 2004, p.5).

2.4 What Research Indicates

Research on accommodations now has a rich history. Although it started with a focus on ACT and ETS college entrance exams (e.g., Laing & Farmer, 1984; Willingham, Ragosta, Bennett, Braun, Rock, & Powers, 1988), most of the research in the past two decades has focused on the

effects of accommodations on K-12 assessment results or related topics such as perspectives on their use or difficulties in administering them (Cormier, Altman, Shyyan, & Thurlow, 2010; Johnstone, Altman, Thurlow, & Thompson, 2006; Rogers, Christian, & Thurlow, 2012; Rogers, Lazarus, & Thurlow, 2014, 2016; Thompson, Blount, & Thurlow, 2002; Zenisky & Sireci, 2007). Research on accommodations at the post-secondary level has focused primarily on college or graduate school entrance examinations and course assessments. For example, Johnson, Rudner, and Sibert (2008) conducted a propensity score analysis of scores from comparable groups of accommodated and non-accommodated test takers on the Graduate Management Admissions Test (GMAT) and found no statistically significant differences in the scores.

The U.S. Government Accountability Office (GAO) (2011) examined whether standardized tests required for admission into postsecondary schools complied with ADA requirements. The GAO interviewed individuals with disabilities, disability experts, test company personnel, and K-12 and post-secondary school personnel. GAO also reviewed testing company policies and data. The GAO concluded that:

Given the critical role that standardized tests play in making decisions on higher education admissions, licensure, and job placement, federal laws require that individuals with disabilities are able to access these tests in a manner that allows them to accurately demonstrate their skill level. While testing companies reported providing thousands of test takers with accommodations in the most recent testing year, test takers and disability advocates continue to raise questions about whether testing companies are complying with the law in making their determinations. (p. 29).

Examples of research on the effects of accommodations on licensure or certification accreditation exams are rare; most guidance is a result of legal action rather than research. Researchers in one study (Woo, Hagge, & Dickison, 2013) examined whether an extended time accommodation produced an unfair advantage on the National Council Licensure Examination for entry-level registered nurses (NCLEX-RN). The researchers concluded that items of similar difficulty performed the same for candidates who tested with an extended time accommodation and candidates

who tested under standard conditions. A notable legal case is *Enyart v. National Conference of Bar Examiners* (NCBE), 630 F.3d 1153 (9th Cir. 2011); plaintiff Enyart is legally blind and requested specific accommodations from the NCBE. Her request for specific assistive technology software (JAWS and ZoomText) was initially denied, although NCBE provided other accommodation options. The crux of this case—and others like it—was that Enyart’s attorneys argued her request for a specific software was relevant under the premise of the “best ensure” principle of the law. The NCBE argued, unsuccessfully, that NCBE should be held to the “reasonable accommodation” standard found in other sections of ADA. The ruling in this case, which required NCBE to allow Enyart to take the exams using the specific requested assistive technology, illustrates that some courts are upholding the “best ensure” standard for accommodations provided to candidates with disabilities.¹

3. K-12 Analysis of States’ Test Security Policies²

At the K-12 level, test security policies often address how accommodations may enable students who need them to meaningfully access an assessment without compromising test security. These policies can provide insight into how accommodations could be included in policies for tests that are used for credentialing, licensure, and certification.

4. Method

The National Center on Educational Outcomes (NCEO) conducted an analysis of states’ test security policies to learn how they addressed accommodated tests and related issues for students with disabilities. NCEO compiled and analyzed publicly available written documents accessed on state department of education websites during the 2013-14 school year for the 50 states and the District of Columbia. Documents analyzed included test security documents, test procedure or administration manuals, and accommodations manuals. See Lazarus, Thurlow, Dominquez, Kincaid, & Edwards (2014) for additional details about the processes and procedures used.

¹Other cases that illustrate similar rulings are *Jones v. National Conference of Bar Examiners*, 801 F.Supp.2d 270 (U.S. District Court, D. Vermont 2011); *Elder v. National Conference of Bar Examiners, et al.*, No. C 11-00199 SI, (N.D. Cal. 2011).

²Figures in this section and some of the text in this section are from Lazarus et al. (2014).

In order to get a deeper understanding of possible test security issues when accommodations are used on technology-based assessments, supplemental information from the findings of a survey of special education teachers in several states following the first administration of the Race-to-the Top (RTT) consortia assessments (i.e., Partnership for Assessment of Readiness for College and Careers – PARCC; Smarter Balanced Assessment Consortium – Smarter Balanced) in Spring, 2015 were included in this analysis. See Lazarus and Heritage (2016) for additional details about this survey.

5. Results

As shown in Figure 2, the test security policies of 37 states provided information about the process that should be used to make accommodations decisions. These policies typically indicated who was responsible for decision making about accommodations, i.e. the Individualized Education Program (IEP) team.

The test security policies of 37 states described the

process for accommodations decision making. This typically included information about how the IEP team is responsible for making accommodations decisions for students with disabilities. The policies of about half of the states addressed training requirements for administrators of accommodated tests and accommodations providers (n = 24). These policies often indicated that all test administrators (or all administrators of accommodated tests) had to complete modules or other training that addressed how to provide accommodations in ways that would not compromise the security or confidentiality of the assessment. The policies of 20 states addressed the qualifications of accommodated test administrators and accommodations providers. Some indicated that test administrators must be licensed teachers, while others indicated other school staff could administer the assessment or provide the accommodation. A few states allowed non-school employees to administer an accommodation, and the policies generally indicated who was responsible if a security breach occurred (e.g., teacher of record, school administrator).

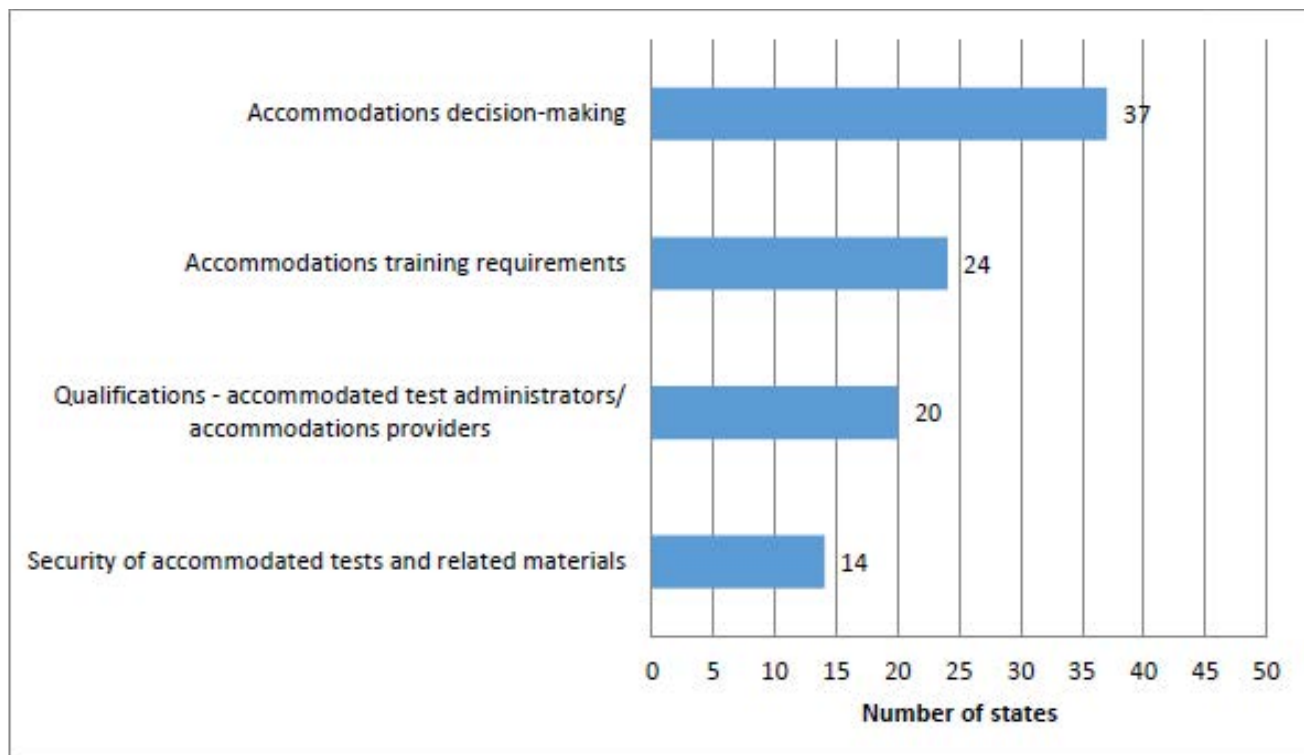


Figure 2. How states' test security policies addressed the provision of accommodations.

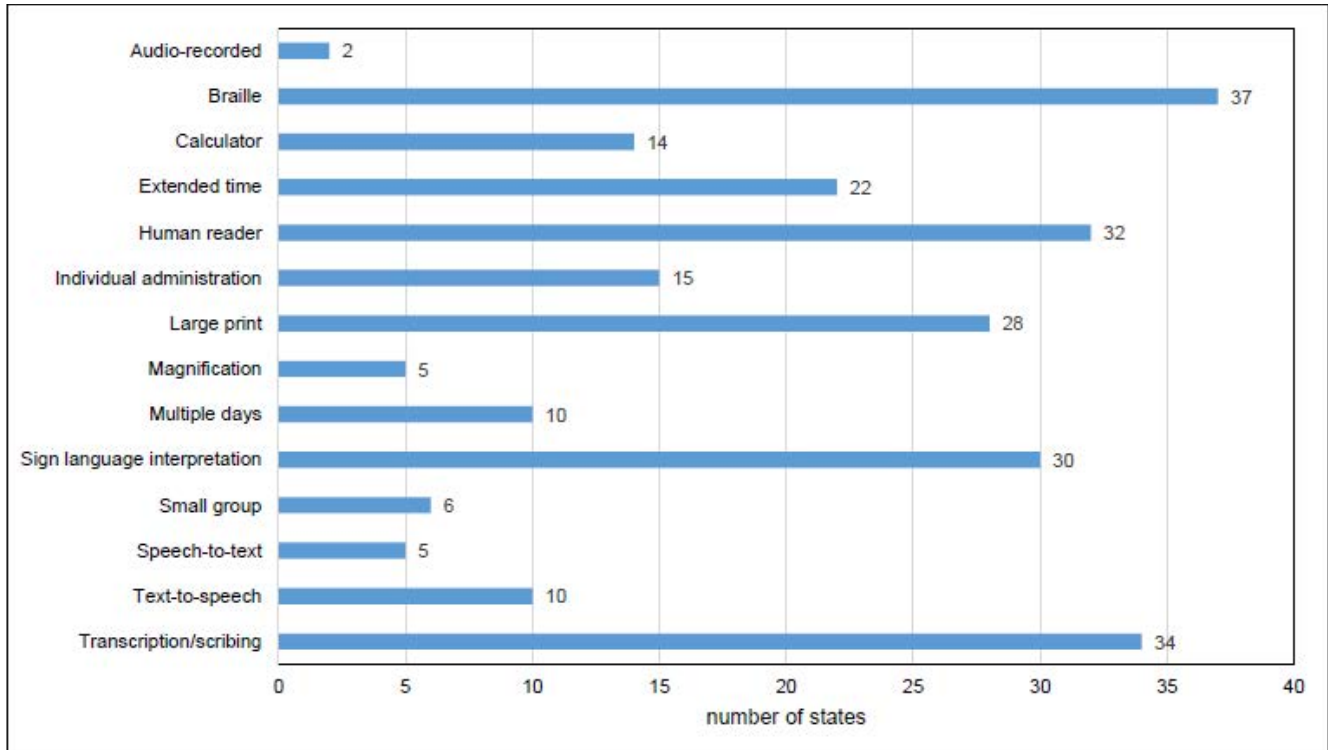


Figure 3. Selected accommodations addressed in states accommodations policies.

The policies of 14 states addressed the security of test materials used for accommodated tests. They typically stated how the test materials should be stored. For example, many policies indicated that test materials for accommodated tests (including alternate formats such as braille and large print editions) should be stored in a secure, locked area before and between each session, as well as after testing. Some policies also indicated that all paper copies of read-aloud scripts and other related materials should be shredded or in some cases returned to the test vendor. As shown in Figure 3, there was wide variation across states in the ways in which specific accommodations were included in test security policies. Information about each listed accommodation can be found in the Appendix and by hovering over the figure caption.

6. Discussion

How to balance test security and accessibility should be considered thoughtfully when developing and implementing certification and licensure exams. Both test security and providing accommodations for individuals who need them are vital components in ensuring

exam score validity. Accessibility and accommodations policies, processes, and procedures can support the valid measurement of what individuals with disabilities know and can do.

6.1 Lessons Learned

The analysis of test security policies found many examples of ways that states are successfully balancing test security and accessibility. For example, policies indicated that text-to-speech was a preferred accommodation over human reader in several states. Another example, of balancing test security with accessibility was policies that indicated that magnification was a preferred accommodation over making copies of the test to enlarge it.

The policies also often supported the use of universal design. *Universal design* is an approach to assessment based on principles of accessibility for a wide variety of end users. A key concept is that assessments should be designed from the beginning to allow the participation of individuals with a wide range of characteristics minimizing the need for accommodated administrations. Such universally-designed assessments can help ensure that the assessment measures what is intended rather than construct-irrelevant information. Thompson, Thurlow,

& Malouf (2004) identified several characteristics of well-designed and inclusive assessments:

- Precisely designed constructs.
- Accessible, nonbiased items.
- Amendable to accommodations.
- Simple, clear, and intuitive instructions and procedures.
- Maximum readability and comprehensibility.
- Maximum legibility.

Lazarus and Thurlow (2015) identified several questions to ask when developing test security policies that will help ensure that the needs of individuals with disabilities are met while mitigating security and confidentiality risks. They include:

- Are all test administrators qualified?
- Does everyone who accesses the assessment sign a test security/confidentiality agreement?
- Is adequate test security training provided to all who need it?
- Are adequate logs/records kept?
- Are accessibility features and accommodations with the fewest security risks identified as preferred features and accommodations?
- Do test security policies and procedures address assistive technology?
- Are test security procedures in place for situations when a test is accessed prior to administration?
- Are appropriate procedures used for small group and individual administrations?

The shift in recent years from paper and pencil to computer/online assessments by many testing programs has both enhanced accessibility for some individuals with disabilities and reduced some test security risks related to the administration of accommodated tests. Many of the test security risks related to use of accommodations on paper and pencil tests are associated with the provision or preparation of some accommodations by human access assistants. The provision of many accommodations as embedded accommodations within the computer platform reduces these risks. In general, it is preferable from a test security standpoint for an accommodation to be provided by an embedded accommodation rather than via a human access assistant, though there are still situations where human accommodations providers are needed. For example, an individual with a physical disability may need a scribe to record responses in the computer system.

While mitigating some security risks, the shift to

computer-based assessments has created a new set of issues related to the needs of some individuals with disabilities who need to use assistive technology to access the assessment. For example, an individual may use specific types of assistive technology for speech-to-text and text-to-speech at school or work, and need to use the same software to meaningfully access the assessment. The test vendor may find it difficult to fully evaluate any possible test security risks associated with various assistive technology platforms. There is a need for test vendors to develop processes and procedures so that the assistive technology can be used in appropriate ways while mitigating security risks rather than simply not allowing its use.

6.2 Recommendations for Licensure, Credentialing and Certification Programs

Many current licensure, credentialing, and certification candidates are emerging from an educational system within which they received assessment accommodations for some or all of that experience. As these individuals move into their careers and professions they expect to receive similar assessment accommodations to those they received in educational settings. For licensure, credentialing, and certification programs to be appropriately prepared for these candidates, programs must be knowledgeable regarding what accommodations candidates may be accustomed to, how those accommodations relate to the professional field (what may and may not be appropriate), and how to administer accommodations in a secure and fair manner. As such, the following recommendations will assist programs in supporting improved practices.

- **Consider both accessibility and exam security during test design and development.** Too often accessibility issues are not considered until after an exam is developed. It then becomes difficult to retrofit the exam. During initial conceptualization of a new exam or series of exams it is important to recognize and detail the various populations of candidates with special focus on whether any of those populations might require accommodations, which accommodations would be appropriate, and how to ensure that appropriate accommodations are granted while maintaining exam security.
- **Assemble an accessibility team to develop and review accommodations policies and procedures.**

The team should include both experts (e.g., accessibility, test security, psychometric) and stakeholders (e.g., individuals with disabilities) as well as individuals with expertise in assistive technology.

- **Develop accommodations policies and procedures to increase the accessibility of the test for examinees while maintaining test security.** Use a team approach to develop policies (and to review any current accommodations policies and procedures), always with consideration of test security and validity of assessment results and interpretations. The policies that are developed should comply with relevant laws and regulations. None of the procedures for requesting accommodations should place an unnecessary burden on examinees.
- **Make sure that the accommodations request and review process is transparent with the goal of increasing the accessibility of the test for examinees while maintaining test security.** The accommodations request and review process should be standardized. Best practices and professional standards indicate that blanket accommodations are not appropriate. Moreover, candidate requests for accommodations should be individually reviewed in relation to previously specified policies detailed by the certification/licensure entity. Requirements regarding accommodations (e.g., dates, required materials, and policies for challenging decisions) and decision-making criteria, should be published in an area of test websites available to all eligible candidates in addition to information about availability of alternative formats. All accommodations requests and the review process should be documented (e.g., required materials/information, inappropriate/irrelevant information, communication of decisions, standardized application to all requests), so that decisions can be reviewed (audited) and policies and procedures can be revised if issues are identified.
- **Train exam proctors and accommodations providers on the appropriate administration of tests with accommodations and how to maintain test security.** Test proctors need to be appropriately trained to administer exams with accommodations. While this seems simple, many certification and licensure entities do not deliver their assessments directly, and thus must confirm that third party

entities are able to provide allowed accommodations and that proctors and accommodations providers have been appropriately trained. The certifying entity must clearly specify to delivery vendors how to train personnel for the different types of accommodations, and how to concurrently keep the exam material secure. Given the high incidence of computerized delivery for certification and licensure exams, this means that computers are available with specialized software or have functionality embedded into the test driver. Moreover, proctors must know how to initiate the appropriate software on these machines without modifying other settings or delivery characteristics.

In general, accommodations that require the involvement of a human to administer are likely to pose more security risks than other accommodations. These risks can be reduced by creating policies on the qualifications and training of human access assistants. All test administrators, accommodations providers, and others who are involved in preparing and administering accommodated assessments should be required to sign test security and confidentiality agreements to improve test security.

- **Regularly review and evaluate policies and procedures so that they can be refined when issues are identified.** The work of the accessibility team does not end once policies and procedures have been developed. To ensure accessibility, while maintaining security, it is vital to regularly review and evaluate how policies and procedures are working, and then refine them as needed.
- **Support research on accommodations use on certification and licensure exams.** It is helpful to look to accommodations research literature for K-12 to learn more about the effect of accommodations given the lack of research in certification and licensure related to accommodations. K-12 research literature findings provide insight into the validity and reliability of various accommodations when they are used in testing situations, as well as increased understanding of how to appropriately implement the accommodations (Rogers et al., 2016). Sound research is needed at the certification and licensure level so that better information will be available in the future.

Test security and accessibility must be balanced when developing and implementing certification

and licensure exams. Both test security and providing accommodations for individuals who need them are vital components to ensure exam score validity. Accessibility and accommodations policies, processes, and procedures support the valid measurement of what individuals with disabilities know and can do.

7. Author Notes

Conflict of Interest Statement: The preparation of this article was supported, in part, by a cooperative agreement between the Research to Practice Division, Office of Special Education Programs, U.S. Department of Education, and the University of Minnesota, National Center on Educational Outcomes. It was also partially supported by Alpine Testing Solutions. Opinions or points of view expressed herein are those of the authors, and not of the U.S. Department of Education or Alpine Testing Solutions.

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8. References

- Altman, J.R., Cormier, D.C., Lazarus, S.S., Thurlow, M.L., Holbrook, M., Byers, M., Chambers, D. Moore, M., & Pence, N. (2010). Accommodations: Results of a survey of Alabama special education teachers. (Synthesis Report 81). Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes.
- American National Standards Institute. (2004). Guidance on psychometric requirements for ANSI accreditation. Washington, DC: American National Standards Institute.
- Cormier, D.C., Altman, J.R., Shyyan, V., & Thurlow, M.L. (2010). A summary of the research on the effects of test accommodations: 2007-2008 (Technical Report 56). Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes.
- Cortiella, C., & Kaloi, L. (2009). Understanding the Americans with Disabilities Act Amendments Act and Section 504 of the Rehabilitation Act: The impact on students with LD and AD/HD (Parent Advocacy Brief). New York, NY: National Center for Learning Disabilities.
- Heritage, M. & Lazarus, S.S. (2016). Lessons learned about instruction from inclusion of students with disabilities in college and career ready assessments. Minneapolis, MN & San Francisco, CA: University of Minnesota, National Center on Educational Outcomes & National Center on Systemic Improvement.
- Hollenbeck, K., Rozek-Tedesco, M., Tindal, G., & Glasgrow, A. (2000). An exploratory study of student-paced versus teacher-paced accommodations for large-scale math tests. *Journal of Special Education Technology*, 15(2), 27-36.
- Johnson, K., Rudner, L., & Sibert, R. (2008). Do accommodated GMAT test takers have an unfair advantage? (RR-08-02). McLean, VA: GMAC (Graduate Management Admission Council).
- Johnstone, C.J., Altman, J., Thurlow, M.L., & Thompson, S.J. (2006). A summary of research on the effects of test accommodations: 2002 through 2004 (Technical Report 45). Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes.
- Institute for Credentialing Excellence. (2014). National Commission for Certifying Agencies (NCCA) Standards. Washington, DC: Author.
- Laing, J., & Farmer, M. (1984). Use of the ACT assessment by examinees with disabilities (Research Report No. 84). Iowa City, IA: American College Testing Program.
- Lazarus, S.S. & Heritage, M. (2016). Lessons learned about assessment from inclusion of students with disabilities in college and career ready assessments. Minneapolis, MN & San Francisco, CA: University of Minnesota, National Center on Educational Outcomes & National Center on Systemic Improvement.
- Lazarus, S.S., & Thurlow, M.L. (2015). Considerations when including students with disabilities in test security policies (Policy Directions 23). Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes.
- Lazarus, S. S., Thurlow, M. L., Dominguez, L. M., Kincaid, A., & Edwards, L. M. (2014). Test security and students with disabilities: An analysis of states' 2013-14 test security policies (Synthesis Report 95). Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes.
- National Center for Education Statistics. (2015). Fast facts. Digest of Education Statistics. Washington, DC: Institute of Education Sciences (IES), U.S. Department of Education.
- NCEO (2015). Making accessibility decisions for ALL students. (NCEO Brief 11). Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes.
- National Commission for Certifying Agencies. (2014). Standards for the accreditation of certification programs. Washington, DC: Institute for Credentialing Excellence.
- Rogers, C.M., Christian, E.M., & Thurlow, M.L. (2012). A summary of the research on the effects of test accommodations: 2009-2010 (Technical Report 65). Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes.
- Rogers, C.M., Lazarus, S.S., & Thurlow, M.L. (2014). A summary of the research on the effects of test accommodations, 2011-2012 (Synthesis Report 94). Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes.
- Rogers, C. M., Lazarus, S. S., & Thurlow, M. L. (2016). A summary of the research on the effects of test accommodations, 2013-2014 (NCEO Report 402). Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes.

- Thompson, S.J., Blount, A., & Thurlow, M.L. (2002). A summary of research on the effects of test accommodations: 1999 through 2001 (Technical Report 44). Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes.
- Thompson, S.J., Thurlow, M.L., & Malouf, D. (2004). Creating better tests for everyone through universally designed assessments. *Journal of Applied Testing Technology*, 6(1), pp 1-15.
- Thurlow, M.L. (2014). Instructional and assessment accommodations in the 21st century. In L. Florian (Ed.) *The Sage handbook of special education* (2nd ed., pp. 597-631). Thousand Oaks, CA: Sage.
- Thurlow, M.L., & Kopriva, R.J. (2015). Advancing accessibility and accommodations in content assessments for students with disabilities and English learners. *Review of Research in Education*, 39, 331-369.
- Thurlow, M.L., Thompson, S.J., & Lazarus, S.S. (2006). Considerations for the administration of tests to special needs students: Accommodations, modifications, and more. In Downing, S.M. & Haladyna, T.M. (Eds.), *Handbook of test development* (pp. 653-673). Mahwah NJ: Lawrence Erlbaum, Inc.
- U.S. Bureau of the Census. (2012). *Americans with disabilities: 2010*. Washington, DC: U.S. Department of Commerce.
- U.S. Bureau of the Census. (2013). *Language use in the United States: 2011*. Washington, DC: U.S. Department of Commerce.
- U.S. Department of Education (2014). 36th annual report to Congress on the implementation of the Individuals with Disabilities Education Act, 2014. Washington, DC: Office of Special Education and Rehabilitative Services.
- U.S. Department of Justice. (2015). Testing accommodations. From: http://www.ada.gov/regs2014/testing_accommodations.html
- U.S. Equal Employment Opportunity Commission (2016). EEOC proposes regulations describing federal government's obligation to engage in affirmative action for people with disabilities. From: <http://www.eeoc.gov/eeoc/newsroom/release/2-23-16.cfm>
- U.S. Government Accountability Office (2011). Higher education and disability: Improved federal enforcement needed to better protect students' rights to testing accommodations (GAO-12-40, Report to Congressional Requesters). Washington, DC: Author.
- Willingham, W.W., Ragosta, M., Bennett, R.E., Braun, H., Rock, D.A., & Powers, D.E. (Eds.). (1988). *Testing handicapped people*. Boston, MA: Allyn & Bacon.
- Woo, A., Hagge, S., & Dickison, P. (2013). The impact of extended time accommodations on differential item functioning in high-stakes licensure examinations. *Journal of Nursing Regulation*, 3(4), 10-14.
- Zenisky, A.L., & Sireci, S.G. (2007). A summary of the research on the effects of test accommodations: 2005-2006 (Technical Report 47). Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes.

Appendix

Audio-recorded. Two states mentioned the audio-recording accommodation in their test security policy. One of the policies indicated that audio-recordings were a preferred way of providing the oral delivery of the assessment because they provided a standardized delivery of the read aloud accommodation; the other state's policy indicated that the audio-recording could not be copied.

Braille. Braille was included in the test security policies of 37 states. The policies generally addressed how far in advance these materials could be reviewed, typically a maximum of two to four days prior to administration. The policies also frequently indicated that the braille materials could only be accessed under secure conditions. Some states required signing a nondisclosure agreement prior to accessing the braille version of the test, while other policies indicated that a second person (e.g., school administrator, school staff who had also signed a nondisclosure agreement) must be present during assessment review. Several state policies

addressed qualifications of individuals administering the braille version of the assessment, for example requiring an authorized school employee with fluency in braille. Some policies described procedures for transferring student responses from tests administered using the braille format to standard documents. A few states had policies that indicated that the braille answer document (and other braille materials) needed to be returned to the test vendor (or in some cases, shredded), along with the transcribed responses on a scorable answer document.

Calculator. The calculator accommodation was included in the test security policies of 14 states, typically indicating allowed calculator types. Some policies stated that the student was only allowed to use approved calculators or the types of calculator identified in the student's IEP. Some policies indicated that the test administrator must verify that the calculator's memory had been cleared prior to beginning the assessment.

Extended time. Twenty-two states had policies addressing security issues related to the provision of

the extended time accommodation with many providing information about the allowed/appropriate setting. Some indicated that extended time administrations should be conducted in a different/separate setting. Others indicated that a student could begin the assessment in the same room as other students, and then described appropriate processes and procedures for relocating the student and testing materials to another location to continue the assessment after other students had completed it. They also described how students should be monitored while taking an extended time accommodated assessment (e.g., monitored at all times), and who was allowed to serve as a monitor (e.g., a test administrator, school personnel, etc.).

Human reader. The test security policies of 32 states addressed oral delivery of the assessment by human readers, typically emphasizing that the tests contain secure content, and human readers must not disclose test content or read the assessment in ways that might affect the students' responses. To minimize security risks some states only permitted usage of certain test forms with the human reader accommodation and many states required human readers to sign a test security agreement. The human reader accommodation was often addressed in the policies of states using paper and pencil assessments—although a few policies addressed computer-based assessments. Some policies indicated the computer-based embedded text-to-speech accommodation was the preferred and most secure way to provide the oral delivery accommodation, but a human reader could be used if the student could not access the assessment using the embedded reader.

Individual administration. The test security policies of 15 states discussed individual administration. A few provided detailed descriptions of the processes and procedures for these administrations. However, many policies provided little detail about how individual administrations should be carried out; instead, these policies merely mentioned this topic within the context of the provision of another accommodation (e.g., braille, scribing, read aloud, sign interpretation, extended time, etc.).

Large print. Twenty-eight states had test security policies addressing the large print accommodation, typically describing the appropriate way to transfer student responses from the large print documents to scannable scoring sheets or into an online system. Policies sometimes indicated that the transferred responses must

be transferred exactly, and in some cases there was a requirement that transferred answers be verified. Some states addressed the distribution and storage of large print booklets, typically indicating that large print (and other special format tests) be kept in a secure location, with some policies providing additional location specifications (e.g., locked room, only authorized individuals could access the assessments, etc.). When policies allowed for copying the test to enlarge it, procedures for maintaining security and confidentiality during copying were described.

Magnification. The test security policies of five states addressed magnification. Several states indicated that magnification was preferred over copies of assessments made to create enlarged print due to the lower security risk. Some states disallow copying tests, but permit magnification. The digital storage of information on devices used to magnify the assessment was also addressed in some policies. For example, one state did not allow low vision devices to store images of secure test materials.

Multiple days. Ten states had policies related to testing across multiple days. The policies generally provided specific information about how to minimize the likelihood of security breaches when an assessment is administered over several days. These policies typically indicated that in order to maintain test security, students could only access a specific set of test items on a single day, and that students were not allowed to return to those items on subsequent days.

Sign language interpretation. The test security policies of 30 states addressed sign language interpretation, with most focusing on the appropriate way to sign words to ensure a valid administration of the test. Some of the policies recognized a need for greater consistency in conducting signing, to help maintain test security. The policies typically addressed the importance of maintaining the confidentiality of test questions and answers when providing a signed administration, and the need to keep testing materials in a secure place to prevent unauthorized access. Some policies addressed how far in advance sign interpreters could access the test to ensure familiarity with signing all included words and terminology. Across states, the maximum advance review period ranged from two hours to four days prior to administration. Some policies also indicated that the interpreters must have signed a nondisclosure agreement prior to reviewing the assessment, and that the security of the test must be maintained.

Small group. The test security policies of six states addressed small group administration. Most policies provided little detail about how small group administrations should be carried out; instead, these policies merely mentioned this topic within the context of the provision of another accommodation (e.g., braille, scribing, read aloud, sign interpretation, extended time, etc.).

Speech-to-text. The policies of five states addressed the speech-to-text accommodation, typically specifying removal of secure test content from computers and other devices following completion of the assessment. They also described which types of assistive technology were allowed. The policies of a few states with computer-based tests indicated that the embedded speech-to-text tool was preferred, though some also allowed the use of non-embedded software to provide the speech-to-text accommodation.

Text-to-speech. Ten states had policies for the text-to-speech accommodation, addressing appropriate procedures for using assistive technology (e.g., clearing memories, limiting access to components of the software that would create security issues, etc.) to help mitigate potential security issues. Some policies indicated that the embedded text-to-speech accommodation was the preferred (and most secure) way to provide the text-to-speech accommodation, but that a human reader could be used if the student could not access the assessment using the embedded reader. A supplemental survey (Heritage & Lazarus, 2016; Lazarus & Heritage, 2016) completed by special education teachers following the first administration of the consortia assessments provided additional insight into test security issues related to the provision of the text-to-speech accommodation on computer-based tests. It was noted that embedded text-

to-speech can be problematic for some students, and that some students with disabilities needed to use specialized assistive technology that provides the text-to-speech accommodation rather than an embedded text-to-speech feature. Issues included differences between the embedded software and the software the students used in instruction, which made it difficult for the students to access the assessment. In some cases, it was merely lack of familiarity, which might be resolved by providing opportunities for the students to practice using the embedded text-to-speech feature prior to assessment day, whereas in others there were functional issues. For example, some blind or visually impaired students are used to receiving the text-to-speech accommodation at faster speeds (e.g., 1.5 times, 2 times) that may not be available in the embedded software.

Transcription and Scribing: The policies of 34 states addressed transcription and scribing, generally describing the required qualifications for scribes. For example, some policies indicated that the scribe must be a school employee familiar with the assessed subject area or content. The policies also typically described appropriate transcription and scribing protocols, processes, and procedures, as well as training requirements. Some of these specifications were quite detailed, and indicated that the scribe must not edit student work; whether (or how) they could ask the student for clarification, and whether the student could review what the scribe had written were also noted. The use of a human access assistant to do transcription and scribing was addressed most commonly in the policies of states with paper and pencil assessments, but transcription and scribing was also sometimes permitted in states with computer-based tests.