![Q-interactive logo]

Digital Assessment Accessibility and Accommodations for Examiners With Disabilities

Q-interactive Technical Report 15

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Introduction

The past decade has brought significant gains with respect to utilizing technology in test administration, scoring, and interpretation (Pade, 2016). For psychologists testing clients with disabilities who require accommodations, computerized administrations and use of platforms such as Q-interactive offer new options for accessibility simply not available with paper-and-pencil methods. Digital assessment platforms not only allow for additional accommodations for examinees, but they also help to accommodate the needs of test examiners with disabilities, an issue which is rarely discussed in scholarly literature on psychological testing. Increased accessibility options available through Q-interactive and other platforms translate to more opportunities for assessments to be completed by a wider range of examiners, including those with motor, learning, visual, and auditory disabilities. This paper seeks to describe some of the barriers faced by examiners with disabilities and to explain how digital assessment, and specifically Q-interactive, notably increases the accessibility of psychological testing for examiners with disabilities.

Examiners With Disabilities

Clinical and school psychologists administer, score, and interpret a myriad of psychological tests designed to assess cognitive, academic, neuropsychological, and social-emotional functioning. Psychologists also integrate data gathered via various assessment measures in a meaningful way to produce a written report and provide verbal feedback to clients. Competency in psychological testing and assessment has come to be considered a key prerequisite for pre-doctoral internship (Krishnamurthy et al., 2004), and this is reflected in various competency models that have been advanced for clinical psychology training, including those authored by the National Council of Schools and Programs of Professional Psychology (NCSPP) and the American Psychological Association (APA; Fouad et al., 2009; NCSPP, 2007).

Completing psychological assessments is often recognized as a rigorous process, but individuals with disabilities may experience additional challenges. Psychological tests were not designed to be accessible for examiners with disabilities (American Psychological Association, 2011). Thus, individuals with disabilities may not be able to administer some types of tests in a standardized manner due to motor, learning, visual, or auditory disabilities. For instance, some psychological tests may require visual acuity or a certain level of proficiency with fine motor skills (e.g., the Block Design subtest of the Wechsler intelligence scales) and auditory capacity to appropriately administer, record, score, and thus interpret various measures. Table 1 provides detailed information about the specific skills examiners are assumed to have to administer the subtests of the Wechsler intelligence tests.

To date, little scholarly writing exists on the topic of accommodating examiners with disabilities in psychological testing (Kemp et al., 2003). Minimal guidance is available regarding how to balance the competing needs of specific standardized administration procedures with the needs of examiners who may require accommodations to complete this aspect of their graduate training or work as a professional psychologist. Additionally, little research has examined the influence of examiner accommodations on the performance of examinees on psychological tests.

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Table 1: Wechsler Intelligence Scales Subtests and Examiner Ability Needs

Wechsler Intelligence Scales Subtests	Examiner Ability Needs				
	Visual	**Auditory**	**Motor**	**Verbal**	**Learning**
	Read directions/ items See responses	Hear responses/ query	Demonstrate items Write responses Use stop watch Turn pages in stimulus booklet	Read directions/ items Provide responses to questions	Reading directions/ items Adding up scores Writing responses
Vocabulary	x	x	x	x	x
Similarities	x	x	x	x	x
Information	x	x	x	x	x
Comprehension	x	x	x	x	x
Block Design	x		x	x	x
Matrix Reasoning	x		x	x	x
Figure Weights	x		x	x	x
Visual Puzzles	x		x	x	x
Picture Concepts	x		x	x	x
Digit Span	x	x	x	x	x
Arithmetic	x	x	x	x	x
Letter-Number Sequencing	x	x	x	x	x
Picture Span	x		x	x	x
Symbol Search	x		x	x	x
Coding	x		x	x	x
Cancellation	x		x	x	x

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Three-Tiered System for Conceptualizing Accommodations in Psychological Testing

To address the absence of guidance regarding appropriate accommodations for examiners with disabilities in psychological testing and assessment, Carlos, Pade, and Hobza (2014) suggested a three-tiered system for conceptualizing accommodations. This three-tiered system is based on two primary assumptions. First, it is presumed that the process of conducting standardized assessments can be made more accessible for examiners with disabilities. Second, this three-tiered system assumes that there are several ways to accommodate examiners with disabilities in conducting psychological assessments in a manner that does not impact the standardized administration of tests, and thus their validity.

The three-tiered system is also based on the premise that there is not a single set of accommodations that will work for the individual needs of all examiners with disabilities to complete any type of assessment battery. Instead, in conceptualizing an appropriate accommodation, one needs to consider both the needs of the examiner and the type of psychological assessment being conducted. It is further presumed that not all accommodations will work for the same examiner across all types of assessment batteries. Sometimes an examiner may not require accommodations to complete part of an assessment independently, while at other times they may require more assistance through additional accommodations.

The three-tiered system for conceptualizing accommodations for psychological testing (Carlos, Pade, & Hobza, 2014) consists of three levels of accommodations. Level 1 of this system encompasses scenarios in which, with minor accommodations, examiners with disabilities can complete the standardized administration and scoring of psychological tests independently. Examples of Level 1 accommodations are allowing an examiner with visual impairment to use enlarged testing materials to navigate with greater ease, and allowing an examiner with a fine motor disability to use a laptop or tablet to take notes during test administration rather than handwrite responses. Both of these fairly simple accommodations may allow an examiner to complete testing and scoring independently in a manner that likely does not impact the standardized procedure of the testing.

Level 2 accommodations in Carlos et al.'s (2014) three-tiered system are intended to reflect scenarios where an examiner with a disability may require a greater level of accommodation and possibly some assistance with administration and/or scoring. At Level 2, examiners may be able to complete parts of standardized administration or scoring independently, but there are also some aspects of these tasks that require assistance from another individual. One example of a Level 2 accommodation is an examiner with fine motor difficulties who may require assistance to administer specific subtests (e.g., Coding or Block Design on the WISC–V), but who may be able to administer other subtests (e.g., verbal subtests of the WISC–V) independently. Carlos et al. (2014) suggest that assistance for an examiner with a disability may be provided by a psychometrist, supervisor, or a qualified colleague, depending on the nature of the clinic setting where the assessment is taking place.

Level 3 accommodations in the three-tiered system are intended to reflect scenarios where significant assistance with standardized administration and scoring are necessary during the assessment. Carlos et al. (2014) emphasize, however, that even with a Level 3 accommodation, an examiner with a disability remains responsible for the clinical interview, building rapport with the client, integrating test results, writing the report, and providing feedback. An example of a Level 3 accommodation might be for an examiner who is blind and requires a sighted examiner

to administer and score most of the testing. As mentioned above, however, the examiner is still able to perform several tasks pertinent to completing the assessment. When considering the needs of psychology trainees, these tasks are critical to the student's training, competency development, and ability to accrue experiences essential to preparation for internship.

Carlos et al. (2014)'s three-tiered system can be applied to understanding how accommodations might be made to assist an examiner with a disability in administering subtests like those on the Wechsler intelligence tests. Table 2 provides a list of tasks that examiners need to complete while administering traditional, nondigital Wechsler tests under standardized conditions. The table identifies the level of accommodation necessary for an examiner with a motor, learning, visual, or auditory disability to complete the task, and indicates specific supports and accommodations that have been used by examiners with disabilities to administer the Wechsler tests.

Although this paper focuses on the Wechsler Scales as an example, much of what is discussed either applies directly to a wide range of measures or may be used as guidance.

Table 2: Levels of Accommodation by Examiner Task / Ability Need and Administration Medium With or Without Supports or Adaptations

Examiner task / Ability needs		Level of Accommodation				
		Paper/Pencil	Paper/Pencil with specific supports	Q-interactive	Q-interactive with specific adaptations	Q-interactive with potential long-term adaptations
Read directions	Visual tasks[#]: ability to see text	Level 2–3	Level 1 – with the inclusion of enlarged font or directions in Braille	Level 3	Level 1 – with the ability to enlarge font or utilize a refreshable Braille keyboard	Level 1 – iPad read directions with press of a button
	Visual tasks[#]: ability to read fluently	Level 2	Level 2 – increased preparation	Level 2		Level 1 – iPad read directions with press of a button
	Motor tasks: ability to point to specific stimuli while reading directions	Level 2–3	Level 1–2 – have assistance of additional examiner, use of a pointer	Level 1–2 Reduced need Stimulus books eliminated		Level 1 – press button on examiner tablet that would initiate/ explain task on examinee tablet
Demonstrate items	Visual tasks[#]: ability to see demonstration items	Level 2–3	Level 2–3 – use tactile blocks	Level 3		Level 1 – iPad complete demo items by press of a button
	Motor tasks: ability to manipulate demonstration items	Level 2–3	Level 2–3 – have assistance in manipulating demonstration items	Level 2–3		Level 1 – iPad complete demo items by press of a button
	Auditory tasks: ability to hear examinee's response on demonstration items	Level 2–3	Level 2 – have assistance from interpreter	Level 2–3		Level 1 – iPad complete demo items by press of a button
Hear responses	Auditory tasks: ability to hear examinee's responses to items	Level 2–3	Level 2–3 – have assistance from interpreter	Level 2–3		Level 1–2 – iPad translates voice to text

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Examiner task / Ability needs		Paper/Pencil	Paper/Pencil with specific supports	Q-interactive	Q-interactive with specific adaptations	Q-interactive with potential long-term adaptations
				Level of Accommodation		
See responses	Visual tasks#: ability to see examinee's responses to tasks	Level 2–3	Level 2–3 – have assistance of additional examiner	Level 1–2 – examinee responses appear on examiner tablet	Level 1–2 – examinee responses appear on examiner tablet	Level 1 – examinee responses scored automatically
Query responses	Auditory tasks: ability to hear examinee's responses to tasks, such that they can be appropriately queried	Level 2–3	Level 2–3 – have assistance from interpreter	Level 2–3		Level 1–2 – iPad translates voice to text
Record responses	Auditory tasks: ability to hear examinee's responses to tasks, such that they can be appropriately recorded	Level 2–3	Level 2–3 – have assistance from an interpreter	Level 2–3		Level 1–2 – iPad translated voice to text
	Visual tasks#: ability to see examinee's responses and score sheet to record responses	Level 2–3	Level 2–3 – have assistance of additional examiner	Level 2–3		Level 1–2 – responses recorded automatically by iPad
	Motor tasks: ability to write down or circle responses	Level 2–3	Level 1–3 – have assistance of an additional examiner or utilize a laptop	Level 1–2 – examinee responses appear on examiner tablet		Level 1–2 – examiner points to responses/ digits rather than write out
	Learning tasks: ability to write down responses fluently	Level 2	Level 2	Level 2		Level 1–2 – iPad translated voice to text Level 1–2 – type responses via keypad
Time task	Visual tasks: ability to see examinee's start and stop task and to see stopwatch	Level 2–3	Level 1–3 – have assistance of additional examiner; addition of a Braille stopwatch	Level 2–3		Level 1–2 – addition of a Braille stopwatch
	Learning tasks: multitasking, increased cognitive load	Level 2	Level 2	Level 1–2 – integrated stopwatch into Q-interactive application reduced multitasking with manipulative		
	Motor tasks: ability to manipulate stopwatch	Level 2–3	Level 1–3 – have assistance of additional examiner; use of a digital stopwatch to ease fine motor demands of task	Level 1–3 – integrated stopwatch into Q-interactive application reduced motor multitasking		

Table 2: Levels of Accommodation by Examiner Task / Ability Need and Administration Medium With or Without Supports or Adaptations

Examiner task / Ability needs		Paper/Pencil	Paper/Pencil with specific supports	Q-interactive	Q-interactive with specific adaptations	Q-interactive with potential long-term adaptations
Prompt responses/ reminders	Visual tasks#: ability to see examinee's responses to tasks, such that they can be appropriately prompted	Level 2–3	Level 2–3 – have assistance of additional examiner	Level 2–3		Level 1 – addition of iPad visual (e.g., red flashing light) or auditory cues to remind examiners to prompt
	Auditory tasks: ability to hear examinee's responses to tasks, such that they can be appropriately prompted	Level 2–3	Level 2–3 – have assistance of additional examiner	Level 2–3		Level 1 – addition of iPad visual (e.g., red flashing light) or auditory cues to remind examiners to prompt
Score responses	Visual tasks: ability to see score sheet	Level 2–3	Level 2–3 – have assistance of additional examiner	Level 2–3		Level 1 – automatic scoring
	Learning tasks: addition & simple calculations	Level 2	Level 2 – calculator	Level 1 – automatic scoring		Level 1 – automatic scoring
	Motor tasks: ability to write scores on score sheet	Level 2–3	Level 1–3 – have assistance of an additional examiner or utilize a laptop	Level 2–3		Level 1 – automatic scoring
Monitor/ apply discontinue/ reverse rule	Visual tasks#: ability to see examinee's responses to tasks, such that discontinue and reversal roles can be appropriately applied.	Level 2–3	Level 2–3 – have assistance of additional examiner	Level 2–3		Level 1 – iPad monitors discontinue/ reversal rules
Turn pages in stimulus book	Visual tasks: ability to see stimulus book	Level 2–3	Level 2–3 – have assistance of additional examiner	Level 2–3		
	Motor tasks: ability to manipulate pages in stimulus book	Level 2–3	Level 2–3 – have assistance of additional examiner	Level 1 – eliminated via examinee tablet		

Note. Examiners with visual or auditory limitations would need another person in the assessment session to document behavioral observations or address questions or need for clarifications. The information in the table is focused on test administration specific tasks. This table does not include an exhaustive list of all abilities, needs, and accommodations associated with testing.

#Examiners with some visual impairment would differ in needs and accommodation level than those who are blind.

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Digital Assessment Platforms and Accessibility for Examiners

The advent of digital assessment began more than a decade ago (Pade, 2016), as test publishers began the process of translating assessment measures into digital format. Pearson's Q-interactive is one example of a digital assessment platform. The Q-interactive platform involves two digital interfaces, Central (website) and Assess (iPad app). Central is web-based and supports the entry of examinee demographic information and history, and the selection and assignment of assessments for an examinee. Assess downloads the assessments assigned in Central and uses two iPads, one for the examiner and one for the client, for the administration of digital assessments.

Digital assessment platforms, such as Q-interactive, can potentially benefit examiners with motor, learning, visual, and auditory disabilities, and can improve the accessibility of the examiner's tasks according to the three-tiered system described by Carlos et al. (2014). While a thorough review of issues related to practice with digital assessment is beyond the scope of this paper (see Pade [2016] for a review of history and clinical issues associated with digital assessment), Q-interactive, in its current version, improves examiner accessibility of assessments, but future modifications of Q-interactive would contribute to further accessibility, including pending and more long term changes. Current iPad technology allows for specific assessment tasks and tests to enjoy greater accessibility options than others. However, as the technological sophistication of Q-interactive continues to advance quickly, greater opportunities for examiner accessibility are within reach. Some examples of such increased accessibility per disability category are provided below.

Examiners With Motor Disabilities

Q-interactive has several benefits that increase ease and efficiency of test administration over traditional paper-and-pencil methods for examiners with motor disabilities, especially in circumstances where examiners require accommodations for fine motor tasks. One main benefit is that, because Q-interactive integrates information from the administration manual, test protocol, and stopwatch into one digital application, there is less need for the examiner to physically manage and manipulate the different materials. The Assess app, which integrates these multiple components, allows for relatively easy navigation of materials and provides examiners with prompts regarding appropriate start points, reversal rules, and discontinue rules, potentially reducing the need for examiners to flip through the pages of a manual to access this information. These advantages are particularly important for examiners with fine motor disabilities. Another important benefit of Q-interactive is that the need for examiners to write down or circle responses is reduced. For instance, in Matrix Reasoning on the WISC–V, an examinee's responses automatically appear on an examiner's iPad, reducing the fine motor component of test administration for an examiner. These advantages of Q-interactive may allow an examiner with a fine motor disability to use the digital app as a Level 1 accommodation, rather than utilizing a Level 2 or Level 3 accommodation to complete assessments.

Examiners With Learning Disabilities

Similar to the advantages for examiners with motor disabilities, Q-interactive has several features that are advantageous to examiners with learning disabilities. First, the integration of the manual, test protocol, and stopwatch into a single app reduces the cognitive load associated with the multitasking demands of test administration. Second, the ability of Q-interactive to reduce some of the examiner's need to write down examinee responses is advantageous for examiners in need of accommodation for dysgraphia. Third, Q-interactive automatically sums subtest totals, eliminating the need to perform simple calculations, thereby reducing potential calculation and scoring errors. This is a significant advantage for examiners with dyscalculia. These advantages inherent in the Assess app may allow an examiner with a learning disability to complete an assessment independently (i.e., with a Level 1 accommodation) instead of utilizing a Level 2 or Level 3 accommodation.

Examiners With Visual Disabilities

While the current design of the Assess app offers many immediate advantages to examiners with motor or learning disabilities, there are fewer immediate advantages over traditional paper-and-pencil tests for examiners with visual disabilities. The features of Q-interactive discussed earlier that are beneficial for examiners with motor or learning disabilities, such as its ability to automatically record and score some subtests (e.g., Matrix Reasoning) and to sum subtest totals, are of obvious benefit to an examiner with a visual disability.

Some features that could be further enhanced for examiners with visual disabilities are font size, font color and contrasts, and the visual organization of stimuli on the examiner's screen. Issues regarding font size and contrast may be relatively easy to remedy with some technical adjustments to the Q-interactive system. Increasing the font size within the app or enabling a zoom option within Q-interactive would allow for easier reading by individuals with visual disabilities. Moreover, adjusting the font color to black font on a white background would help to address the contrast issue. Additionally, examiners who have visual impairment and/or who are colorblind would probably do better with identifying correct responses when colors other than green or red circles are used to identify correct and incorrect answers. The framing of correct answers with a green box (e.g., on Matrix Reasoning of the WAIS-IV) may also be difficult to visually detect. Utilizing universally recognized "check" and "x" marks for correct and incorrect answers in black ink would address any color based visual limitations.

There are additional ways Pearson may consider to further increase accessibility on Q-interactive for those with visual limitations, which include not only those with disabilities, but also older psychologists whose eye sight is simply not as acute as it used to be. Having a flashing button to alert examiners when they need to press it to show an examinee the next item can help increase administration efficiency. It may also be helpful to consider a button which will allow examiners to play an audio file of verbatim directions. This would further increase consistency and standardization of administration directions and limit impact of the small font size and low contrast colors, considering the fairly small/limited iPad screen space. Such features would not only address visual limitations but may enhance the administration experience for all examiners.

Examiners With Auditory Disabilities

Similar to the discussion above regarding examiners with visual disabilities, those with auditory disabilities may not find that Q-interactive makes psychological testing immediately more accessible. In both Q-interactive and nondigital, traditional assessment formats, examiners with auditory disabilities are challenged by the presumption inherent in psychological testing that an examiner is able to hear what an examinee says in response to assessment questions and prompts, as well as by the presumption that examiners and examinees communicate with one another via spoken language. In light of these assumptions inherent in the psychological testing process, one type of accommodation that has been used by individuals with auditory disabilities in psychological testing is the use of an interpreter to facilitate communication between an examiner who is Deaf or hard of hearing and an examinee who is hearing. As it is currently designed, Q-interactive does not appear to significantly increase accessibility of psychological testing to examiners with auditory disabilities above and beyond the accessibility of traditional, nondigitally based assessment measures.

However, looking into the future, one might ask whether Q-interactive, as well as other digital forms of assessment, might be able to improve the accessibility of psychological assessment for examiners with auditory disabilities. Q-interactive might be able to develop and enhance the technical capacity to translate auditory stimuli (e.g., an examinee's verbal response) to text. Additionally, Q-interactive may also offer the technical ability for examinees to communicate with examiners via their tablet on tasks that do not specifically assess the verbal capacity of the examinee. This may help to facilitate communication between an examiner and examinee in the absence of an interpreter. While such possibilities are exciting, it is imperative to ask whether this would be the most culturally appropriate accommodation for an examiner who is Deaf or hard of hearing. Future examination of this issue by surveying examiners with auditory disabilities is necessary to determine the best course of action for how Q-interactive may or may not promote accessibility for this particular population of examiners.

Summary

It is clear that Q-interactive, as currently designed, offers several potential benefits that increase the ease and efficiency with which examiners with various types of disabilities administer psychological tests. As described by Carlos et al. (2014) in their three-tiered system of conceptualizing accommodations for examiners with disabilities, there are many ways in which psychological assessment can be made more accessible for examiners with disabilities in a manner that does not impact standardized administration protocols. Q-interactive, as currently designed, may offer accessibility features for individual examiners that make a tremendous difference in terms of what tier-level of accommodations are necessary to enable them to complete testing. As technology continues to advance, impact, and change the field of psychological testing and assessment, the "psychologist" component remains as critical as before for a meaningful assessment. Options for reasonable accommodations are now undeniably greater and more readily available with digital platforms than ever before.

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