Chapter 5.18
Accessibility of Computer-Based Testing for Individuals with Disabilities and English Language Learners within a Validity Framework

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ABSTRACT

There is a great need for designers of computer-based tests and testing systems to build accessibility into their designs from the earliest stages, thereby overcoming barriers faced by individuals with disabilities and English language learners. Some important potential accessibility features include text-to-speech, font enlargement and screen magnification, online dictionaries, and extended testing time. Yet accessibility features can, under some circumstances, undermine the validity of test results. Evidence centered assessment design (ECD) is offered as a conceptual framework—providing sharable terminology, concepts, and knowledge representations—for representing and anticipating the impact of accessibility features on validity, thus helping weigh the consequences of potential design alternatives for accessible computer-based tests and testing systems.

INTRODUCTION

Computer-based tests—including Web-based tests—are likely to become much more common in the future, and it is important that they be designed in a way to be as accessible as possible to individuals with disabilities or who are English language learners.[1] Examples of features that might be considered for such systems include built-in text-to-speech (speech synthesis) with visual highlighting as text is read aloud, font enlargement, screen magnification, color and contrast modification, spelling and grammar checkers, dictionaries, extended testing time, and compatibility with external assistive technologies such as screen readers and refreshable braille displays.[2,3] However, accessibility features that may be useful in overcoming accessibility barriers can, in some instances, invalidate the results of tests. For example, a person with a spelling disability (dysorthographia) could argue that his or her use of spell-checker software would help overcome an accessibility barrier on educational tests that involve writing. Yet, if a test is intended to measure *spelling* ability, then such an accommodation will tend to invalidate the test results by providing an unfair advantage for the person who uses that feature.[4] As we will see, it is not always easy to identify the impact of an accessibility feature on the validity of test results.[5,6] There is clearly a need for a conceptual framework for determining how accessibility features impact validity, thereby clarifying decisions about: which features to provide with computer-based testing systems, whether to build or buy those features, and how much control to allow to test takers in the use of those features.

PURPOSE

The purpose of this chapter is to sketch out a conceptual framework—a *validity framework* that can help clarify the relationships between accessibility features and validity, thereby clarifying possible strategies for increasing accessibility without undermining validity. The first sections of this chapter lay out key concepts in the framework, and the latter sections apply the framework to considerations in computer-based testing.

In terms of the design of accessible computer-based testing systems, this chapter focuses on *laying the groundwork for establishing requirements* for computer-based testing that is more accessible.[7] Thus, the focus is *not* on development of a list of necessary accessibility features per se, but rather on a framework for evaluating possible accessibility-related features for computer-based tests and testing systems. It is hoped that such a framework can help design computer-based testing systems that will be flexible and powerful enough to be used for computer-based testing of individuals with a wide range of profiles of disability (or nondisability) or language status in many different subject areas. While many of the examples used in this chapter are relatively simple, they serve to illustrate key principles and concepts.

Following is a list of the remaining sections of this chapter:

- "An Overview of the Framework" provides an example of the need for such a framework and a brief overview of the framework, with special attention paid to a way of being more precise about what one intends to measure.
- "Basic Reasoning About Accessibility Features" outlines some key basics in reasoning about accessibility features.
- "Universal Design of Assessment" describes this concept and relates it to the concepts described in this chapter.
- "Toward a Common Understanding" provides a hypothetical discussion between team members working toward a design for an accessible computer-based testing system. This discussion underscores how assessment design inevitably requires decid-