a key to evaluation:

the transition competence battery for deaf adolescents and young adults

By Cheryl Davis and Annette Leonard

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Right: At right, figures 1, 2 and 3 show sample scenes from the test battery, including the signs, the written questions, and the response options.

Guiding deaf and hard of hearing students in making important decisions about their adult careers can be a difficult task. Twenty years after its inception, the Transition Competence Battery (TCB), as adapted for deaf and hard of hearing students, may help. The CD, containing the TCB's six subtests, the Mini TCB, and the computerized adapted version of the TCB can be obtained on a limited basis from the authors.

Typical assessment procedures for deaf adolescents and young adults involve adapting materials developed for hearing students; however, there are several potential problems with this.

- Instruments not normed for deaf students become invalid once administration procedures are altered, thus potentially providing inaccurate information about the deaf student's status. Nonetheless, these tests must be altered in order to be administered.
- The language used in materials developed for hearing students may result in test scores that reflect a deaf student's English comprehension instead of his or her mastery of a subject.
- Some items developed on tests for hearing students are simply invalid for use with deaf students.
- Some situations that deaf students will encounter and that are important to their success on the job or living independently (e.g., how to use an interpreter in a job interview, using various kinds of assistive technology, or understanding their rights under the ADA) simply aren't part of the lives of hearing students and thus would not be part of any independent living or employment assessment. This may be the most important limitation of all.

Illustrations at right courtesy of Cheryl Davis

FIGURE 1

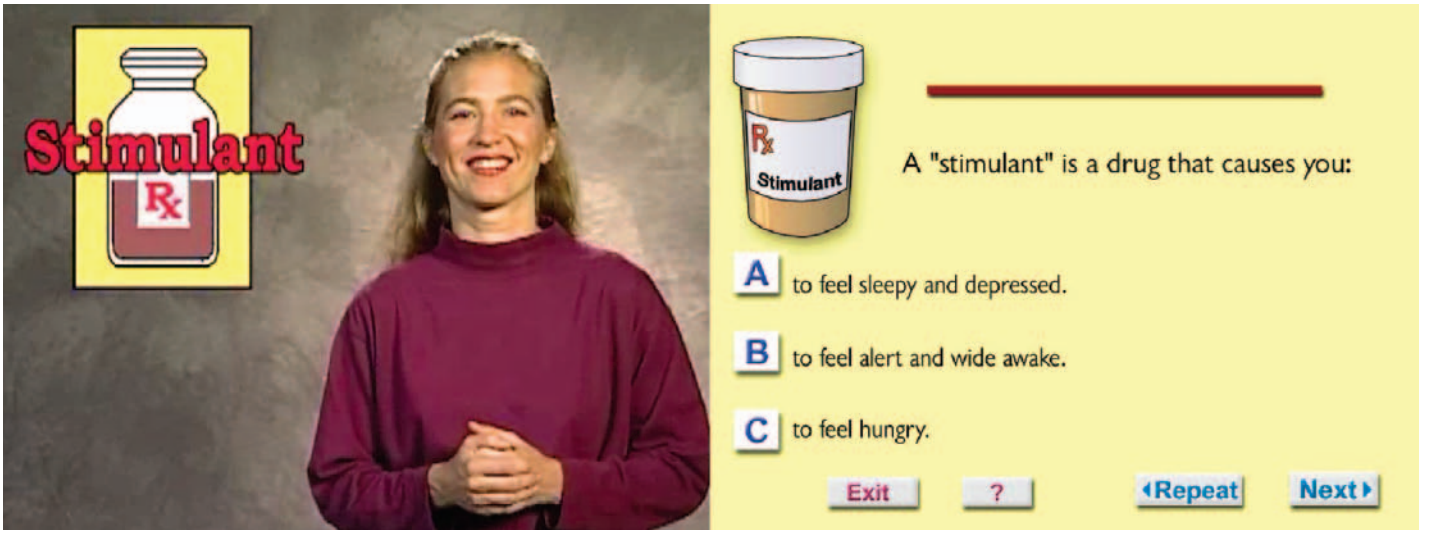


FIGURE 2

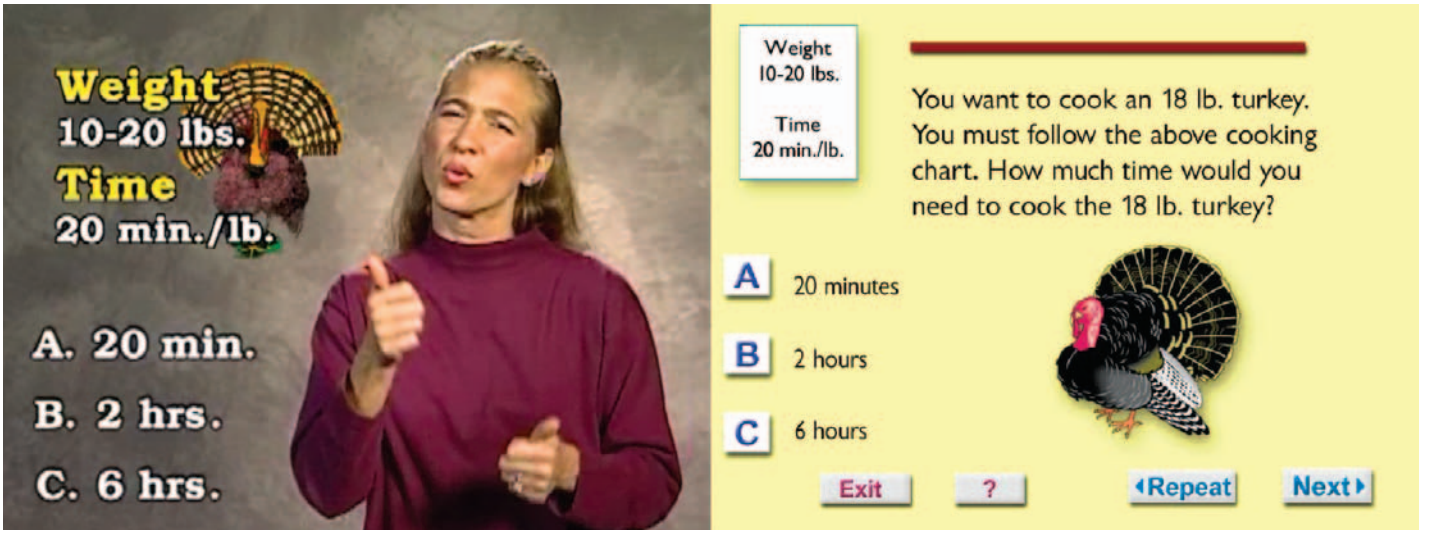
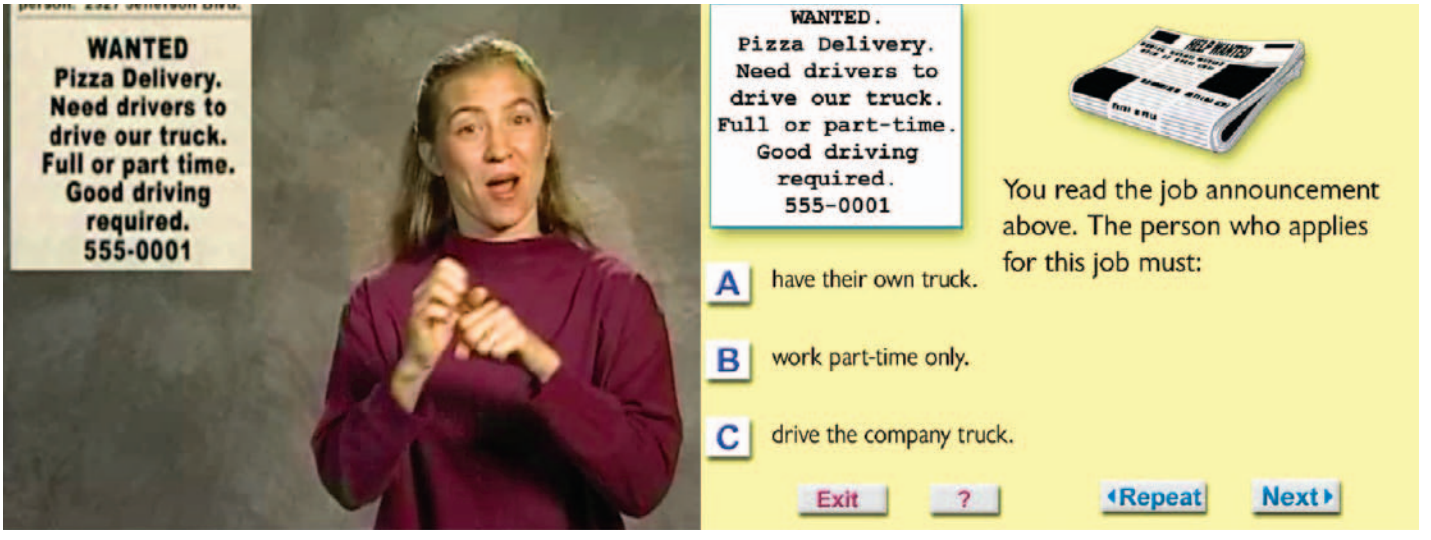


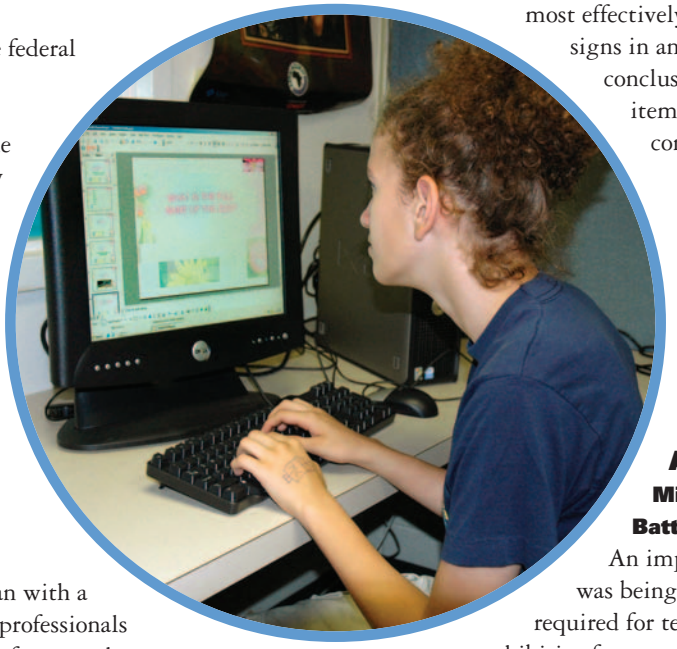
FIGURE 3



Transition Tool for Deaf Youth

The Transition Competence Battery (TCB) is a unique assessment tool designed to measure the transition skills of deaf high school adolescents and young adults who plan to enter the workforce, job training programs, or two-year colleges. This segment of the deaf high school population is both the largest and the most in need of services to succeed in their transition to adult life.

Funded by a grant from the federal Office of Special Education Programs, the TCB was stringently developed with the goal of producing a nationally standardized assessment tool. The defining characteristic of the TCB is its accessibility to students who rely on sign communication. The first project was funded in 1986 and multiple follow-up projects allowed for refinement and testing in multiple formats.



The first phase of the development of the TCB began with a group of 18 deaf and hearing professionals and consumers. Seeking input from teachers, administrators, vocational rehabilitation counselors, parents, employers, and deaf adults, two questions were asked:

1) What are the five most important independent living skills deaf students should have?

2) What are the five most important employment skills deaf students should have?

Project staff then grouped the responses into three areas within two broad domains. The *Employment Domain* includes job-seeking skills, work adjustment skills, and job-related social skills. The *Independent Living Domain* includes money management skills, health and home skills, and community awareness skills. A national survey was then conducted asking respondents to rate skills according to their importance in the successful transition of deaf students. From these ratings, the skills were prioritized and selected for inclusion in the test battery.

A second group of deaf and hearing professionals was convened to begin item writing. More than 900 items were considered for inclusion in the final product. Translating these skill areas into questions and then into a test required careful consideration of issues, such as the target population's literacy, what language should be used, how the questions should be formatted, whether or not the use of graphics would detract from the test's utility, and whether or not the test should be time limited. Little research was available to guide the formatting of the test items and the video presentation, so a series of pilot tests guided initial development.

Students complained in the pilot testing that they did not understand questions as presented in American Sign Language. Deaf and hearing professionals agreed that the test was most effectively presented in conceptually correct signs in an English-influenced order. At the conclusion of the TCB's development, 200 items were presented in six subtests in conceptually correct signs.

The test was standardized through traveling to schools for the deaf and to mainstream programs across the United States and presenting the test items in small group settings through videotape. Fourteen programs and 230 students participated in the project.

A Solution to Testing Time: Mini Transition Competence Battery

An important concern emerged as the test was being standardized: the amount of time required for test administration was simply prohibitive for many sites. In response to this concern, a second line of research to develop the Mini TCB was begun. Using the items developed for the TCB and the data collected in the standardization research, we identified 48 items that best measured performance at the proficiency (screening) level of ability.

Five hundred and ninety-three students participated in the field test of the Mini TCB, including 133 four-year college students making up a comparison group. In a concurrent validity study, these subjects took the Mini TCB and the full test battery two to four weeks later. Correlations between the Mini TCB and each of the subtests ranged from .73 to .86. In reliability studies, subjects took the Mini TCB once, and then again two to four weeks later. The test-retest index was .75.

Taken together, these results suggest that the Mini TCB would be a suitable and important instrument to use with adolescents who are deaf and in transition. The screening tool requires approximately 45 minutes to administer. The Mini TCB has been well received. The reduction of time required for testing has made it much more accessible to school programs.

The Computer Meets the TCB

Technology Aids Testing

Since the late 1980s, there has been a dramatic increase in computer use, and many programs requested a computerized version of the test rather than the one we had developed on

videotape. With students responding directly on the computer, reports could be compiled and hand scoring would no longer be necessary. Even more importantly, a computer could take advantage of adaptive testing algorithms. Each student could receive a different combination of items based on his or her own pattern of responses.

Adaptive testing, which tailors the test to the individual student, is an exciting testing option that enables the testing to be used in developing Individualized Education Programs and Individualized Transition Plans. As with the videotaped version, the computerized adaptive version of the TCB is presented in two domains: *Employment* and *Independent Living*. Students view standardized instructions on the computer that include information about the research project, how to use the navigation buttons in the program, how to respond to the items, and examples.

Students see the item stem and response options signed first. Then the response screen appears. It includes a written version of the question and the three response options. Students can choose to view the question again, or they can pick a response and choose to continue. Responding is a two-step process that allows for the student to change his or her mind and select a different answer before continuing.

The reporting function allows for individual and group data to be compiled for the instructor. Reports can be printed for students that include the item stem, their response, and the correct response. Students and instructors have responded very positively to this new version of the test. Testing takes about 45 minutes to an hour.

In the pilot testing, we were concerned with the reliability and validity of the tool and the representation of the content areas since the number of items presented would be reduced. Four sites and 84 students participated in this phase of the project. Each site took the Mini TCB and the computerized adaptive version of the TCB two to four weeks apart. Some sites had the Mini TCB first and others had the computerized adaptive version of the TCB first.

On average, students were administered 29 items in the *Employment* domain and 12 items in the *Independent Living* domain. As expected, reliability ranged from .85-.86 for the *Employment* domain and .85-.88 for the *Independent Living* domain. Subsequent field testing involving 17 sites and 490 students again evaluated concurrent validity, discriminant validity, and test-retest reliability with similar positive results (see Bullis & Yovanoff, 2005).

Future Directions

The trend that we saw 20 years ago has continued to today: teachers are working in a single classroom with students who use a variety of communication modes. Now, with greater storage capacities, improved compression strategies for video, and faster processing speeds of computers, it would be feasible and appropriate to develop a test where students could choose to see the item in sign language and to add voice tracks that could be muted. It would be interesting to see how student preferences have changed, and if there are any predictive patterns in their preferences. In our research, students' preferences often differed from teachers' expectations.

Future projects should also take advantage of the opportunity to update items. For example, there are items on TTY procedures and etiquette that should be replaced with videophone usage. Even questions regarding checks and deposit slips are becoming obsolete, with ATM and Internet banking more prevalent. In addition to updating items, more challenging items could be developed. The current test was developed for students who likely would not go to four-year colleges or universities. More challenging items would make the test relevant to an even larger group of students, and reduce the need to single out students for testing.

As can be seen, research on the TCB has been extensive and the results strong. Even students responded positively to the assessment, saying that it helped them to understand the issues they would face when they lived independently. Deaf students and their teachers deserve tools that will help them plan for successful transition.

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