The Future of Language Assessment

Disclosure

- Dr. Adam Scheller
  - Employee of Pearson
  - Assessments discussed during this talk are published by Pearson Clinical Assessment.

Agenda

1. Introduction/Disclosures
2. Technology in the history and future of assessment
3. Introduction to speech and language measures on Q-interactive
4. The science behind digital assessment
5. Ethical and practice considerations
6. Conclusions and questions
Learning Objectives

At the completion of the session, participants will be able to:

1. identify how digital solutions provide clinicians with the opportunity to improve practice and service to clients.
2. identify how various aspects of speech and language can be assessed using an interactive digital platform.
3. identify the science behind building digital tests.

Adopting Technology

• It took almost 62 yrs for the telephone to be adopted by 80% of the USA population.
  • It took about 15-20 yrs for the cell phone to be adopted by 80% of the USA population.
  • Smartphones introduced sometime between 1994 and 1997.
    • About 15yrs later over 50% of all cell phone users have a smartphone – mostly Android and iPhone.

Adopting Technology

• The first commercially available computer was released in 1951.
  • By 2010, about 77% of households had a computer.
• In 2010, Apple announces the first iPad and starts the tablet PC race.
  • By 2012, 30% of internet users access the internet from a tablet PC.
  • By 2011, over 10% of households have a tablet PC
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History of Technology in Speech and Language

- Sound Level Meters
- Voice
- Audiometers
- Hearing
- Delayed Auditory Feedback Device
- Stuttering
- Augmentative Devices
  - Non-verbal Communication
  - 1950s: systems for people who lost the ability to speak following surgical procedures

Assessment...the times they are a changing...

Wechsler-Bellevue: 1939

Q-interactive: Today

What is Q-interactive?
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A digital system for individually-administered tests consisting of two primary components

**CENTRAL:**
Browser-based function for generating client profiles, building test batteries, creating assessment sessions, and sharing results.

**ASSESS:**
Application that lets an examiner administer a test via two tablets connected by Bluetooth.

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Where are my test materials and kits?

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**Q-interactive**
Components of Assess

Examiner records and scores responses.

Examiner controls client's device and reads instructions.

Client responds.
What we’re used to...multitasking: the timer, my client, the protocol, etc.
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Current Library:

Full Instruments:

- WAIS-IV
- WPPSI-IV
- WJ-III
- WJ-IV
- WMS-IV
- KTEA-3
- KIAI
- CVLT-II
- CVLT-3
- PPVT-4
- CELF-5
- NEO-III

Selected Subtests:

- CMS
- DELF
- DREIS
- KAPLAN
- NFCT

CELF-5

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GFTA-3 and KLPA-3

GFTA-3 and KLPA-3

Test of Articulation Sounds-in-Words
Who has time to score?

Taking it home 😊

I'm on what column?

Assess: Results tab

1. Subtests
2. Composite
3. Comparison
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Reviewing Assessment Results

[Image of a visual representation of assessment results]

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[Image of a visual representation of assessment results]

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[Image of a visual representation of assessment results]
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Results in Central

Other Kept Data
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Item Level Responses

Generating Reports

Psychometric Study Findings
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Development and Design
Two primary steps in current development process

1. Design tests in a way that minimizes digital effects
   - Group tests based on common features
   - Identify how particular features might impact raw scores
   - Develop interfaces for each 'group' that minimize those impacts

2. Conduct studies to establish raw score equivalency between paper and digital versions
   - Verify that goals in Step 1 are being realized
   - Allow for use of pre-existing norms, as well as reliability and validity information

Test Design
What are the potential causes of digital effects?

- Examinee interaction with the tablet
  - e.g., viewing stimuli, selecting responses, etc.
- Examiner interaction with the tablet
  - e.g., recording or scoring responses, accessing information for instructions, prompts, etc.
- Interactions of the first two
  - In early prototype, keyboard used for verbal response capture, and examinees would truncate responses to "help" slower examiners

Equivalency Studies
Process

- Develop efficient study designs
  - Choice dependent on interface, test constructs, etc.
- Set a standard for equivalence:
  - Effect size < .20, slightly more than ½ scaled score point on Wechsler subtests
- Extensive training of examiners
- Video recording of data collection
- Investigations of any observed format effects:
  - Deeper dive into data
  - Review videos for changes in examinee or examiner behavior
  - Analyze user interface for potential problems
Q-interactive
Overview of CELF-5 Study

1. CELF-5 equivalency is a retest design.
2. CELF-5 only required 4 (sub)test(s) to go through equivalency (LC, FD, RS and FS).
   - Tests are unique to anything that had previously gone through equivalency due to response capture and scoring.
3. Every examinee will take the same sequence of subtests: Linguistic Concepts (ages 5-8), Formulated Sentences, Following Directions, and Recalling Sentences.

Q-interactive
Overview of CELF-5 Study

4. 20 demographically-matched pairs of examinees.
   - One group randomly assigned to take Paper-Digital. The other will be assigned to the Digital-Paper study.
5. Administrations will be video-recorded for diagnosis of any nonequivalence.
6. All examiners have been instructed to leave the video camera rolling for a total of 15 min. between the two administrations to demonstrate that time has elapsed.
   - All of the examiners attended a 2.5 to 3 hour training on how to digitally administer the four (sub)test(s). All of the examiners are also required to submit a “test” case for approval before we are assign their remaining cases.
7. No examinee may participate in more than one of the two studies.

CELF-5 Q-interactive Effect Sizes

The subtests shown have Q-interactive interfaces that have features that could affect the examiner’s ability to accurately score responses, but have not been previously studied.
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**Practice Implications for Digital Assessment**
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Q-interactive provides efficiencies

- Save time with helpful tools that allow rapid capture and on-the-fly scoring
- Improve productivity by eliminating time spent on mundane tasks
- Achieve greater accuracy in administration and scoring
- Obtain rich data which lead to rich insights
- Good fit with assessment in the RTI world
- Access feedback quicker to interpret findings sooner, probe deeper or more broadly

Observations in Practice

Data from a four-month public beta revealed that psychologists using Q-interactive experienced:

- 30% Time Savings
- 35% Cost Savings

when compared with paper and pencil assessments.

More time to do what’s important.

Practice Considerations

- General Ethical Principles
- “Best Practices”
ASHA Scope of Practice (2007)

- Speech-language pathology is dynamic and continuously developing
  - Scope of Practice does not exclude emerging areas of practice.
- SLPs may provide additional professional services necessary for the well-being of the individual(s) they are serving but are not addressed in this Scope of Practice.
- In such instances, it is both ethically and legally incumbent upon professionals to determine whether they have the knowledge and skills necessary to perform such services.

Scope of Practice: Clinical Services

- Speech-language pathologists provide clinical services that include the following:
  - prevention and pre-referral
  - screening*
  - assessment/evaluation*
  - consultation
  - diagnosis*
  - treatment, intervention*, management
  - counseling
  - collaboration
  - documentation*
  - referral

(ASHA, 2007)
Scope of Practice: Clinical Services (cont.)

- Examples of SLP clinical services related to Q-i use include:
  - "using data to guide clinical decision making and determine the effectiveness of services;"
  - "making service delivery decisions (e.g., admission/eligibility, frequency, duration, location, discharge/disch) across the lifespan;"
  - "documenting provision of services in accordance with accepted procedures appropriate for the practice setting;"
  - "providing intervention and support services for children and adults diagnosed with speech and language disorders;"

Technology and S/L

- "Technology is rapidly changing and growing, which means staying up-to-date is important to keep engagement and motivation high for the students you are working with…"
- "Exposing students to new and different technologies while working towards language and/or speech goals will help children adapt to a future involving continued use of technology."

Security

http://blog.asha.org/ (Tanner, 2011)
Paper Records

• Control of access to paper records may be accomplished by storing files in locked cabinets or other containers housed in locked offices or storage rooms.

How is digital data secured?

Security compliance with the standards established in the HIPAA and FERPA Security Regulations and in accordance with the HITECH Act applicable to Business Associates.

All transfers to or from the web application to the tablet are automatically encrypted, using industry best practices.

Client data is transferred from the tablet, using a secure connection, and stored in an encrypted Pearson database.

A variety of administrative, physical, and technical safeguards are in place on Q-interactive to protect your personal data.
HIPAA Security Rule

- SLPs who maintain electronic records will be subject to the HIPAA Security Rule, which requires a detailed analysis of the risks associated with electronic records.
- Electronic records, like paper records, should be created and maintained in a way that is designed to protect their security, integrity, confidentiality, and appropriate access, as well as their compliance with applicable legal and ethical requirements.

Ethical Principles (ASHA, 2013)

- ASHA members have a responsibility not only for monitoring their own conversations, securing of records, and sharing of client information, but also for ensuring that supervisees and support staff are adhering to ethical requirements regarding privacy.
- “Appropriate steps must be taken to ensure the confidentiality and protection of electronic and computerized client records and information. All information should be password protected, and only authorized persons should have access to the records and information. Computerized records should be backed up routinely, and there should be plans for protecting computer systems in case of emergencies.”
Property of SLP or organization? (ASHA, 2013)

- Know your local/institutional guidelines about who owns the record.
  - In a medical setting, often the medical facility owns the record.
  - In a private practice, the individual who is legally responsible for the practice owns the record.
  - In a school setting, the school district owns the record.
- “A report prepared by a speech-language pathologist or audiologist in the course of employment in a particular setting is not owned by that speech-language pathologist or audiologist, and he or she may not remove or copy such confidential records while employed, upon termination of employment, or if the practice closes.”

The Unique Challenges of Training

- Who is best qualified to train on the use of technology in the field?
  - How can that be balanced with knowledge of practice and the field?
- Paper/pencil or digital or both
- University training

Training Resources

- Administration and scoring manuals
- On Your Own Video Tutorials
- Test Instrument Tutorials
- Software User Guides
- On Boarding Webinar Series (2 parts):
  - iPad settings and Q-interactive Central
  - Assessing with Q-interactive, Generating Reports
- Frequently Asked Questions
- Contact Technical Support

Q-interactive Central (accessible after logging in)

Helloq.com (public site)
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Where will we go?

• Artificial intelligence
• Inspection time
• Affect recognition

Thanks for Coming!

Questions?
Adam.Scheller@Pearson.com
Senior Educational Consultant

www.pearsonclinical.com
www.helloq.com

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