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Telepractice: Using Distance Technology to Connect, Communicate, & Enhance Language Learning in Young Children with Hearing Loss

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Disclaimers

Dr. Houston is currently the author or co-author/editor of three books published by Plural Publishing:

Telepractice In Speech-Language Pathology (2014)

Assessing Listening and Spoken Language In Children with Hearing Loss (2015) – with co-author/editor, Tamala S. Bradham, PhD, CCC-A

Telepractice In Audiology (2016) – with co-author/editor Emma Rushbrooke, MA, AuD

Dr. Houston does not receive any monetary compensation from any of the manufacturers/companies of the technology discussed during this presentation.
Learning Objectives

At the end of this presentation, participants will be able to:

- Define telepractice service delivery models currently utilized in Speech-Language Pathology and Audiology
- Discuss the role of parent coaching in telepractice
- Define a model program of telepractice for children with hearing loss and their families.

Dylan & Dad...and Butterflies!
**Terminology**

- Connected Health
- Tele-Audiology
- Tele-Health
- Tele-Therapy
- Telerehabilitation
- Teleintervention
- Telepractice
- Telemedicine
- mHealth

**Defining Telepractice**

- **American Speech-Language-Hearing Association**
  - The application of telecommunications technology at a distance by linking a clinician to client or clinician to clinician for assessment, intervention, and/or consultation.

- Telepractice is an appropriate model of service delivery for the professions of Speech-Language Pathology & Audiology.

- The quality of services delivered via telepractice must be consistent with the quality of services delivered face-to-face.
History of Telehealth

Evolution Leading to Revolution

5 Mb of Storage Being Loaded: 1956
Digital Natives vs. Digital Immigrants

Digital Native

Digital Immigrants


CONTINUED
The times...They are a-changin’

- Virtual Reality = Immersive Computing
- Artificial Intelligence (AI) / Robotics
- 3-D Printing
- Internet of Things / Internet of Everything / Smart Homes
- 5G connections = 10K faster, 10 Gbits per second
- Everything On Demand = Uber, Lyft, etc.
- Quantified Self / Mobile Health
- Self-Driving cars

Convergence of Technology, Healthcare, & Education

- Technology: Smartphones, Tablets, Notebooks
- Increased Demand for Telehealth
- Any Service, Any Place, Any Time “On Demand”
- Broadband Internet
- Social Media/Networks: Connections
- Lowering Costs: ACA, Market Pressures

Download a 2-Hour Movie

<table>
<thead>
<tr>
<th>Technology</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>3G</td>
<td>26 hours</td>
</tr>
<tr>
<td>4G</td>
<td>6 minutes</td>
</tr>
<tr>
<td>5G</td>
<td>3.6 seconds</td>
</tr>
</tbody>
</table>

A flight from New York to Sidney
Drive 3 miles or catch up on Facebook
Blink and the download is done
...so what about early interventionists, audiologists, and speech-language pathologists?

Healthcare Access of the Future

According to the American Medical Association, 70% of doctors visits and 40% of ER visits could be avoided through telemedicine.

Increasingly, speech-language pathologists, audiologists, and other educators are adopting models of telehealth & telepractice to serve more children with hearing loss and their families.
An Audiologist’s Perspective

“Telehealth has taken many years to become an “overnight” sensation...and now we have...a convergence of telecommunications and health care finally becoming a reality.”

--David Fabry, PHD

Telepractice & Speech-Language Pathology

- Around the world, SLPs are using telepractice to delivery direct and indirect services for the following areas of practice:
  - Assessments
  - Speech and language delays
  - Articulation & phonological disorders
  - Voice & fluency
  - Non-verbal/AAC
  - Traumatic brain injury
  - Aphasia/Stroke
  - Auditory-Verbal Therapy/Parent Coaching
  - Adult Aural Rehabilitation
  - Supervision, mentoring, & consultation

Boisvert, M. (2014)
Telepractice & Audiology

- Patient Counseling
- Hearing Screenings
- Audiological Diagnostics
- Hearing Aid Fittings
- Cochlear Implant Mapping
- Teleintervention for children & Adult Aural Rehabilitation

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*Telepractice is not a different service but rather a different method of service delivery.*

-- Janet Brown, 2010
Technology & Service Delivery Models

What is the Technology

Principal components
- Equipment (web-based software)
- Connectivity

Two Technology Approaches
- Live Interactive
  - Audio/Video – synchronous
- Store and Forward
  - Audio/Video - asynchronous
ASHA’s Position on Equipment

- Telepractice application and desired intervention outcomes cause variances in equipment specifications.
- Image and sound quality must be sufficient for the clinical application.
- Important factors:
  - Network availability and reliability
  - Equipment maintenance and upgrades
  - Training of professionals and clients

(ASHA, 2005)

+ Determining Technology & Equipment Needs

Boisvert, M. (2014)
Determining Technology & Equipment Needs

- Key Questions:
  - What is to be accomplished? (direct service, supervision, mentoring, etc.)
  - What is the clinical population? (e.g., speech/language delay, voice, fluency, articulation/phonology, AAC)
  - What is the setting of the services? (e.g., 1:1, small group, classroom based, training)
  - What is the delivery model? (e.g., direct FtF, Store/Forward, hybrid)
  - What are the security requirement?
  - What are the resources that are available? (i.e., existing equipment, budget, IT support, administrative support, bandwidth)

Boisvert, M. (2014)

Technology: Things to Consider

- Transmission methods and speeds
- Types of technology
- Uses of technology
- Technical support
- Privacy/Security
- Funding Issues
- Applications
Bandwidth is the KEY Technological Issue

- All technology systems, regardless of cost, are effected by bandwidth
- Bandwidth is an issue in all geographical locations (urban and rural)
- Bandwidth is traffic dependent
- Traffic is dependent on time of day, weather, location
- Bandwidth is increasing dramatically nation-wide, but so is traffic (thanks, Netflix and youtube!)

Web-based systems

<table>
<thead>
<tr>
<th>Basic equipment</th>
<th>Looks like....</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware/software</td>
<td>Skype, facetime, etc.</td>
</tr>
<tr>
<td>Camera</td>
<td>Internal or external webcam</td>
</tr>
<tr>
<td>Monitor</td>
<td>Computer screen/tablet</td>
</tr>
<tr>
<td>Microphone</td>
<td>Headset or built-in</td>
</tr>
<tr>
<td>Speakers</td>
<td>Headset, built-in or external</td>
</tr>
</tbody>
</table>
## Web Based Systems

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quick and easy to set up</td>
<td>Limited camera angle</td>
</tr>
<tr>
<td>Can be accessed from any computer with internet</td>
<td>Teacher can’t control the family’s camera</td>
</tr>
<tr>
<td>Inexpensive</td>
<td>Relies on family’s/school’s internet connection</td>
</tr>
<tr>
<td>May have screen sharing</td>
<td>Family must provide own IT support</td>
</tr>
<tr>
<td>Could be portable</td>
<td></td>
</tr>
</tbody>
</table>

## Clinician/Contractor Equipment

- Desktop or Laptop computer
- Webcam
- Headset with Mic; integrated microphone & speaker
- Printer & scanner
- Phones
- Direct line to Internet (no wi-fi)
- Teleconferencing Platform
- Email
Web-Based Telepractice Platforms

- SKYPE (Free…No!)
- SKYPE for Business
- Infinite Conferencing
- AdobeConnect
- Megameeting
- GoToMeeting
- Microsoft Office 365
- Cisco WebEx
- iLinc
- Blackboard Collaborate
- Zoom

Technology Considerations

- Up-front Costs
- Ongoing Service Fees
- Bandwidth & Reliability
- Technology Maintenance & Support
- Quality of Equipment (video, image size, camera pan, & zoom)
- Recording telepractice session
- Security, Firewalls
- Ease of Use
Benefits of Telepractice

Telepractice: Force Multiplier

Served

Boisvert, M. (2014)

The Need for Telehealth/Telepractice

- Clinician/specialist shortages
- Misdistribution of providers
- Rural/urban underserved
- Travel time, cost & hardship
- Delayed treatment, intervention or rehabilitation
Telepractice Benefits

- Reduces barriers to access
- Reduces travel, time constraints
- Reduces overall healthcare costs
- Reduces delays in care
- Improves quality of care, collaboration, & coordination

More consistent therapy & intervention leads to improved speech, language, and learning outcomes for the children and families served.

The Question for the Day

With the convergence of communication technology and healthcare, how will telepractice service delivery models impact the provision speech-language intervention to children with hearing loss & their families?
Telepractice & eLearning Laboratory (TeLL)

The University of Akron serves children with hearing loss and their families as well as adults with hearing loss.

- Pediatric therapy focuses primarily on listening and spoken language & Auditory-Verbal Therapy.
- Adult aural rehabilitation with a direct, patient-centered focus.
- Training of future SLPs in telepractice service delivery models.

Telepractice & eLearning Lab (TeLL)
School of Speech-Language Pathology & Audiology
Adult Learning Theory:

*Adults [Parents] like to...*

- bring knowledge, skills, attitudes
- bring experience
- like to solve problems
- like to apply what they learn to real situations
- like to have choices
- like to share in the setting learning objectives
- have variety of learning styles/preferences
- do best in an environment where they feel safe, accepted, and respected
- want and need feedback
- need to have their abilities and achievements honored

Coaching and Adult Learning Theory

Joint Planning

Observation

Action

Reflection

Feedback

Generalizing knowledge and applying to other situations
Sequence Of Therapy Preparation

1. Referral to clinic
2. In-person visit for full evaluation
3. Completion of home inventories
4. Technology test session
5. Lesson plans emailed at least 48 hours prior to session
6. Parent gathers materials and prepares by collaborating with clinicians by email or phone
7. Session begins

Conducting A Session

1. Reviewing goals and activities
   - Reviewing goals from previous week, new updates, review goals for current session, check hearing devices
2. Conducting the lesson/activity
   - Demonstration of new strategies/techniques, coaching the parent or adult, discuss integration of goals into daily home routines, strategies for improving/controlling communication opportunities (adults)
3. Debriefing
   - Allow questions from parents, discuss continuation or selection of new goals, summarize session and goals for the coming week
Alex – the Super HEAR-O

Technology continues to evolve; professionals must do the same. New service delivery models and the technological tools to support them – are inevitable.

- Telepractice is a viable solution to meet the increased demand for listening & spoken language services for children with hearing loss & their families.

- Telepractice service delivery models will continue to expand & will be regular fixtures in healthcare, early intervention services, and educational settings.


References


Resources

- American Telemedicine Association
  - www.americantelemed.org
- American Speech-Language-Hearing Association
  - www.asha.org/telepractice
  - SIG 18: Telepractice
- BroadbandUSA
  - http://www2.ntia.doc.gov/iowa
- Check with your professional organization for additional white papers, position statements, & preferred practices

Resources

- Center for Telehealth and E-Health Law (Ctel):
  - http://www.telehealthlawcenter.org/
Resources

Edited by Anita Stredler-Brown
The Volta Review, Vol. 112. No. 3
Available from the Alexander Graham Bell Association for Deaf & Hard of Hearing

Telepractice in Speech-Language Pathology (2014).
Author: K. Todd Houston
Publisher: Plural

Telepractice in Audiology (2016)
Authors: Emma Rushbrooke & K. Todd Houston
Publisher: Plural

Assistance Is Available!
Federally Designated
Telehealth Resource Centers

[Logos of various telehealth resource centers]
Thank You for Listening!

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              Telepractice In Audiology