

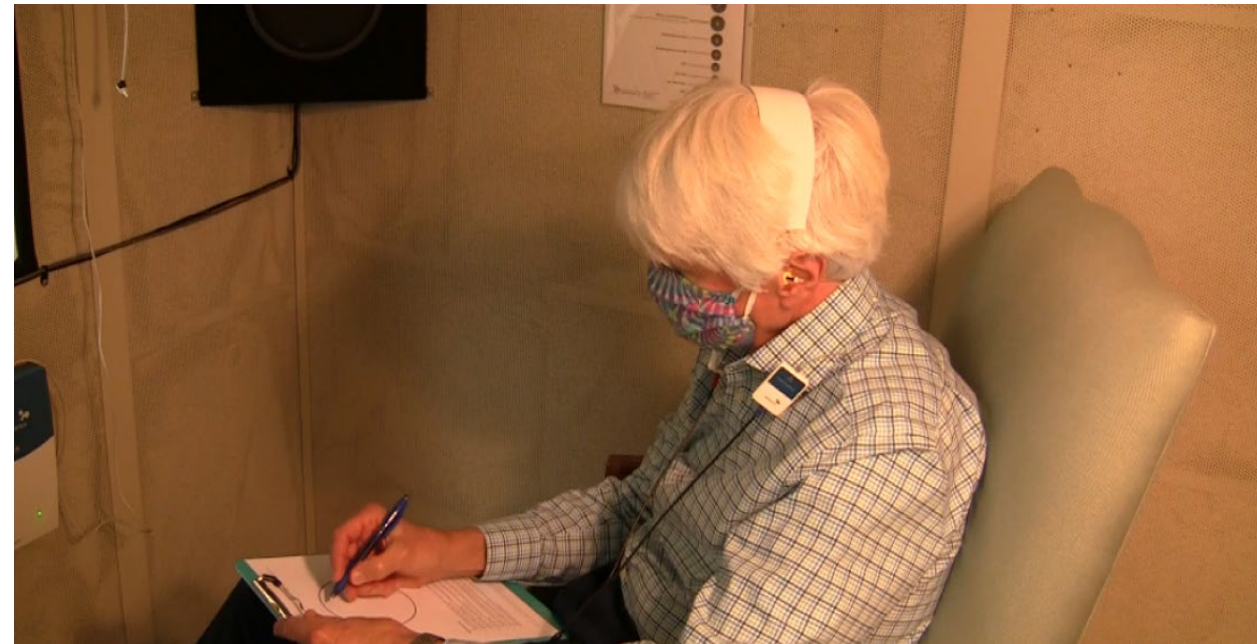
Integrating Cognitive Screenings

*Alicia D.D. Spoor, Au.D.
Designer Audiology, LLC*



Protocols

- All (hearing) diagnostic adults
 - Differentiate hearing vs. cognitive difficulties
- Functional & Communication Needs Assessment
 - Data to create a Treatment Plan/Plan of Care
- Follow-up
 - Not progressing as expected



Good Idea

- Symptoms consistent with MCI
- Over age of 65 year
- Complaints with WNL audiometric results
- Lack of benefit from appropriately fit amplification

Bad Idea

- Known diagnosis of MCI
- Lack of screening training
- Uncomfortable counseling/integrating results
- No referral system

Cognitive Screening=Part of Audiological Management

Heidi Hill, AuD



Cognitive Screening=Part of Audiological Management

- We see many patients with comorbidity of hearing loss and cognitive impairment and difficulty communicating is a symptom of both hearing loss and dementia, it's difficult to differentiate
- Does the patient have the top-down processing skills (i.e., cognitive processing) necessary to compensate for poor bottom-up signal?
 - Yes; high probability that the patient will feel they can “manage without”
 - No; high probability of unmet expectations, poor performance in noise, lack of participation and engagement will continue, under utilization of hearing aids



Cognitive Screening=Part of Audiological Management

What hearing aid considerations do I need to make given cognition?

- Hearing aids have the potential to increase rather than decrease cognitive effort (Edwards, 2016)
 - Compression
 - Noise Reduction
 - Frequency Compression
- Other rehabilitative considerations
 - Remote Microphone/FM
 - Other Streaming Devices
 - Social Support
 - Decision Making
 - How Much Technology
 - Auditory Training
 - Communication Strategies
 - Environmental Modifications
 - Visual Support Materials



Cognitive Screening=Part of Audiological Management

Things to Consider:

- Patients with higher cognitive abilities may acclimate faster, and may not require as much rehabilitative intervention
- Those with better cognitive function have greater awareness of hearing aid benefit compared to those with lower cognitive functioning (Lunner 2003)
- Patients with lower cognitive abilities may require more rehabilitative activities (active listening training, speech tracking, Group Rehabilitation, visuals, My Hearing Wellness Journey, auditory training etc), environmental modification, use of assistive technology and enhanced social support)



CogniHear

Clinical application of testing and treating cochlea to cortex

- Research
- Functional Hearing Assessment
- Impact on counseling, hearing aid fitting and rehabilitation



Case Studies

Jill Davis, AuD



Recipe for Success:

- Handicap inventory: MOTIVATION
- Speech in noise test: REAL-WORLD EXPERIENCE
- Cognitive screening: EAR OR BRAIN
- Comorbidities: OTHER CONDITIONS THAT IMPACT PERFORMANCE

Other Ingredients:

- Audiogram: SEVERITY AND PATTERN for channels
- ANL: NOISE TOLERANCE for level of technology

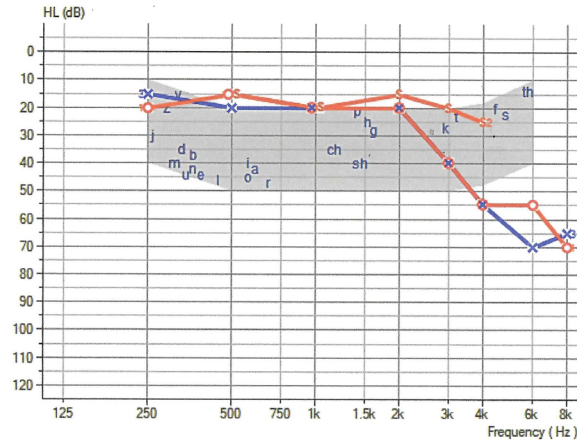
Victory Hearing & Balance Center
3811 Bee Cave Road Ste 101
Austin, TX 78746

Jill Davis, Au.D.



Male

Audiometry



Left	125	250	500	750	1k	1.5k	2k	3k	4k	6k	8k
AC	15	20		20	20	40	55	70	65		
FF											

Right	125	250	500	750	1k	1.5k	2k	3k	4k	6k	8k
AC	20	15		20	20	20	40	55	55	70	
FF											

1 ○ Air Conduction, AI=70%, PTA=18, HFA=32
2 ○ Free Field, AI=91%, PTA=17, HFA=20
3 × Air Conduction, AI=70%, PTA=20, HFA=32

AC	SRT	WR	WR, Aided	MCL	UCL
Left	25dB	100% at 60dB			
Right	20dB	100% at 60dB			

QuickSIN

	SNR Loss Unaided	SNR Loss Aided	(LP-HFE) Unaided	(LP-HFE) Aided
Left				
Right				
Both	7.5			

0-3 dB: Normal, 3-7 dB: Mild, 7-15 dB: Moderate, >15 dB: Severe.
(SNR Loss HFE-LP - SNR Loss HFE) > 3.9 dB: amplification is useful

Audiometry Legend	Left	Right
Air Conduction	×	○
Air Conduction, Masked	□	△
Bone Conduction	>	<
Bone Conduction, Masked	□	△
Sound Field	S	S
Sound Field, Aided	A	A
Comfortable Level	M	M
Uncomfortable Level	U	U

thrive Report

by cognivue

Name:

Date of birth:

Test date: 10/04/2021

Cognitive Domain Screened and Patient's Average Score	Normative Range Reference	Cognitive Domain Relevance
Memory 74	<p>0-48 Consistent with Poor Ability 49-76 Consistent with Moderate Ability 77-100 Consistent with Good Ability</p>	<p>Memory is the ability to have information encoded, stored, and retrieved when needed.</p> <p>This score indicates that you may have occasional memory issues when storing and processing information.</p>
Visuospatial 96	<p>0-42 Consistent with Poor Ability 43-58 Consistent with Moderate Ability 59-100 Consistent with Good Ability</p>	<p>Visuospatial is the ability to process and interpret visual information about where objects are in space and in relation to ourselves.</p> <p>This score indicates that your ability to process and interpret visual information is normal.</p>
Executive Function 83	<p>0-49 Consistent with Poor Ability 50-74 Consistent with Moderate Ability 75-100 Consistent with Good Ability</p>	<p>Executive Function is higher-order cognitive processing, such as attention, problem solving, reasoning, judgement, inhibition, working memory and appropriate social behavior.</p> <p>This score indicates that your ability to concentrate and or problem solve is normal.</p>
Speed Performance Area	Normative Range Reference	Speed Performance Relevance
Reaction Time 728 milliseconds	<p>1170ms and above Consistent with Poor Ability 1169ms-901ms Consistent with Moderate Ability 900ms and below Consistent with Good Ability</p>	<p>Reaction Time is the time between the beginning of a stimulus and the beginning of a reaction to it.</p> <p>This score indicates a good ability to react in an appropriate and safe manner physically and quickly to situations as they occur.</p>
Processing Speed 1721 milliseconds	<p>2500ms and above Consistent with Poor Ability 2499ms-1901ms Consistent with Moderate Ability 1900ms and below Consistent with Good Ability</p>	<p>Processing Speed is the pace at which you take information, make sense of it, and begin to respond.</p> <p>This score indicates a good ability to process a task and or situations quickly and in an appropriate and safe manner.</p>

Cognivue Provider Report

Disclaimer: Cognivue is not intended to be a substitute for professional medical advice, diagnosis, or treatment. Talk to your health care provider about optimal cognitive health management. Clinical contextualization required.
v1000



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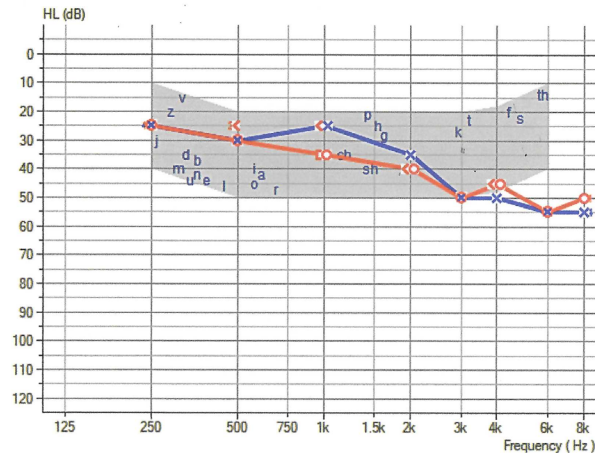
65-year-old male HHIA:56

Victory Hearing & Balance Center
3811 Bee Cave Road Ste 101
Austin, TX 78746

Jill Davis, Au.D.



Audiometry



Left	125	250	500	750	1k	1.5k	2k	3k	4k	6k	8k
AC		25	30		25		35	50	50	55	55
BC											
BC-Mask											
Mask											

Right	125	250	500	750	1k	1.5k	2k	3k	4k	6k	8k
AC		25	30		35		40	50	45	55	50
BC											
BC-Mask											
Mask Oppos											

- 1 ○ Air Conduction, AI=39%, PTA=35, HFA=40
2 ○ Bone Conduction, PTA=33, HFA=40
3 ○ Bone Conduction, PTA=30, HFA=37
4 × Air Conduction, AI=50%, PTA=30, HFA=37

AC	SRT	WR	WR, Aided	MCL	UCL
Left	40dB	100% at 75dB			
Right	40dB	100% at 75dB			

QuickSIN

	SNR Loss Unaided	SNR Loss Aided	(LP-HFE) Unaided	(LP-HFE) Aided
Left				
Right				
Both	11.5			

0-3 dB: Normal, 3-7 dB: Mild, 7-15 dB: Moderate, >15 dB: Severe.
(SNR Loss HFE-LP - SNR Loss HFE) > 3.9 dB: amplification is useful

Audiometry Legend	Left	Right
Air Conduction	×	○
Air Conduction, Masked	□	△
Bone Conduction	▷	◁
Bone Conduction, Masked	◁	▷
Sound Field	S	S
Sound Field, Aided	A	A
Comfortable Level	M	M
Uncomfortable Level	U	U

thrive Report

by cognivue

+ Diabetes

Name:	Date of birth:	Test date: 09/13/2021
Cognitive Domain Screened and Patient's Average Score	Normative Range Reference	Cognitive Domain Relevance
Memory 44		Memory is the ability to have information encoded, stored, and retrieved when needed. This score indicates that you may have memory issues when storing and processing information.
Visuospatial 64		Visuospatial is the ability to process and interpret visual information about where objects are in space and in relation to ourselves. This score indicates that your ability to process and interpret visual information is normal.
Executive Function 54		Executive Function is higher-order cognitive processing, such as attention, problem solving, reasoning, judgement, inhibition, working memory and appropriate social behavior. This score indicates that you may have mild to moderate issues concentrating and or problem solving.
Speed Performance Area	Normative Range Reference	Speed Performance Relevance
Reaction Time 625 milliseconds		Reaction Time is the time between the beginning of a stimulus and the beginning of a reaction to it. This score indicates a good ability to react in an appropriate and safe manner physically and quickly to situations as they occur.
Processing Speed 1870 milliseconds		Processing Speed is the pace at which you take information, make sense of it, and begin to respond This score indicates a good ability to process a task and or situations quickly and in an appropriate and safe manner.

Cognivue Provider Report

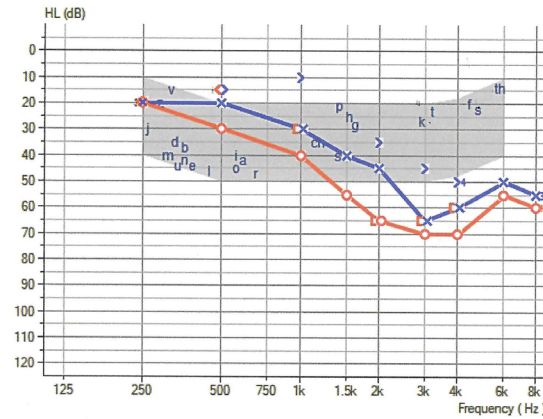
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Victory Hearing & Balance Center
3811 Bee Cave Road Ste 101
Austin, TX 78746

Jill Davis, Au.D.



Audiometry



Left	125	250	500	750	1k	1.5k	2k	3k	4k	6k	8k
AC		20	20		30	40	45	65	60	50	55
BC			15		10		35	45	50		
BC-Mask											
Mask											

Right	125	250	500	750	1k	1.5k	2k	3k	4k	6k	8k
AC		20	30		40	55	65	70	70	55	60
BC							15	30	65	65	60
BC-Mask											
Mask Oppos							45	55	65	85	

1 ○ Air Conduction, AI=27%, PTA=45, HFA=98
2 ○ Bone Conduction, PTA=37, HFA=52
3 × Air Conduction, AI=40%, PTA=32, HFA=45
4 × Bone Conduction, PTA=20, HFA=32

Quicksin - 5.5 dB unaided
2.8 dB aided

thrive Report by cognivue

Name:	Date of birth:	Test date: 09/27/2021
Cognitive Domain Screened and Patient's Average Score	Normative Range Reference	Cognitive Domain Relevance
Memory 92		Memory is the ability to have information encoded, stored, and retrieved when needed. This score indicates that your ability to store and process information is normal.
Visuospatial 93		Visuospatial is the ability to process and interpret visual information about where objects are in space and in relation to ourselves. This score indicates that your ability to process and interpret visual information is normal.
Executive Function 91		Executive Function is higher-order cognitive processing, such as attention, problem solving, reasoning, judgement, inhibition, working memory and appropriate social behavior. This score indicates that your ability to concentrate and or problem solve is normal.
Speed Performance Area	Normative Range Reference	Speed Performance Relevance
Reaction Time 539 milliseconds		Reaction Time is the time between the beginning of a stimulus and the beginning of a reaction to it. This score indicates a good ability to react in an appropriate and safe manner physically and quickly to situations as they occur.
Processing Speed 1536 milliseconds		Processing Speed is the pace at which you take information, make sense of it, and begin to respond. This score indicates a good ability to process a task and or situations quickly and in an appropriate and safe manner.

Cognivue Provider Report
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cognivue
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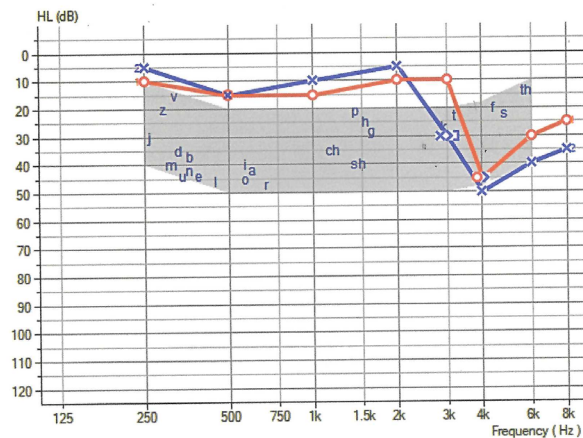
64-year-old male HHIA:38

Victory Hearing & Balance Center
3811 Bee Cave Road Ste 101
Austin, TX 78746

Jill Davis, Au.D.



Audiometry



Left	125	250	500	750	1k	1.5k	2k	3k	4k	6k	8k
AC		5	15		10		5	30	50	40	35
BC								30	45		
BC-Mask								30	45		
Mask Oppos								25			

Right	125	250	500	750	1k	1.5k	2k	3k	4k	6k	8k
AC		10	15		15		10	10	45	30	25
BC											
BC-Mask											
Mask											

1 ○ Air Conduction, AI=83%, PTA=13, HFA=23
2 × Air Conduction, AI=78%, PTA=10, HFA=22
3 × Bone Conduction, HFA=35
4 × Bone Conduction, HFA=35

AC	SRT	WR	WR, Aided	MCL	UCL
Left	15dB	100% at 60dB			
Right	15dB	96% at 60dB			

QuickSIN

	SNR Loss Unaided	SNR Loss Aided	(LP-HFE) Unaided	(LP-HFE) Aided
Left	2.5			
Right				
Both	3.5			

0-3 dB: Normal, 3-7 dB: Mild, 7-15 dB: Moderate, >15 dB: Severe.
(SNR Loss HFE-LP - SNR Loss HFE) > 3.9 dB: amplification is useful

Audiometry Legend	Left	Right
Air Conduction	×	○
Air Conduction, Masked	□	△
Bone Conduction	>	<
Bone Conduction, Masked	□	△
Sound Field	S	S
Sound Field, Aided	A	A
Comfortable Level	M	M
Uncomfortable Level	U	U

thrive Report

social isolation

Name:

Date of birth:

Test date: 07/21/2021

Cognitive Domain Screened and Patient's Average Score	Normative Range Reference	Cognitive Domain Relevance
Memory 90		Memory is the ability to have information encoded, stored, and retrieved when needed. This score indicates that your ability to store and process information is normal.
Visuospatial 95		Visuospatial is the ability to process and interpret visual information about where objects are in space and in relation to ourselves. This score indicates that your ability to process and interpret visual information is normal.
Executive Function 70		Executive Function is higher-order cognitive processing, such as attention, problem solving, reasoning, judgement, inhibition, working memory and appropriate social behavior. This score indicates that you may have mild to moderate issues concentrating and or problem solving.
Speed Performance Area	Normative Range Reference	Speed Performance Relevance
Reaction Time 714 milliseconds		Reaction Time is the time between the beginning of a stimulus and the beginning of a reaction to it. This score indicates a good ability to react in an appropriate and safe manner physically and quickly to situations as they occur.
Processing Speed 1577 milliseconds		Processing Speed is the pace at which you take information, make sense of it, and begin to respond. This score indicates a good ability to process a task and or situations quickly and in an appropriate and safe manner.

Cognivue Provider Report

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V1000



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58-year-old male. THI: 40

60 day follow up

THI: 4

"The past few days have been amazing! My wife says I stopped asking "say that again".

She no longer suffers with me turning the TV up so loud.

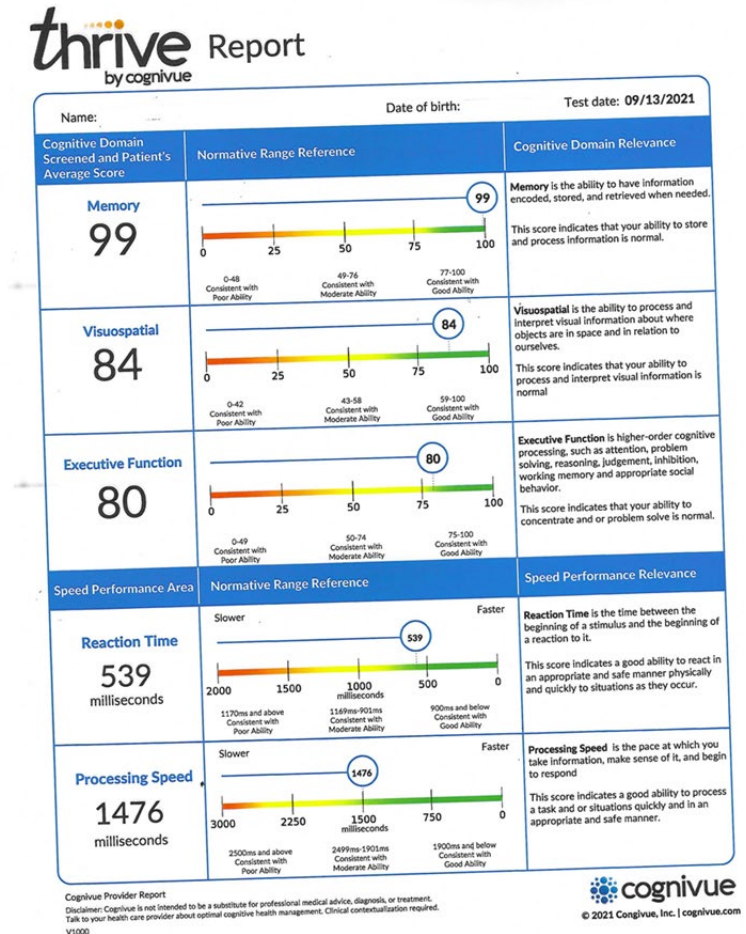
We've been to a few restaurants and it was so great to be in the conversation without asking my wife "what did they say?".

I've heard birds, crickets and other high register sounds that I haven't heard in years.

My tinnitus is a bit less noticeable because I now hear other high-end sounds that "compete" with the tinnitus as opposed to hearing just the tinnitus.

When I take them off the world sounds covered in a blanket; I forgot what I was missing.

I don't want to go back to how it was before I came to see you."



74-yr-old female. Long-time hearing aid wearer. Mild SNHL. Difficulty hearing in background noise. Concerned about short-term memory and cognitive impairment.

Pre-Training

- HHIA- 34
- Unaided QuickSIN: 1.2 dB
- Aided QuickSIN: .5 dB
- Cognitive Screening: WNL

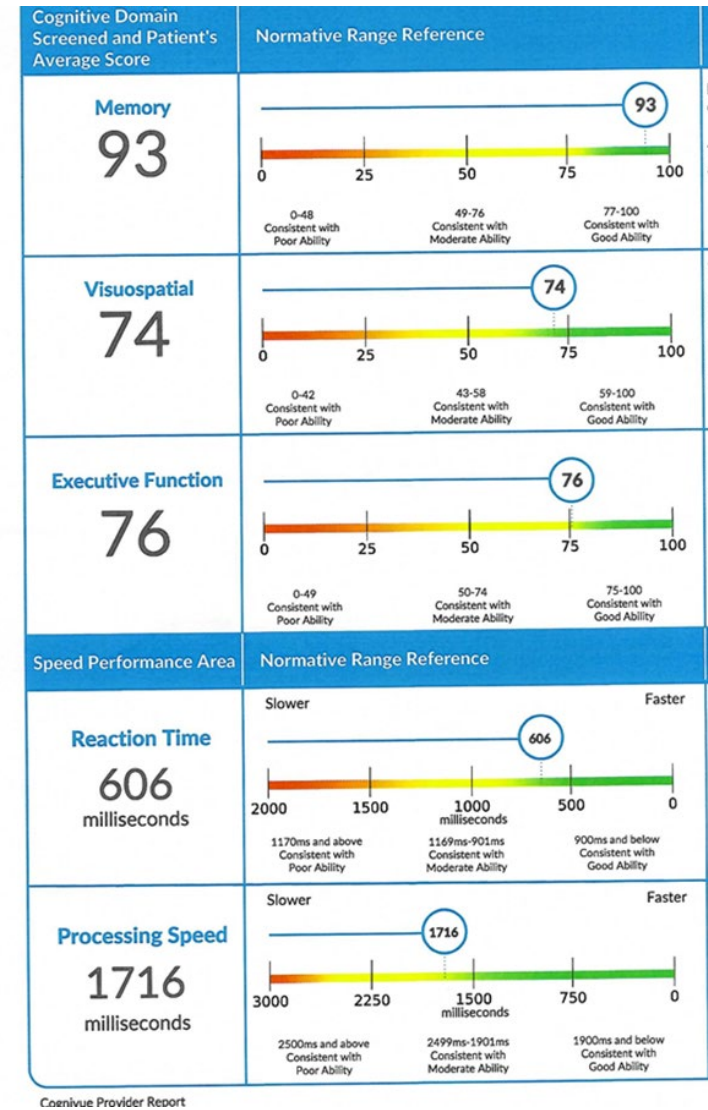
Post-Training

- HHIA- 20
- Unaided QuickSIN: .5 dB
- Aided QuickSIN: -.2 dB
- Cognitive Screening:
improved

Music-Based Auditory Training: 3-month program

Music-Based Auditory Training

- “I’m more coordinated now, I can play without looking at my hands”
- “I have more energy at the end of the day”



Cognitive Screening and Scope of Practice

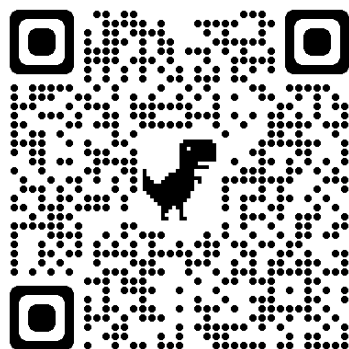
Amy M. Amlani, PhD
President – Otolithic, LLC





SCOPE OF PRACTICE IN AUDIOLOGY

AD HOC COMMITTEE ON THE SCOPE OF PRACTICE IN AUDIOLOGY



Reference this material as: American Speech-Language-Hearing Association. (2018). Scope of Practice in Audiology [Scope of Practice]. Available from www.asha.org/policy.

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Page 6

Audiologists are responsible for the assessment of hearing, balance, and other related disorders, including tinnitus and auditory processing, across the lifespan that includes the following:

- Administration and interpretation of clinical case history.
- Administration and interpretation of behavioral, electroacoustic, and electrophysiologic measures of the peripheral and central auditory, balance, and other related systems.
- Administration and interpretation of diagnostic screening that includes measures to detect the presence of hearing, balance, and other related disorders. Additional screening measures of mental health and cognitive impairment should be used to assess, treat, and refer (American Academy of Audiology, 2013; Beck & Clark, 2009; Li et al., 2014; Shen, Anderson, Arehart, & Souza, 2016; Sweetow, 2015; Weinstein, 2017, 2018).

Page 7

In this role, audiologists

- design, implement, and document delivery of service in accordance with best available practice;
- screen for possible cognitive disorders;
- case-finding for dementia;
- provide culturally and linguistically appropriate services;
- integrate the highest quality available research evidence with practitioner expertise as well as with individual preference and values in establishing treatment goals;
- utilize treatment data to determine effectiveness of services and guide decisions;
- deliver the appropriate frequency and intensity of treatment utilizing best available practice;
- engage in treatment activities that are within the scope of the professional's competence; and
- collaborate with other professionals in the delivery of services to ensure the highest quality of interventions.

Yes



STATE OF ARKANSAS

BOARD OF EXAMINERS IN SPEECH-LANGUAGE PATHOLOGY AND AUDIOLOGY

Pursuant to the authority vested in the State Board of Examiners in Speech-Language Pathology and Audiology, the said Board has promulgated and, by these presents, does hereby publish Rules ~~and Regulations~~ of the State Board of Examiners in Speech-Language Pathology and Audiology as authorized by Section 4 Act 277 of 1975 (Ark. Code Ann. § 17-100-202).

EFFECTIVE: ~~September 26, 2015,~~
AUGUST 1, 2020

11.2. The practice of audiology includes:

- A. Facilitating the conservation of auditory system function; developing and implementing environmental and occupational hearing conservation programs;
- B. Screening, identifying, assessing and interpreting, diagnosing, preventing, and rehabilitating peripheral and central auditory and peripheral and central vestibular system dysfunctions;
- C. Providing and interpreting behavioral and (electro) physiological measurements of auditory and vestibular & facial nerve functions;
- D. Selecting, fitting, programming, and dispensing of amplification, assistive listening and alerting devices and other systems (e.g., implantable devices) and providing training in their use;
- E. Providing aural rehabilitation and related counseling services to individuals with hearing loss and their families;
- F. Screening of speech-language, cognition and other factors affecting communication function;

No

RE: Audiology Inquiry

WT Wells, Tamika (DOH) <tamika.wells@dc.gov>
To Otolithic@outlook.com
Cc Nixon, Aisha (DOH)

☰ Reply Reply All Forward ...
Thu 5/27/2021 11:02 AM

Good Afternoon Dr. Amlani,

Thank you for contacting the District of Columbia Board of Audiology and Speech-Language Pathology. Here is the current scope of practice in audiology definition:

2B) (A) "Practice of audiology" means the planning, directing, supervising, and conducting of habilitative or rehabilitative counseling programs for individuals or groups of individuals who have, or are suspected of having, disorders of hearing; any service in audiology, including prevention, identification, evaluation, consultation, habilitation or rehabilitation, instruction, and research; participating in hearing conservation, hearing aid and assistive listening device evaluation, selection, preparation, dispensing, and orientation; fabricating ear molds; providing auditory training and speech reading; or administering tests of vestibular function and tests for tinnitus. The practice of audiology includes speech and language screening limited to a pass-or-fail determination for the purpose of identification of individuals with disorders of communication. The practice of audiology does not include the practice of medicine or osteopathic medicine, or the performance of a task in the normal practice of medicine or osteopathic medicine by a person to whom the task is delegated by a licensed physician.

According to the Health Occupation Revision Act (HORA) <https://dchealth.dc.gov/node/129252> (see page 15 for the audiology scope of practice), cognitive screening is not a part of the scope of practice in audiology. If you have any additional questions please feel free to email dcboaud@dc.gov.

Tamika J. Wells
Health Licensing Specialist
Health Regulation and Licensing Administration (HRLA)
Allied and Behavioral Health Boards
Tamika.wells@dc.gov
Washington, D.C. 20002
899 North Capitol St., N.E. 2nd Floor Washington, DC 20002



AUDACITY 2021

OCTOBER 25-27 • PORTLAND, OREGON

Yes, but...

RE: Audiology Inquiry



Wendy Jacobs [KDADS] <Wendy.Jacobs@ks.gov>
To: Otolithic Consulting

You replied to this message on 5/17/2021 4:55 PM.

Good afternoon.

Kansas [Statutes](#) and [Regulations](#) stand silent on specificities of scope of practice as long as the Audiologist has received the necessary training to complete the service appropriately. Enjoy today

Wendy Jacobs

Licensing Administrator
Health Occupations Credentialing
Survey, Certification and Credentialing
Kansas Department for Aging and Disability Services
503 S Kansas Ave
Topeka KS 66603
P: 785.296.0061
F: 785.296.3075

Visit our website: www.kdads.ks.gov

Neutral

Re: Audiology Inquiry



Denise Brown <dsherwood@ncboeslpa.org>
To: Otolithic Consulting

If there are problems with how this message is displayed, click here to view it in a web browser.

There is nothing currently in our statute or rules that speaks specifically to cognitive screenings.

Sincerely,
C. Denise Brown
Executive Director, NC Board of Examiners for SLP & Aud.
336-272-1828



Reply

Reply All

Forward



Fri 5/21/2021 1:24 PM

AUDACITY 2021

OCTOBER 25-27 • PORTLAND, OREGON

<<Letterhead>>

<<Date>>

<<Licensing Board Address>>

Re: Request to Provide Cognitive Screening – No-Action Request

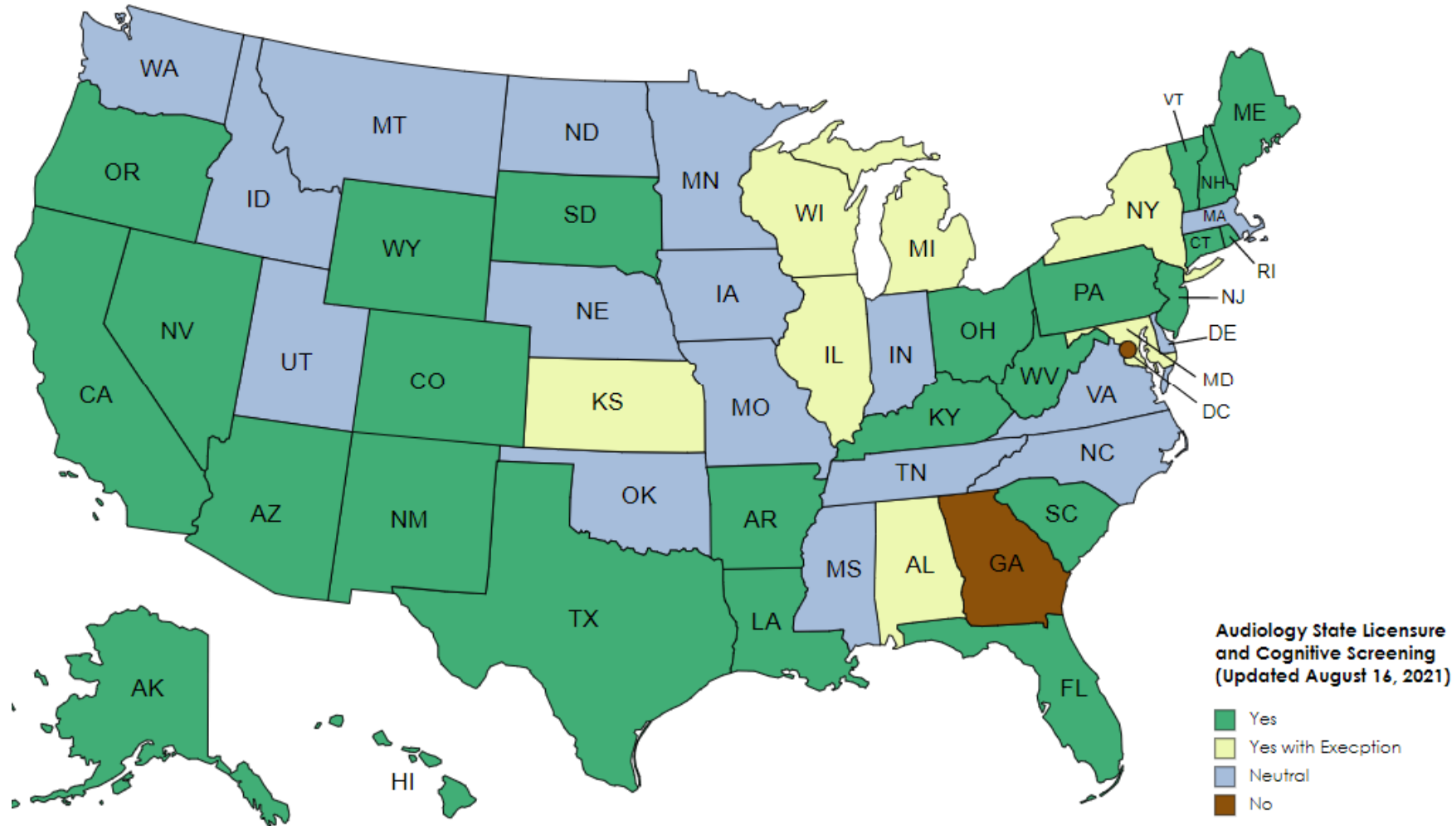
Dear Licensing Board Members:

I am an audiologist (license # <<>>) in good standing in the State of <<>>. I am interested in providing certain cognitive screening services to my adult patients with hearing loss as part of my practice of audiology.

After reviewing the State's laws, rules, regulations, and guidelines regarding the scope of practice for professional audiology, it is unclear if the provision of cognitive screening to adult patients (≥ 18 years of age) with hearing loss falls within the scope of practice for professional audiology in the State of <<>>.

Cognitive screenings do **not** yield a diagnostic outcome. Instead, they serve as a screener intended for rapid assessment of cognitive function. The outcomes from the screener allow audiologists to better serve their patients through:

1. Recording screening outcomes of cognitive function over time,¹ similar to a hearing screening performed in occupational audiology;
2. Screening outcomes that provide guidance with respect to treatment interventions, such as the type of hearing aid compression,² and advanced features (e.g., directional microphones, noise reduction) and accessories (e.g., remote microphone) for listening in complex environments;³
3. The quantification of pre- and post-treatment performance/efficacy; and



* States with **EXCEPTIONS** require evidence of (1) graduate education or continuing education in cognitive screening (e.g., AL, DE, IL, KS, NY, WI), (2) outcomes reported as pass/fail (e.g., OH), or (3) with physician oversight (e.g., MI).

States that are **NEUTRAL indicated that license holders could submit a written response, and each case would be evaluated on its own merit. Cognivue offers a template of a written response to State Licensure Boards that is available by contacting David TenBarge at dttenbarga@cognivue.com.