



Cognitive rehabilitation in acquired brain injury

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The American Speech-Language Hearing Association

Why are we here today?

- Varied audience today
- ASHA is undertaking a large evidence-based guideline project
- When finished, this guideline could have meaningful impacts on both the people performing cognitive rehabilitation and most importantly those receiving it.

Agenda

- Role of speech-language pathologists in brain injury rehabilitation
- Guideline goals
- Methods
- Status

What do speech-language pathologists (SLPs) do?

- Speech
 - Injury to mouth, tongue, teeth, nose, throat, motor speech disorders (dysarthria, apraxia, fluency, voice)
- Language
 - Ability to understand and convey meaning through speaking/listening, writing/reading (aphasia)
- Swallowing
 - Safely and efficiently moving food and liquids from mouth to the digestive tract (dysphagia, aspiration)

And, of course, cognitive communication

- Difficulty with any aspect of communication that is affected by disruption of cognition
- Some examples of cognitive processes include attention, memory, problem solving, and executive function. (ASHA scope of practice, 2016)

What is cognitive rehabilitation?

- Non-pharmacological and non-surgical interventions by healthcare providers that aim to improve or restore brain functions (e.g., memory, attention, impulse control, speed of information processing, etc.). (Wilson 2002)

Acquired brain injury

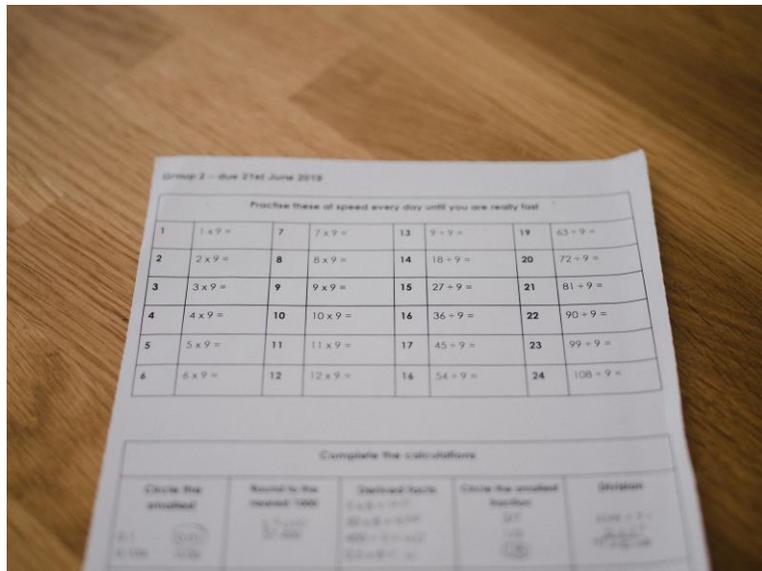
- TBI
- Stroke
- Hypoxia/anoxia
- Brain cancer/tumor



**What does
treatment
look like?**

Restorative vs. compensatory

- Restore the ability
 - Improve skills through exercises and instruction
- Compensate for the deficits
 - Adapt using strategies, external aids, or environmental modifications



Decontextualized vs. contextualized

- Tasks meant to carry over to real life
- Real-life tasks



Early vs. late

- Soon after the injury



- Later on



Remote vs. face-to-face

- Telehealth/online



- In-person



What does treatment look like?

- Drill
- Strategy instruction
- Environmental modifications
- External cognitive aids
- Hierarchical training
- Education/counseling

Types of research

- Individual studies
- Synthesized research
 - **Systematic reviews:** a formal assessment of the body of scientific evidence related to a clinical question and describes the extent to which various diagnostic or treatment approaches are supported by the evidence.
 - **Guidelines:** are developed by a group of topic experts, provide recommendations for managing a specific condition or population to optimize care.

Goals of the guideline

- Payors
 - Demonstrate efficacy of treatments to expand coverage and reimbursement to improve an individual's access to needed services.
- Clinicians
 - Examine which treatments work best for whom, when they are most effective, and how they are best presented.

Panel members

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Clinical questions

- 19 individual PICO questions
 - Population, intervention, comparison, outcome
- Broadly looking at:
 - Efficacy
 - Comparative effectiveness
 - Predictive factors

Database search

Database Name (Platform)	Citations
CINAHL Plus (EBSCOhost)	18,430
ClinicalTrials.gov	5,133
Cochrane Library (Wiley)	635
Communication & Mass Media Complete (EBSCOhost)	3,703
Education Research Complete (EBSCOhost)	19,002
Health Source: Nursing/Academic Edition (EBSCOhost)	6,144
Otseeker	56
PsycBITE	1,412
Psychology and Behavioral Sciences Collection (EBSCOhost)	12,419
PsycINFO (EBSCOhost)	8,179
PubMed (NLM)	14,321
PubPsych	1,548
SCIELO	530
ScienceDirect (Elsevier)	9,606
speechBITE	65
Web of Science (Clarivate Analytics)	4,891

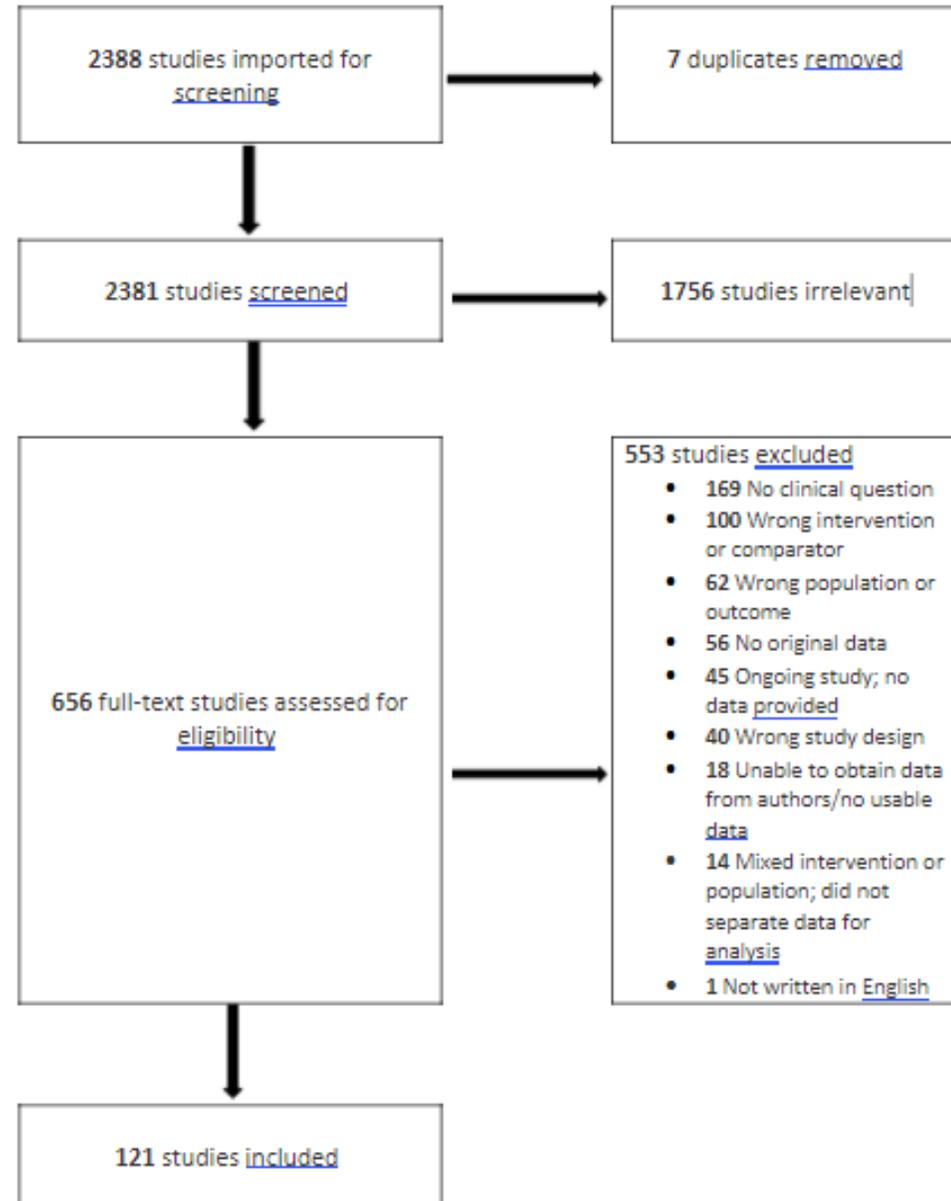
Inclusion criteria

- were published in English from 1980 onward;
- reported original data;
- included adult participants aged 18 years of age or older with an acquired brain injury or included mixed populations with majority of participants ($\geq 80\%$) were 18 years+ with diagnosis of acquired brain injury;
- utilized a randomized or controlled trial with a no treatment control or comparator of interest;
- examined a cognitive treatment, strategy or intervention used by an SLP to address one or more cognitive process such as attention, memory or executive functioning. Note: holistic treatments were included if the primary focus of the treatment was cognitive remediation; and
- provided data on an outcome measure of interest with documented psychometric properties or included data from a dichotomous outcome measure (e.g., return to work, treatment satisfaction).

Exclusion criteria

- were published before 1980 or did not include usable data for inclusion in meta-analysis;
- were observational or uncontrolled studies;
- included individuals with neurodegenerative disorders or nonstable or ongoing brain events (e.g., uncontrolled seizure disorder), psychiatric disorders or speech and language disorders (e.g., aphasia);
- included mixed participant age ranges or mixed diagnoses if greater than 80% were not adults with ABI.
- did not report on a validated outcome measure or used a validated measure that was modified by the investigators;
- examined pharmacological interventions, cognitive behavioral interventions, treatments targeting coma stimulation, neurofeedback or treatments targeting speech, language, voice or fluency; or
- examined a form of cognitive rehabilitation but did not compare it to a control or a different form of cognitive rehabilitation (e.g., pharmacological treatment, cognitive behavioral treatment).

PRISMA

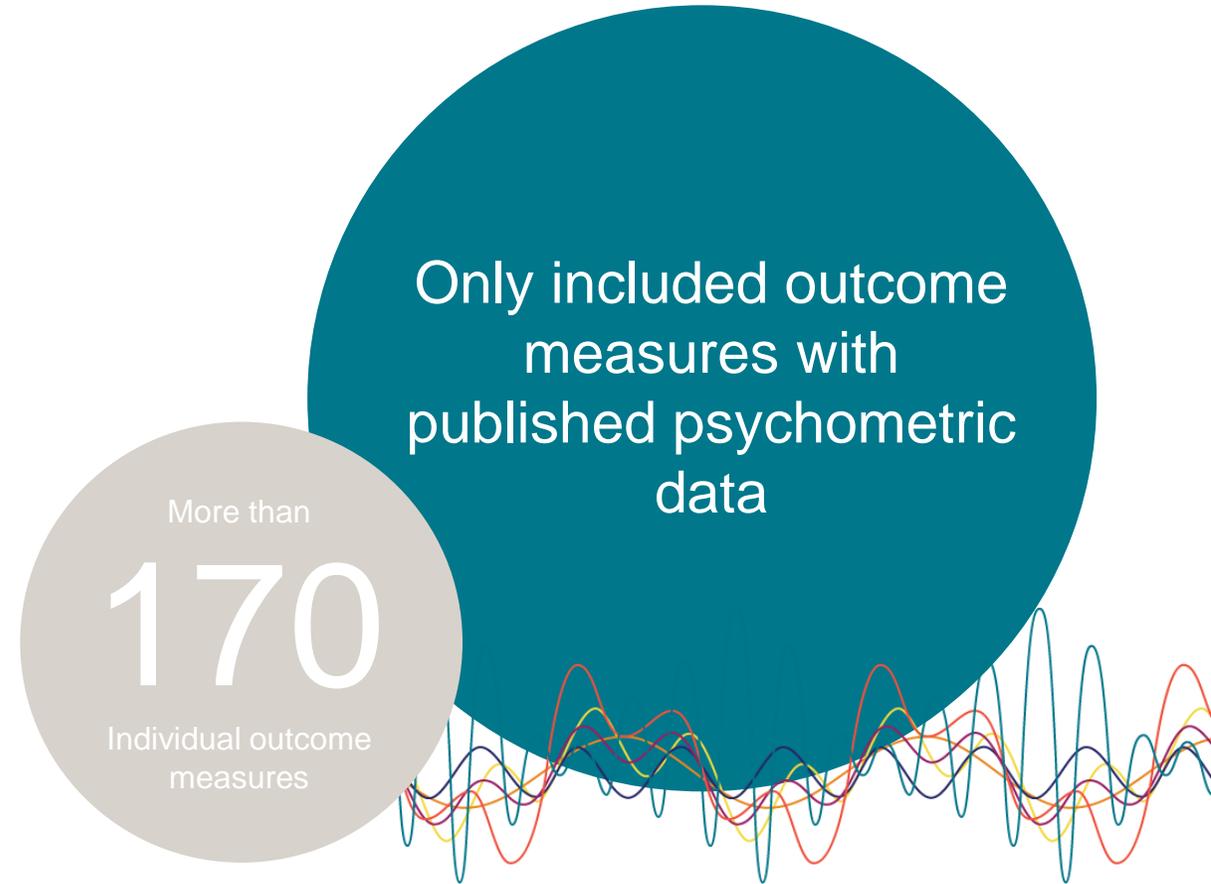


Quality assessment

- Cochrane Risk of Bias Tool
 - Random sequence generation
 - Allocation concealment
 - Blinding of participants and personnel
 - Blinding of assessors
 - Incomplete outcome data
 - Selective reporting

Detecting improvement

- Weschler Memory Scale
- Stroop Color & Word Test
- Caregiver Strain Index
- Rivermead Behavioral Memory Test
- Functional Independence Measure
- Assessment of Awareness of Disability



How do we measure change?

- Many of these measures are designed to detect cognitive impairments are blunt instruments to monitor progress.
- An individual can test as impaired, make great progress, and still test as impaired.
- Imperfect tools, part of the picture is missing

Patient-reported outcomes

- Quality of life
- Satisfaction
- Caregiver burden
- Return to work

Meta-analysis

- Combines the results of multiple scientific studies
- Effect size measures the relationship between two variables
- Weight takes into account the amount of information contained in the study (e.g., number of participants)

Almost finished with meta-analysis

- Panel assisting with categorization
 - Which bucket does this treatment belong in?
- Statistician helping with number crunching
- Looking at cost effectiveness, equity, acceptability, feasibility, etc.
- Targeting publication by fall 2021

Again, why this research matters to you

- Individuals with ABI
 - What treatment and services are available, and which ones work best for individuals with your type of injury
- Family members
 - What treatments improve supervision, caregiver burden, and return to work
- Clinicians
 - What treatment work best for whom, when are they most effective, and how are they best presented
- Researchers
 - What gaps exist in the current body of literature and what questions are unanswered
- Payors
 - Is cognitive rehabilitation an effective treatment that should be reimbursed



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References

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- Wilson BA. *Cognitive Rehabilitation in the 21st Century. Neurorehabilitation and Neural Repair*. 2002;16(2):207-210. doi:10.1177/0888439002016002003