APHASIA

Aphasia is an acquired communication disorder that impairs a person’s ability to process LANGUAGE, but DOES NOT AFFECT intelligence. Aphasia impairs the ability to speak and understand others.

-National Aphasia Association

LANGUAGE

Language is a system of communication that uses symbolism. K L U $ + M –
- Phonemes: perceptually distinct unit of sounds
- Words: sounds combined & given meaning
- Sentences: combination of syntax (rules) and semantics (meaning).

CLASSIFICATIONS OF APHASIA

EXPRESSIVE VS. RECEPTIVE

FLUENT VS. NON-FLUENT
**BROCA’S APHASIA**
* short utterances
* limited vocabulary
* halting, effortful speech
* mild comprehension deficits

**Lesion**
* Inferior frontal gyrus

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**SAMPLE OF BROCA’S THERAPY FROM TACTUS THERAPY**
WERNICKE'S APHASIA

- Comprehension is poor (auditory & reading)
- Fluent, intact prosody
- Logorhea, press of speech
- Neologisms, Paraphasias
- Lack of awareness

Lesion
Temporo-Parietal, Posterior section of the superior temporal gyrus near the auditory cortex
GLOBAL APHASIA
* severe language deficit
* responds to personally relevant language
* responds to non-verbal cues
* some automatic speech

Lesion
Broca’s & Wernicke’s Area
Perisylvian region

WHAT DID THEY SAY?
ANOMIA (Without Name)
Tip of tongue, unable generate label
Common with Many Aphasia
Anomic Aphasia

PERSEVERATION
Overstimulation of the wrong target that occurred before question or activity
Stereotypy

PARAPHRASIAS
* Language errors characterized by unintended syllables, words during speaking attempts
Phonemic/Literal
- Substitution of sound(s) for another, i.e., “thistle” for “whistle”
Verbal
- Substitution of real word for target word, i.e., cat/dog...chair/dog
* Agrammatism
- Difficulty with formulating grammatically correct sentences, telegraphic speech
OTHER CONSIDERATIONS

* APRAXIA (DIFFICULTY PLANNING AND EXECUTING VOLUNTARY MOVEMENTS)

VERBAL

* SOUND SUBSTITUTIONS, GROPING FOR ARTICULATORY PLACEMENT
* VOICE ONSET

NON-VERBAL

* DIFFICULTY WITH ORAL COMMANDS, I.E. SMILE, STICK OUT YOUR TONGUE
* NODDING/SHAKING HEAD FOR YES/NO INDICATION

CONSIDER MELODIC INTONATION

LIMB

* DIFFICULTY EXECUTING BODY MOVEMENTS FOR COMMANDS THAT WERE COMPREHENDED
* POINTING (COMMUNICATION BOARDS)
* LESS SO WITH GROSS MOTOR, I.E. LEGS

IDEATIONAL

* PLANNING ISSUES RELATED TO USE OF OBJECTS
INDICATING FORMAL TESTING AND IMPAIRMENT BASED APHASIA TX, MAY NOT BE APPROPRIATE IN THE ACUTE CARE PHASE OF STROKE.

APHASIA MANAGEMENT DURING THE EARLY PHASES OF RECOVERY FOLLOWING STROKE

WHY?
* SHORTENED HOSPITAL STAY
* FEAR, ANXIETY, FRUSTRATION
* MAY NOT BE READY TO RECEIVE OR BENEFIT FROM REMEDIATION/INSTRUCTION
* SPONTANEOUS RECOVERY

WEBSTER, NEWHOFF (1982)

* POSTPONE FORMAL TESTING FOR A FEW DAYS
* CAN MIX FORMAL TESTING WITH INFORMAL INTERACTIONS.
* DOCUMENT STRENGTHS AND WEAKNESSES
* EDUCATION/COUNSELING
EDUCATION/COUNSELING
* STAFF
  SHARE "TEST" RESULTS, STRENGTHS WITH NURSING
* FAMILY/PATIENT
  WHAT IS APHASIA
  TIPS FOR COMMUNICATION DIAGRAMS
  SPONTANEOUS RECOVERY

INFORMAL ASSESSMENT
* ESTABLISH MEANS OF YES/NO
* USE ITEMS IN ROOM TO MAKE CHOICES, PROBE AUDITORY DISCRIMINATION, COMMANDS
* USE GREETING CARDS, MENU FOR READING
* WRITE FAMILIAR FAMILY NAMES
* PROBE NAMING WITH ITEMS IN ROOM, FAMILY PICTURES

15 MINUTE SEGMENTS (FATIGUE)

BOSTON DIAGNOSTIC APHASIA EXAMINATION (BDAE)
- NORMED TEST
- %TILE RANKS
- USED FOR NIH STROKE SCALE, COMMON "LANGUAGE" WITH NURSING GOODGLASS & KAPLAN
A WORD ABOUT YES/NO

* BIOGRAPHICAL INFORMATION
* 50% RULE
* EYE BLINKS, EYE GAZE, NO D/SHAKE, THUMBS UP/DOWN
* VERTICAL VS. HORIZONTAL
* ASK "NO" RESPONSES
* POINTING, FACILITATE ARM MOTION, PLACE PENCIL/PEN IN HAND
* ASK NURSING, FAMILY WHAT WORKS
* POST WHAT WORKS, ALL DOING THE SAME THING

MAY BE LOW TECH, BUT...
COLOR CUE
SYMBOL CUE
EXPRESSION CUE

EXPLORE FREE APPS
LET ME TALK
APPNOTIC EUG
YES/NO
UTOPIA PROGRAMMING, LLC
TEXTING, USE OF WORD PREDICTION

AUGMENTATIVE COMMUNICATION BOARDS - VIDATAK, CHILDREN'S HOSPITAL BOSTON

KARINA
KLNIN
The boy is getting cookies.
The daughter is sleeping in her
dress.
ORIENTATION

EDUCATION

LOW TECH
SPONTANEOUS RECOVERY
* Early improvement may reflect return to function of compromised brain areas
* Turkeltaub et al. (2001) evidence of language reorganization to homotopic region in right hemisphere
* Robson et al. (2014) recruitment of the anterior temporal lobes for comprehension in Wernicke’s aphasics

TIPS FOR COMMUNICATING WITH PWA
* Eye contact (educate re: neglect)
* Use shorter sentences
* Don’t talk down
* Limit noise, distraction
* Give choices
* Ask yes/no questions
* Offer gesture, drawing, writing

ASHA.ORG (AMERICAN SPEECH, HEARING ASSOCIATION)
NATIONAL APHASIA ASSOCIATION
AMERICAN STROKE ASSOCIATION

OTHER RESOURCES
Free or Low Cost Apps
Stroke Support Groups
Missouri State University Speech-Language Hearing Clinic
Tactus Therapy

Lingraphica’s Talk Path

PRICE VARIES $5 - $25
EVIDENCE BASED
FREE LITE VERSIONS

FREE

CONSTANT THERAPY

- Tablet
- Smart phone
- $25 monthly
- $250 yearly
- The Language Corp.

- AMERICAN SPEECH HEARING ASSOCIATION
INTELLIGENCE: ONE’S CAPACITY FOR LOGIC, PROBLEM SOLVING, CREATIVITY, PLANNING, SELF AWARENESS, LEARNING....

UNRAVELING NONVERBAL COGNITIVE PERFORMANCE IN ACQUIRED APHASIA ROBERT FUCETOLA, ET AL. 2009

“IMPAIRMENT IN NON-VERBAL COGNITIVE ABILITY IS NOT FULLY EXPLAINED BY LANGUAGE COMPETENCE IN PERSONS WITH APHASIA”

ATTENTION AND OTHER COGNITIVE DEFICITS IN APHASIA: PRESENCE & RELATIONSHIP TO LANGUAGE & COMMON MEASURES, LAURA MURRAY, 2012

“GROUP WITH APHASIA PERFORMED SIGNIFICANTLY MORE POORLY ON COGNITIVE MEASURES, BUT DISPLAYED VARIABILITY IN PRESENCE, TYPES, SEVERITY OF THEIR ATTENTION & OTHER DEFICITS”.

SYMBOL CANCELLATION (COGNITIVE LINGUISTIC QUICK TEST) HELM-ESTABROOKS, 2011
EXECUTIVE FUNCTIONS

Range of Cognitive Abilities including goal formulation, planning, carrying out goal directed plans, and monitoring effects of actions (quality control)

THE RELATION BETWEEN LANGUAGE, NON-VERBAL COGNITION AND QUALITY OF LIFE IN PEOPLE WITH APHASIA (NICHOLS, ET AL 2017)

- 28 PWA, Chronic phase
- Language battery, non-verbal cognitive battery, quality of life battery (aphasia friendly)
- NVC impairment predicted 3x the variance on a measure of QOL than Language impairment
- Emerged predictors: Trails task, Visual Memory task & Maze
C-SPEAK APHASIA STUDY (NICHOLAS, SINOTTE & HELM-ESTABROOKS, 2011)

- 10 PWA, chronic aphasia
- Severe, non-fluent aphasia
- 6 months training using C-Speak
- Carry-over to functional communication (making phone calls, answering biographical questions, describing person-action pictures, describing a short video, writing a card and grocery list)
- 4 out of 10 communicated more information with computer than without
- Baseline non-linguistic executive function skills, pictorial semantic knowledge and auditory comprehension
- Only non-linguistic executive function skills correlated with treatment response

WAIS R: WIECHSLER ADULT INTELLIGENCE SCALE (THE PSYCHOLOGICAL CORPORATION) AND PYRAMID AND PALM TREES TEST (HOWARD & PATTERSON)
RAVEN'S PROGRESSIVE MATRICES  -JOHN RAVEN 1936

WISCONSIN CARD SORT
-DAVID GRANT, ESTA BERG

TIC TAC
-CLQT, NANCY-HELM ESTABROOKS, 2011

PROMOTE COMMUNICATION For Our Severe Clients
- Supported Communication
- Melodic Intonation
- Visual Action Therapy
- Scripting; Aphasia
- Personalized Vocabularies
- Multi-modality communication (Famous People Protocol)
- Technology!!
NON-PROPOSITIONAL LANGUAGE
OVER-LEARNED, ROTE
* COUNTING, DAYS OF WEEK
* PRAYERS
* WELL KNOWN SONGS
* CURSING
LIMBIC SYSTEM, BASAL GANGLIA,
RIGHT HEMISPHERE STRUCTURES

EXPERTS: NEUROLINGUISTIC AND NEUROBEHAVIORAL
PERSPECTIVES ON SWEARING, VAN LANXER, CUMMINGS, OCTOBER
1999.

MELODIC INTONATION (MIT)

- Uses musical elements of speech (melody, rhythm, stress) to improve language (apraxia)
- Intoning simple 2-3 syllable phrases - 5+ syllable phrases
- 3 levels (elementary, intermediate, advanced)

MELODIC INTONATION CONT.

Uses 2 pitches. Stressed syllables have upward pitch, unaccented syllables have downward pitch

Left hand taps each syllable (paces speaker and may involve right hemispheric sensorimotor network)

Elementary level: Humming, Unison Intoning, Unison Intoning with Fading, Repetition, Response to a probe question
PERSONALIZED VOCABULARY
“YOU WANT TO GO FOR A WALK?” “GO, JOHN, GO!”

SHIRLEY RYAN ABILITY LAB-FORMERLY RIC
PERSONAL ANIMATED THERAPIST (PAT), 20 SCRIPTS, EDITOR OPTION TO CREATE OWN SCRIPTS, REPEATED PRACTICE, REQUIRES WINDOWS

FAMOUS PERSON PROTOCOL
*APHASIA BANK
*PROMOTES MULTI-MODALITY COMMUNICATION
WORD FINDING TREATMENT
- Common to have Confrontation Naming Goals
- Boston Naming Test
- Spreading Activation from M. R. Quillian's (1967) theory of semantic memory search
  - The search process is initiated by labeling a set of source nodes (concepts in a semantic network) with "weights" of activation then spreading that activation to other nodes linked to the source.
“Training atypical items within a category and their semantic features results in generalization to naming of intermediate and typical exemplars of the category selected for training.” – Kiran & Thompson, 2003

TRAIN ATYPICAL EXEMPLARS TO PROMOTE GENERALIZATION (SFA) (KIRAN & THOMPSON, 2003)

VNEST PROTOCOL: VERB NETWORK STRENGTHENING PROGRAM, EDMONDS, 2014
- Takes SFA a step further, focusing primarily on verbs
- Focuses on Agrammatism (strengthens sentence structure, S+V+O)
- Same verb, but promotes semantic variety
- Pictures not used, promoting mental flexibility
10 VERBS (TRANSITIVE, AVOID OVERLAP)

3-5 HRS A WEEK / 10 WEEKS

3 X 5 CARDS

3 PAIRS SUBJECT/OBJECT "WHO", "WHAT"

CLIENT READS EACH TRIAD

CHOOSE ONE TRIAD

EXPAND TO "WHERE", "WHY", "WHEN"

CLIENT READS ALoud

CLEAR THE TABLE, ASK 12 QUESTIONS ABOUT VERB, CLIENT DECIDES CORRECT/INCORRECT

RECALL VERB

REPEAT FIRST STEP WITHOUT CUES

VNEST PROTOCOL - EDMONDS, 2014
WHEN IT COMES TO MEDICATIONS
- Reduce Polypharmacy
- Avoid topiramate (can worsen anomia) – Mula, 2012
- Many single case studies that would indicate benefit for Aphasia
- Address neurotransmitter systems disrupted by stroke
- Medication enhancing plasticity
  - Cholinesterase Inhibitors

A RANDOMIZED PLACEBO-CONTROLLED STUDY OF DONEPEZIL IN POST STROKE APHASIA
- Berthier, et al 2006
- 26 participants, 70 y/o or younger, chronic aphasia (1yr. or greater)
- Computer randomized, well matched baseline variables
- Western Aphasia Battery (WAB), Communication Activity Log (CAL), Psycholinguistic Assessments of Language Processing in Aphasia (PALPA)
- Treatment: 5mg/daily or placebo during a 4 week titration followed by 12 week maintenance (10mg/daily), followed by 4 week washout phase
- Testing at 0, 4, 16 (endpoint), 20 (washout) weeks
- Concurrent Speech Language Therapy, 2 hrs. per week
  - “Syndrome specific standard approach”

RESULTS:
- Statistically significant changes in Aphasia Quotient (AQ) on the WAB
  - Increased picture Naming on the PALPA
- Between group differences no longer significant at week 20. Suggests continued usage needed for benefit
- Adverse events higher for Donepezil group than placebo (Irritability (4), Insomnia (2)) and during titration. 2 with recurrence of post stroke seizure without relapse after dose adjustment
GALANTAMINE ADMINISTRATION IN CHRONIC POST-STROKE APHASIA, HONG, 2012

• 45 patients, 75 y/o or less, 1 year or greater post stroke
• Week 0 – Week 16
• 8 mg/day for 4 weeks, 16 mg/day for following 12 weeks
• Spontaneous speech, comprehension, repetition, naming
• AQ on WAB

RESULTS

• Statistically significant increase in total AQ WAB score in Galantamine group
• In Galantamine group, “good” vs. “poor” responders. “Good” responders had higher level education, higher baseline Mini-Mental Status Exams
• Beneficial effect more prominent in subcortical dominant lesions

AUDITORY TRAINING CHANGES TEMPORAL LOBE CONNECTIVITY IN WERNICKE’S APHASIA: A RANDOMIZED TRIAL, WOODHEAD ET AL. (2017)

• 20 patients, 2 concurrent treatments
• 5 week blocks
• Drug only (5 mg. Donepezil)
• Drug (10 mg.) + Earobics (two 40 min Tx)
• Placebo
• Placebo + Earobics
RESULTS:
- Statistically significant (but small) improvement in speech comprehension with Phonological training (Earobics)
- Improvements including Generalization, improved written comprehension
- Worse comprehension with medication than placebo
- Both effects stronger in more severely impaired patients
- Take away: Donepezil may be better suited for speech expression vs. comprehension

REFERENCES IN ORDER OF OCCURRENCE

REFERENCES CONTINUED:


REFERENCES CONTINUED


Woodhead, Crinion, Teki (2017) Auditory training changes temporal lobe connectivity in Wernicke’s aphasia: a randomized trial. Journal of Neurology/Neurosurgery/Psychiatry

THANK YOU