

## WYOMING-SESSION TWO

Apraxia of Speech

## APRAXIA OF SPEECH BY WHATEVER NAME

Call it George

### ORIENTATION TO PRESENTATION

- Must determine the relative amount of motor, linguistic, and cognitive involvement
  - At least try to do this
  - Cause a motor practice tx is helpless unless sufficient language and cognition
- Treatment

### BEST REFERENCE

- Acquired Apraxia of Speech: Evidence-Based Intervention.
- ASHA Professional Development
- ASHA products sales 10801 Rockville Pike
- Rockville MD 20852-3279

### WHAT'S IN A NAME?

- Apraxia was assigned to emphasize higher motor dysfunction
- The clinician who can recognize clinically significant differences among patients can call it George
- At the level of treatment the issue is: what to do with the condition and what to predict

### CARDINAL OR CORE FEATURES

- Mixture in spontaneous and imitative speech of distortions, substitutions, distorted substitutions, omissions and additions
- Awareness and dissatisfaction with errors
- Inordinate difficulty in going from silence to speech
- Often groping, struggling attempts to correct

## INITIATION DIFFICULTY

- This is cardinal for me
- I talk to pts about their difficulty in going from silence to speech
- And a hallmark of tx is to have them purposively plan that activity
- Those who try to talk as they did are at the mercy of physiological recovery

## SOME CASES

- The first is as pure as you are likely to see
- You can plan the basics of tx based on what he does as he talks
- Listen and ask yourself: what does he need help with?

## NEARLY PURE

- A joy to treat



## SECOND IS UNUSUAL

- At least etiology is unusual
- Has a primary progressive AOS
- Our Dept of Neurology believes these primary progressive cases are increasingly common
- Look at one
- Listen to one's pre and post tx speech
- Who says you can't treat progressive disorders

## SLOW ONSET OF SPEECH DIFFICULTY



- What do you hear?
- What would you do?
- Is tx appropriate?

## GOOD LESSONS

- Suggests you can treat
- With intensive drill



## THIRD IS TOUGH

- Hearing him on day two after stroke
- He's not cognitively impaired in any way
- But he clearly has more than just AOS
- The trick is to decide what to treat and what to predict

## TOUGH

- Starts with a complex mix
- Ends with a fairly simple mix

## BEFORE TX BEGINS

- Must establish as precisely as possible the amount of co-existing language and cognition impairment
- Equating AOS and Broca's aphasia was horribly handicapping
- As is the assumption that all expressive difficulties after brain damage have a motor component

## DIAGNOSTIC BATTERY

- Spontaneous speech first and foremost
- But because it is noisy
- Follow with imitation of all relevant stimuli especially words and sentences
- Imitation allows for control of cognitive and linguistic influences on speech performance
- Therefore interpretation is easier

## MORE BATTERY

- Aphasia testing
- Including reading, writing, comprehension
- And cognitive testing
- Including memory relevance and orientation

## WHY SPEECH TASKS

- Establish presence of the core features
- Which will be present in most cases in all motor performance
- Help in ruling out dysarthria
- Only articulatory features affected in AOS
- Resonance, phonation and respiration OK unless coexisting problem

## WHAT COEXISTING PROBLEM

- Can be structural as with COPD or GERD related laryngeal changes
- Can be dysarthria
- Can be cognitive
- Cognition has powerful influence on motor performance

## WHY LANGUAGE TASKS

- Auditory comprehension is relatively intact to degree AOS predominates in overall symptomatology
- Reading and writing may help as well
- Both sensitive but not specific
- Illiteracy or language learning disability complicate interpretation

## INTERPRETATION OF LANGUAGE PERFORMANCE

- To degree that comprehension is intact hypothesis that AOS is present is strengthened
- Increased confidence if reading is intact
- Further increase if writing is
- And if significant dysarthria can be ruled out

## WHY COGNITIVE DATA

- We are seeing so many pts with cognitive impairment
- To degree relevance especially of behavior is intact, hypothesis of AOS is strengthened
- Intact memory and orientation also contribute to confidence

## THE USUAL CAVEAT

- In severe cases, such as those with speechlessness or near speechlessness, often can only decide with treatment or watchful waiting
- Diagnosis ex juvantibus

## DIAGNOSIS EX JUVANTIBUS

- Means diagnosis based on response to treatment
- Wepman wrote about it in the 50s
- A classification system based on response to treatment would be welcome
- AOS responds to motor drill, and if an expressive problem does not, then it is likely that apraxia is not major cause

## TREATMENT KEYS

- To degree apraxia is the reason for verbal expressive deficit, intelligent, intensive drill is a key
  - Right method such as MIT
  - The right stimuli, including part-whole relationships
  - The right structure for the method
  - The right amount of practice
  - The right type and schedule of feedback

## SECOND KEY

- Related to patient
  - Must need and want to talk better
  - Must have the cognitive linguistic support sufficient to promote improved motor performance
  - Should have an enriched environment

## IF ANY PART IS MISSING

- Success will be limited
- The wrong method dooms treatment
- Even more dangerous is the wrong structure
- Wrong schedule and type of feedback
- To degree language and/or mentation are impaired, then prognosis darkens
- A sterile environment is the kiss of death

## WHAT'S NEW?

- Not many new treatment procedures
- But principles from skill learning/training are making us think about how we use the procedures we have
- And the emphasis on function has an influence as well

## BUT FIRST

- The most well organized of the modern treatments
- Will describe
- And then we will refine into a complete treatment package

## ONE OF BEST NEWISH PROGRAMS FOR GETTING STARTED

- The Pittsburgh group has structured a number of traditional steps into a useful program
- Name has come to be Sound Production Treatment (SPT)
- This program can be used with a variety of severities by simply selecting appropriate stimuli

## THE PITTSBURGH TREATMENT

- Wambaugh et al JSHR, 41, 1998
- Five step program, from less to more cueing
- Depends on minimal contrast pairs in **words**
- For example, p vs b (pat vs bat)
- One sound (the most often incorrect) was the target
- Fifteen treatment sessions

## COMPONENTS

- Modeling
- Repetition
- Minimal pair contrasts
- Integral stimulation
- Articulatory placement cueing
- Feedback

### STEP ONE MODELING/IMITATION

- Clinician produces both in pair and pt says both
- If error, then each one of pair presented and produced separately
- If both correct, repeat and on to next pair
- Provide knowledge of results (good, okay, etc)
- If not, step is repeated
- If still not, went to next step

### STEP TWO MODELING +

- CI showed printed versions of the target
- Says this is the sound you are working on
- Then repeat step one
- If BOTH okay go on to next pair
- If not, go to next step

### STEP THREE INTEGRAL STIM

- If only target was wrong earlier or if both were then only target was subjected to integral stimulation
- Watch me, listen and say what I say
- If correct try to get two to four more repetitions
- If correct go on to next pair
- If target is incorrect go to next step

### STEP FOUR MODELING WITH JUNCTURE

- CI produced the target using silent juncture after the target and before the rest of word
- If correct, went to next pair
- If not, went to next step

## STEP FIVE ARTICULATORY PLACEMENT

- CI provided verbal description of sound and produced it in isolation
- Correct or incorrect CI then went on to next pair
- Or in another version, simplify the context

## STIMULI

- Usually use 8 to 10 stimulus pairs
- In substitutions use sound that most frequently substitutes for the target
- Try to work at word or phrase level
- Try to use all stimuli in each session
- Try to get through all at least 4 to 8 times per session

## EXAMPLE

- Pit-bit
- Pat-bat
- Pot-bought
- Pull-bull
- Pack-back
- Poor-bore
- Pill-bill
- Pan-ban

## THE DATA

- Trained and untrained items improved
- Generalization was limited overall
- As was maintenance (retention)
- Subjects had **aphasia** and apraxia

## ADDITIONAL COMMENTARY

- This program uses all the traditional approaches
- It is the time honored task continuum
- The study itself is controlled in the traditional ways with generalization probes, baseline line and maintenance probes

## VALUE OF THIS REPORT

- Can do the treatment based on it
- Some of our very few data
- BUT ITS TOTALLY INCOMPLETE FOR ANYTHING BUT RESEARCH

## PROBLEMS

- Builds in perseveration (or over generalization) on plosives, a class that AOS speakers often do well
- Depends inordinately on imitation
- Does not reflect principles of skill learning
- Does not have any carryover steps
- Has no functional use steps such as Q-A or dialogue
- Uses only pt and cl

## NEW LOOK

- New list of stimuli might look like this
  - Pie, by, tie, sigh, my
  - Poor, bore, sore, tore, four

AND SO ON

LET'S LOOK AT ONE OF THE IMPORTANT LESSONS FROM

SKILL LEARNING LITERATURE APPLIED TO AOS

## SO LETS EXPAND

- Perseveration or over generalization can be reduced by
  - Using multiple stimuli differing in
    - Manner-fricative and plosive
    - Place-anterior posterior
    - Voicing
    - Don't neglect vowels

## WHAT YOU ARE THINKING

- That might make it more work for the patient to succeed
- Yep it might
- In acute stage might not want that
- Chronic, stable pts will profit in most important way

## SOURCE

- Schmidt, Bjork (1996). In Robin (Ed). Brookes. Also on Communicative Disorders, U of Pitt website
- Summarizes what is know about skill learning and speculates about implications for motor speech training
- The first lesson is the hardest cause it flies in the face of contemporary practice

## THAT LESSON

- Rate of acquisition is negatively correlated with retention
- In other words, the faster a response is acquired the less likely it is to be retained
- Almost no one teaches us that and insurance companies don't want to hear it
- Clinicians have to handle the requirement for improvement monthly very cautiously

## WHY CARE

- Most of us want our patients to be able to talk outside therapy
- Want them to be independent
- Want them to leave treatment improved and not needing us

## MAKING PARADIGM HARDER

- Introduce competition into your drills
- In between responses have patient count or copy a letter or make a hand gesture or answer an unrelated question
- Makes for more enduring responses once acquired

## OTHER MODIFICATIONS

- Present stimuli in quasi-random way by skipping around in list of stimuli
  - Abandon getting multiple consecutive responses of a single item
- Don't immediately reinforce every response
  - Have pt judge first
  - Provide only summary feedback after every five or so responses

## CREATE INDEPENDENCE

- Use imitation as a last resort instead of as the FIRST STEP
- Have pt select the stimulus he wants to use and then you indicate what you have heard
- If you have to provide the model at least allow the pt to determine when he/she will say it

## HARDEST OF ALL

- Work on nonstimulable or minimally stimulable rather than easily stimulable
  - Aids generalization but requires very active supportive clinician
- Work on rare rather than most frequent
  - Also more likely to generalize

## THE LENGTH ISSUE

- Never assume that short will be better than long even against the background of the part-whole dilemma
- Always test the length variable
- Leaving you with the hard decision-what length to use
- Often apraxic talkers do best when meaning drives the movement

## MEANING

- They may produce sounds in a sentence better than in a single word and especially than in isolation
- Is it better to go with the easier longer stuff?
- Modern thought would suggest no

## OTHER ISSUES

- Carryover is not merely a question of the issue we've discussed
- Other variables are important in creating treatments
- One of most important is based on a principal of generalization

## THAT PRINCIPAL

- A response is most likely to occur in contexts resembling the one in which it was acquired
- HUH?
- If you want a person to talk better to the spouse get the spouse in the tx
- With strangers? Use strangers in tx

## CAN'T DO IT?

- Then generalization is unlikely
- Doesn't mean don't treat
- Does mean prognosis is guarded

## ANOTHER REASON

- Enriched brains learn and retain better than unenriched ones
- Hebb's rats

## SPECIFIC IDEA

- Communication partners
- A program of soliciting volunteers to become part of treatment
- The CP becomes another person to whom the patient talks
  - In and
  - Outside clinic

## GENERALIZATION

- Another critical idea
- ADD COGNITIVE LINGUISTIC LOAD
- Means systematically requiring more difficult and creative patient-generated responses

## BUT NEED TO RESEMBLE CONVERSATION

- For us the next step is the contrastive stress drill

## CONTRASTIVE STRESS DRILL

- Contrastive stress drill is a question and answer dialogue
- It can be made to resemble therapeutic conversation
- Use the stimuli in sentences
  - He bit me
  - Please sit down
  - I don't fit
- And elicit with Qs: What did he do?

## ANOTHER USEFUL APPROACH

- SCRIPTS, formalized by Holland and colleagues so far as I know
- Require considerable language integrity but if that is not there then none of this motor stuff makes much sense

## SCRIPTS

- Notion is simply that pt (when possible) and pt and cl when necessary create narratives of an appropriate length which are then practiced the way shorter utterances are practiced
- Can be practiced first with clinician then with communication partner

## NEXT

- Then the script can be treated to contrastive stress treatment
- And with questions clinician can help the pt move beyond the script to related content
- This is a formal way to move toward more functional communication

OR

## PACE

- This program created by Davis and colleagues is years old
- Simple
- Ideas represented on cards placed face down between pt and other communicator
- Take turns turning up (but concealing) and communicating content

## ALL THE WHILE

- Clinician and patient making decisions about how much percision vs how much successful communication
- This is one of the hardest parts of tx
- And sometimes none of this works if severe

## SO WHERE ARE WE

- Over the days of arguing about what the term means
- Over the days of banging away at the speech when language and cognition are larger problems
- Over the days of follow the leader therapy
- In the days of principle driven pt control and of emphasizing functional communication
- Pts probably are wondering what took so long