Language Disorders in Adults: Objective Review of Therapies for Anomia Due to Aphasia

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Goals of this seminar

- Describe three different treatment approaches for anomia
- Identify research evidence supporting three different treatment approaches for anomia
- Identify the effect size depending on word set and follow-up measures for three different treatment approaches for anomia
Objective review of therapies for anomia

- Studies and effect sizes based on Wisenburn and Mahoney (2009)
- Unbiased effect size (Rudner, Glass, Evartt, & Emery, 2002)
  - unbiased ES = \( (1 - \frac{3}{4 \times (2 \times n) - 9}) \times \frac{(M_{post\ tx} - M_{pre\ tx})}{SD_{pre\ tx}} \)
- Approximate interpretation of effect size, based on comparison of anomia therapies
  - Trained words: small < 1.5, large > 2.5
  - Related/Exposed: small < 1.35, large > 1.75
  - Unrelated/Exposed: small < 0.75, large > 1.75
  - Untrained words: small < 0.25, large > 0.5
Moderator variables

- Type of therapy
  - Semantic
  - Phonologic
  - Mixed

- Word set
  - Trained
  - Related/Exposed
  - Unrelated/Exposed
  - Untrained

- Follow-up
General therapy recommendations

(Wisenburn & Mahoney, 2009; Wisenburn, 2009)

- Gains can be made even years post-onset
- If damage to the semantic system
  - substantial gains can be made with either semantic or phonological therapies
  - some generalization to untrained words
- If damage to the phonological system
  - substantial gains can be made with only phonological or mixed therapy
  - little generalization to untrained words
Semantic Feature Analysis
(Boyle & Coelho, 1995)

- **Procedure**
  - Target word is described according to features
  - ES for Law, Wong, Sung, and Hon (2006)
    - Trained words: 3.29; 1-month Follow-up: 4.39
    - Related/exposed: 4.11; 1-month Follow-up: 2.52
    - Unrelated/exposed: 1.98; 1-month Follow-up: 3.25
  - ES for Lowell, Beeson, and Holland (1995)
    - Trained words: 1.32
    - Related/exposed: 0.27
    - Unrelated/exposed: 2.23
Semantic therapies focused on features

- **Procedure**
  - Naming 3 features of target word
    - Trained words: 0.56; 3-month Follow-up: 0.23

- **Procedure**
  - Selecting features, answering y/n questions
    - Trained words: 2.43; 1-month Follow-up: 1.92
    - Related/exposed: 1.54; 1-month Follow-up: 1.54
    - Untrained: 0.78
    - Trained: 2.72
Semantic therapies focused on sentence context

- **Procedure**
  - Written sentence completion and sentence repetition tasks
    - Trained words: 0.28
    - Unrelated/Exposed words: 0.13
    - Untrained words: 0.10
Semantic Tx with word to picture matching

- **Procedure**
  - Word to picture matching with semantic foils
  - ES for Nickels and Best (1996)
    - Trained words: 1.23
    - Untrained words: 0.43

- **Procedure**
  - Word/description to picture matching, categorization
  - ES for Nettleton and Lesser (1991)
    - Trained words: 0.28
Semantic cueing hierarchy

Procedure
- Cues as needed: description and sentence completion
- ES for Fridriksson et al. (2007)
  • Untrained words: 0.527
- ES for Wambaugh et al. (2002)
  • Trained words: 1.41

Procedure
- Cues as needed: category and feature
- ES for Greenwald et al. (1995)
  • Trained words: 2.02; 1-month Follow-up: 1.21
Semantic therapies focused on verb naming

- **Procedure: Verb Production at the Word and Sentence Level (VWS)**
  - Sentence completion tasks with infinitive and tensed verb
  - ES for Bastiaanse, Hurkmans & Links (2006)
    - Trained words: 0.65; 3-month Follow-up: 0.97

- **Procedure**
  - Sentence completion with verb, and naming verb to definition
    - Trained words: 0.50; 3-month Follow-up: 0.44
    - Untrained words: -0.42; 3-month Follow-up: 0.31
Semantic verb naming therapies with gestures

- Procedure
  - Matching verb to picture, answering questions with verb and gesture
  - ES for Fink, Schwartz, Sobel, and Myers (1997)
    • Trained words: 4.22
Semantic verb naming therapies focusing on semantic and argument class

- **Procedure**
  - Explanation of semantic class of the verb (change of state or of motion)
  - ES for Schneider and Thompson (2003)
    - Trained words: 0.47; 1-month Follow-up: 0.56
    - Exposed words: 0.14; 1-month Follow-up: 0.20

- **Procedure**
  - Explanation of argument class of the verb (1\textsuperscript{st}, 2\textsuperscript{nd}, or 3\textsuperscript{rd})
  - ES for Schneider and Thompson (2003)
    - Trained words: 1.34; 1-month Follow-up: 0.95
    - Exposed words: 0.63; 1-month Follow-up: 0.80
Phonologic therapy with cueing hierarchy

- **Procedure**
  - Cues as needed: rhymed words and initial phoneme
  - ES for Fridriksson et al. (2007)
    - Untrained words: 0.17
  - ES for Raymer et al. (1993):
    - Trained words: 2.35; 2-month Follow-up: 1.90;
    - Exposed/Related words: 1.35; 2-month Follow-up: 1.17
  - ES for Wambaugh et al. (2002)
    - Trained words: 3.03
Phonologic therapy focused on progressive phonemic cues

- **Procedure**
  - Cues as needed: increasing initial phoneme(s) for target and foil
  - ES for Best et al. (2000)
    - Trained words: 1.09
  - ES for Hickin et al. (2002)
    - Trained words: 1.15
Phonologic therapy focused on progressive orthographic cues

- Procedure
  - Cues as needed: increasing initial letter(s) for target and foil
  - ES for Best et al. (2000)
    - Trained words: 0.05
  - ES for Hickin et al. (2002)
    - Trained words: 0.95
Phonologic therapy focused on writing

- Procedure:
  - Copy and Recall Treatment (CART) plus oral repetition: Repeated copying and stating target word
  - Effect size for Beeson and Egnor (2006)
    - Untrained words: 0.81
Phonological errorless therapy

- Procedure
  - Read/repeated target word three times
  - ES for Fillingham, Sage & Ralph (2005)
    - Trained: 17.7; 1-month Follow-up: 10.62
Mixed therapy with functional activities

- Procedure
  - Naming to definition, role-playing conversations with target word, with phonemic and orthographic cues
  - ES for Herbert et al. (2003)
    - Trained: 1.88; 2-month Follow-up: 1.51
    - Untrained: 0.00; 2-month Follow-up: 0.23
Mixed semantic and phonologic cueing hierarchy

- Procedure
  - Cues as needed: Description, sentence completion, first phoneme
  - ES for Linebaugh, Baron & Corcoran (1998)
    • Trained words: 0.69;
    • Unrelated/Exposed words: 0.28
References

References (continued)

Appendix Ia: Semantic Treatment Procedures
Semantic Feature Analysis
(Boyle & Coelho, 1995)

- A picture is placed in the middle of a diagram, to which the Participant (P) fills in semantic aspects related to the target, with the Clinician (C):
  - Group: “is …?”;
  - Use: “is used for/to …”;
  - Action: “… does what?”;
  - Properties: “his/is…?”;
  - Location: “is found…”;
  - Association: “reminds me of a …”
Appendix Ib: Semantic Treatment Procedures
Semantic therapies focused on features

- **Feature description** (Nadeau & Kendall, 2006)
  - P named up to 3 features of a pictured object
  - Then P named the object

- **Feature identification** (Edmonds & Kiran, 2006; Kiran & Thompson, 2003)
  - P named pictured object
  - Then P selected 6/12 cards that described features of object, with 6 foils.
  - Then, C asked 12 y/n questions on features of object
  - P named object again.
Appendix Ic: Semantic Treatment Procedures
Semantic therapies focused on sentence context

Raymer & Kohen (2006):
- Action pictures with target nouns and verbs were shown to P, along with printed sentence with the word
- C and then P read the sentence aloud
- C then covered the target word for P to repeat
- C then covered the whole sentence, for P to repeat the sentence
- P then chose pictures to say the word or sentence to C
Appendix Id: Semantic Treatment Procedures
Semantic therapy with word to picture matching

- Nickels & Best (1996)
  - C stated word, and P selected matching picture from array with 3 semantic foils
  - or C showed a picture that was matched to written word with 3 semantic foils

- Nettleton & Lesser (1991)
  - C stated word, and P selected matching picture from array with 3 semantic foils
  - Then P pointed to picture based on verbal description
  - Then P matched the written word to picture
  - C asks Y/N questions related to category and feature
  - P then sorts pictures into categories
Appendix Ie: Semantic Treatment Procedures
Semantic cueing hierarchy

- Fridriksson et al. (2007), Wambaugh et al. (2002):
  - P was shown picture to name
  - If needed, cues were provided: verbal description, non-specific cloze sentence task, specific cloze sentence task, repetition

- Greenwald et al. (1995):
  - P was shown picture to name
  - If needed, cues were provided: category, visual feature, sentence with category and feature
  - If still not named, repeat for second feature, re-state sentences, state size of object, summarize all info
  - P repeats the word 3 times
Appendix Ic: Semantic Treatment Procedures
Semantic therapies focused on verb naming

- Verb Production at the Word and Sentence Level (VWS) (Bastiaanse, Hurkmans & Links, 2006)
  - P completed cloze sentence tasks, first with infinitive and then tensed verb
  - Then P constructs a full sentence when shown a picture

- Verb training for cases of fluent aphasia (Edwards & Tucker, 2006)
  - P completed cloze sentence tasks and named the verb to definition
  - Then P named the verb when shown a picture
Appendix Ig: Semantic Treatment Procedures
Semantic verb naming therapies with gestures

- Fink, Schwartz, Sobel, & Myers (1997)
  - P pointed to stated action from an array of pictures
  - Then C produced a sentence with the word and gesture
  - Then C asked a verification question using the word or a foil
  - P answered using the word in a sentence along with the gesture
Appendix Ih: Semantic Treatment Procedures
Semantic verb naming therapies focusing on semantic and argument class

- Semantic Class Tx (Schneider & Thompson, 2003)
  - P was shown picture and told the semantic class of the verb (change of state (e.g., “melt”) or change of motion (e.g., “jump”))
  - Then P named the verb

- Argument Class Tx (Schneider & Thompson, 2003)
  - P was shown picture and told the argument class of the verb (1st place (“eat”), 2nd place (“hit”), or 3rd place (“send”))
  - Then P named action
Appendix IIa: Phonological Treatment Procedures
Phonologic therapy with cueing hierarchy

- Fridriksson et al. (2007); Raymer et al. (1993); Wambaugh et al. (2002):
  - C showed P a picture to name
  - If not named, cues were provided:
    • a rhyming non-word was stated
    • Then the initial phoneme
    • then the rhymed word and initial phoneme repeated together
    • then the word was provided to be repeated by P
Appendix IIb: Phonological Treatment Procedures

Phonologic therapies focused on progressive phonemic cues

- **Best et al. (2000), Hickin et al. (2002):**
  - C showed P a picture to name
  - If not named, the first phoneme was provided for the target word and for an unrelated foil
  - If still not named, next phoneme would be provided for both words until named or the word was complete
Appendix IIc: Phonological Treatment Procedures
Phonologic therapies focused on progressive orthographic cues

Best et al. (2000), Hickin et al. (2002):
- C showed P a picture to name
- If not named, the first letter was provided for the target word and for an unrelated foil
- If still not named, next letter would be provided for both words until named or the word was complete
Appendix IId: Phonological Treatment Procedures
Phonologic therapies focused on writing

- Copy and Recall Treatment (CART) + oral repetition (Beeson & Egnor, 2006)
  - C showed a picture for P to name and write
  - P then listened to spoken word and repeated name, and copied writing name
  - This was repeated twice more, and done for homework
Appendix IIe: Phonological Treatment Procedures
Phonological errorless therapy

- Fillingham, Sage & Ralph (2005)
  - C showed P a picture; C named the picture and showed the written form
  - P repeated or read the name 3 times
Appendix IIIa: Mixed Therapy Procedures
Mixed therapy with functional activities

- Herbert et al. (2003)
  - C presented definition, P named the word
  - Then, from a set of pictures, P communicated the meaning of a picture to C
  - Then, use of target words in hypothetical common communicative situations
  - Then, P generated lists of related words, with phonological and orthographic cues
  - Then, conversation with target words
Appendix IIIb: Mixed Therapy Procedures
Mixed semantic and phonologic cueing hierarchy

- Linebaugh, Baron & Corcoran (1998)
  - P pointed to target picture in an array when C provided description
  - P then attempted to name picture
  - If not named, cues were provided: sentence completion task; first phoneme; imitation
  - Then, sentence completion task for noun and verb
  - Then, constructing a sentence with a target word
  - Then, constructing a sentence with target noun and verb together