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Clinical Application of Evidence-Based Practice in Aphasia: SPICES

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Moderated by:
Amy Natho, MS, CCC-SLP, CEU Administrator, SpeechPathology.com

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Clinical Application of Evidence-Based Practice in Aphasia: SPICES

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Disclosures

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  - SpeechPathology.com will be making a donation to the Veterans Research Foundation of Pittsburgh (VRFP), a 501c3 private, non-profit research corporation that is independent of the Veterans Health Administration (VHA). This donation is requested in lieu of presenter honorarium.
- Non-financial Disclosures
  - Member of American Speech-Language-Hearing Association
    - Member of Special Interest Group 2 (Neurogenic Communication Disorders)

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Acknowledgements

- Geriatric Research Education and Clinical Center (GRECC)
- Jim Schumacher, Dr. Michael Dickey and Ronda Winans-Mitrik
- Emily Boss, Brooke Lang and Rebecca Owens
- Dr. Patrick Doyle
- PIRATE Staff

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Lecture Outline

- Evidence-Based Practice & Theory: Review
- Impetus for SPICES Development: Review
- Treatment Description: Comprehension & Production
- Presentation of Case Studies

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Learning Objectives

After this course, participants will be able to:

- Identify the key differences between Semantic Priming to Improve Comprehension and Expression of Sentences (SPICES) and Verb Network Strengthening Treatment (VNeST).
- Describe the steps of the novel treatment, SPICES.
- Describe probe procedures for SPICES.

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Terms and Key Words

- Client: The person receiving services from the clinician
- Agent: The subject of a sentence
  - e.g. The boy throws the ball.
  - Agent=subject (boy)
- Patient: The object of a sentence
  - e.g. The boy throws the ball.
  - Patient=object (ball)

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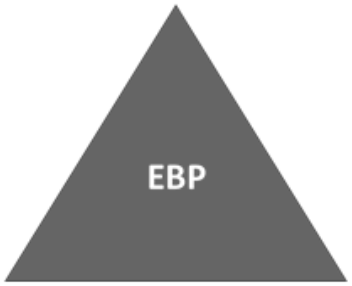
Evidence-Based Practice

Current Best Evidence



Clinical Expertise

Client Values

Adapted from the National Center for Evidence-Based Practice in Communication Disorders

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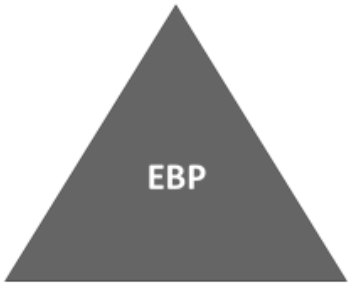
Evidence-Based Practice

Current Best Evidence



Clinical Expertise

Client Values

Adapted from the National Center for Evidence-Based Practice in Communication Disorders

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Evidence-Based Practice

Adapted from the National Center for Evidence-Based Practice in Communication Disorders

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VNeST & SPICES: Theoretical Models

- Spreading Activation Theory of Semantic Processing
- Verb As Core

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Spreading Activation Theory of Semantic Processing

- Semantic network consists of related concepts stored as nodes, which are linked
- Activation spreads from one concept node to another, and activation occurs constantly.
- For example: Activation of FIRE ENGINE might spread to other closely related concepts, such as other vehicles or the color RED.
- Activated concepts then prime other related concepts.

(Collins & Loftus, 1975)

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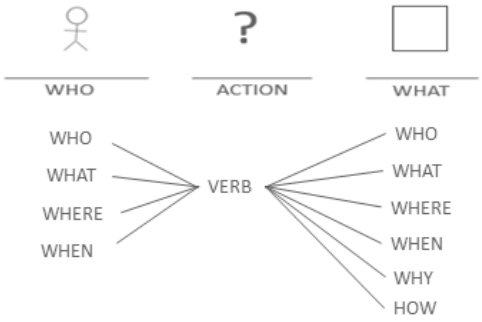
Verb Centered Treatments: Verb As Core

1. Verbs are central to sentence formulation
2. An increase in verb retrieval will support sentence production



Adapted from Loverso et al 1986; Edmonds 2009

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Evidence-Based Practice

Adapted from the National Center for Evidence-Based Practice in Communication Disorders

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Semantic Priming to Improve Comprehension and Expression of Sentences (SPICES)

- Clinical Observations:
  - Many people with aphasia produce mostly nouns
  - People with aphasia lack **specific** verbs in verbal output
  - People with aphasia demonstrate more difficulty with generating subjects than objects during VNeST treatment

(Schumacher et al., 2016, 2017)

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The Impetus for Development of SPICES

- Research has supported bidirectional semantic priming between verbs and their arguments (Ferretti et al., 2007; Hare et al., 2009; McRae et al., 2005)
- VNeST is an efficacious treatment approach for expansion of verbal output from words to sentences (Edmonds et al., 2009; Edmonds & Babb, 2011; see Edmonds, 2016, for review)
- Noun retrieval may be a strength compared to verb retrieval for many PWA, possibly contributing to telegraphic output – see Verb as Core (Loverso, Selinger & Prescott, 1979)
- Both top-down knowledge of commonplace events (e.g., McRae & Matsuki, 2009) and personally-relevant associations often trigger generative responses of related actions and subjects (Hare, et al., 2009).

(Schumacher et al., 2016, 2017)

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The **goal** of **SPICES** is to explore <u>sentence-level treatment</u> that would maximize the number of treatment trials, as well as focus on efficiency of successful subject and verb retrieval.

(Schumacher et al., 2016, 2017)

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CONTINUED

SPICES: An Overview

- Novel, *sentence-level* picture-based treatment
- Rooted in semantic-priming models (Collins & Loftus, 1975)
- Used to facilitate retrieval of verbs and their arguments (subjects and objects)
- People with aphasia were cued to identify and produce semantically-related subjects and actions in response to pictured objects.
- Treatment format allows for a large number of trials, as subject- and action retrieval trials are brief.

(Schumacher et al., 2016, 2017)

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CONTINUED

VNeST vs. SPICES

VNeST*	SPICES
Supplied **verb (printed word)** serves as the semantic primer	Supplied **object (pictured object)** serves as the semantic primer
Comprehension component focuses on plausibility of subject-object pairs at the **sentence level**	Comprehension component focuses on subject-object pairs and verb-object pairs at the **single word level,** though therapist **models sentence-length** constructions
Verb is **supplied**; Subjects and Objects are **generated.**	Object is **supplied**; Subjects and Verbs are **generated.**

*Edmonds et al. (2009, 2011)

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SPICES Treatment Set-up

- Client is presented with a field of 10 pictured objects. SVO sentence structure is visible for reference.

- Training is completed using **blocked trials** of 10 stimuli for the following groups:
  - Comprehension of Subjects
  - Comprehension of Verbs
  - Production of Subjects
  - Production of Verbs

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Clinician: "Quarterback"

Comprehension of Subjects	Comprehension of Verbs	Production of Subjects	Production of Verbs

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"Right; The **QUARTERBACK THROWS** the **FOOTBALL.**"

Clinician should load models with novel, specific or distantly related, subjects and verbs based on the client's abilities.

Example: **Target: "football"**

- **RUNNING BACK** catches the football.
- **COACH** throws the football.
- **REFEREE** inflatesthe football.
- **KICKER** kicks the football.
- **CHILDREN** spike the football.

Comprehension of Subjects

Video Demonstration

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Demonstration Recap: Comprehension of Subjects

- Prior to recording, the clinician reviewed the objects with the client.
- For each trial, the clinician verbally presented a subject.
- The client pointed to the appropriate semantically related object.
- The clinician reinforced accuracy and modeled a salient S-V-O sentence.

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Clinician: "Fumble"

Comprehension of Subjects	Comprehension of Verbs	Production of Subjects	Production of Verbs

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"Right; The **RUNNING BACK FUMBLES** the **FOOTBALL.**"

Comprehension of Agents	Comprehension of Verbs	Production of Subjects	Production of Verbs

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Clinician should load models with novel, specific or distantly related, subjects and verbs based on the client's abilities.

Example: Target: "**football**"

▪ Receiver	**SPIKES**	the football.
▪ Defense	**RECOVERS**	the football.
▪ Coach	**DEFLATES**	the football.
▪ Punter	**PUNTS**	the football.
▪ Center	**SNAPS**	the football.

Comprehension of Verbs

Video Demonstration

Demonstration Recap: Comprehension of Verbs

- Prior to recording, the clinician reviewed the objects with the client.
- For each trial, the clinician verbally presented a verb.
- The client pointed to the appropriate semantically related object.
- The clinician reinforced accuracy and modeled a salient S-V-O sentence.

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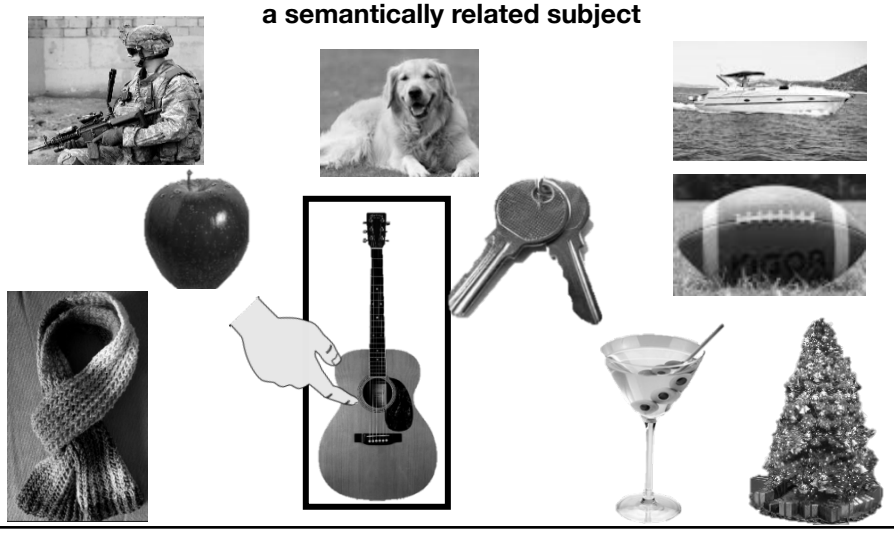
Clinician points to a pictured object and requests verbal generation of a semantically related subject



Comprehension of Subjects	Comprehension of Verbs	Production of Subjects	Production of Verbs

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Client: "MUSICIAN"

Clinician: "Right; Please use it in a sentence."

Client: "The MUSICIAN plays the GUITAR."

Comprehension of Subjects | **Comprehension of Verbs** | **Production of Subjects** | **Production of Verbs**

37

Encourage clients to produce highly salient and related subjects and verbs.

Example:

Client: "I strum the guitar."

Clinician: "Could you give a more specific person? Whose job is it to strum a guitar?"

Examples of targets could include: Musician, music teacher, band member, etc.

Comprehension of Subjects | **Comprehension of Verbs** | **Production of Subjects** | **Production of Verbs**

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Production of Subjects

Video Demonstration

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Demonstration Recap: Production of Subjects

- The clinician points to an object and asks the client to produce a related subject.
- Accuracy is reinforced and the client is asked to form an SVO sentence.
- Note the use of the visible SVO sentence structure and the clinician's sentence repetition.

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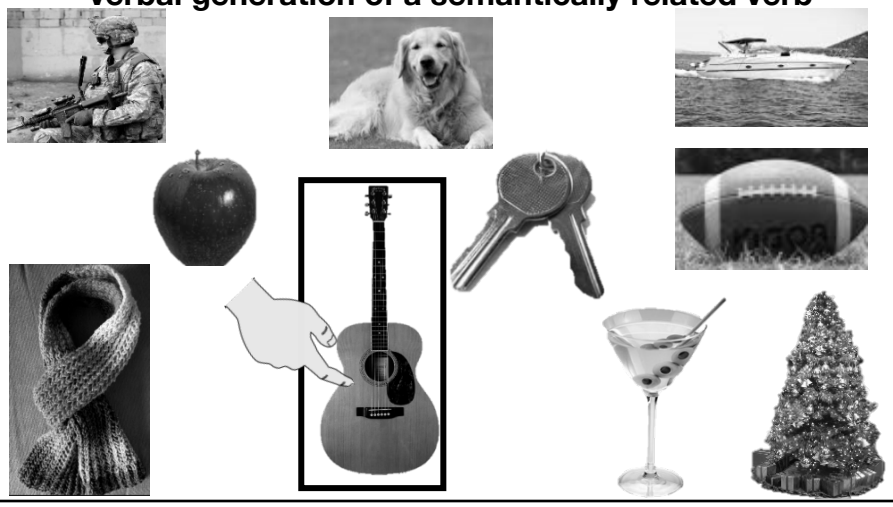
Clinician points to a pictured object and requests verbal generation of a semantically related verb



Comprehension of Agents	Comprehension of Verbs	Production of Subjects	Production of Verbs

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Client: "Strum"

Clinician: "Right; Please use it in a sentence."

Client: "The music teacher STRUMS the GUITAR."

Comprehension of Agents	Comprehension of Verbs	Production of Subjects	Production of Verbs

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Encourage clients to produce highly salient and related subjects and verbs.

Example:

Client: "Eric Clapton has the guitar."

Clinician: "*Has* is non-specific. Could you give me a stronger action word for what Eric Clapton would do to a guitar?"

Examples of targets could include: strum, restring, pluck

Production of Verbs

Video Demonstration

Demonstration Recap: Production of Verbs

- The clinician points to an object and asks the client to produce a related verb.
- Accuracy is reinforced and the client is asked to form an SVO sentence.
- The clinician should repeat the SVO sentence for reinforcement.

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Errors in Production of Verbs

Video Demonstration

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Demonstration Recap: Errors in Production of Verbs

- The clinician pointed to an object and asked the client to produce a related verb.
- The client produced a non-specific verb - "have."
- The clinician referred to the SVO sentence structure to assist with verb and sentence generation.
- Accuracy was reinforced and the clinician repeated the sentence.

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SVO Sentence Generation: How to Cue Clients

- Create a personalized cueing hierarchy for your client.
- For example:
  - Refer back to the visible SVO sentence structure first
  - Guide by asking wh- questions for missing parts (e.g., "WHO throws the football?", "WHAT can you do with a guitar?")
  - Utilize cues that work for your client (e.g., gestures, writing, etc.)
- Reinforce with oral reading and rehearsal/repetition

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Things to Remember About SPICES Treatment

- Completed in blocked trials of 10 for each target area
- Amount of treatment time focused in each area can be client-dependent
- Comprehension is often treated first to allow clinician to prime responses for production portion
- Clinician may select personally relevant stimuli

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Choosing Personal Stimuli

- Choose personally relevant, client-centered stimuli.
- Consider diverse stimuli for mild clients and semantically similar stimuli for more severe clients.
- Choose objects that directly receive actions.
  - FOOTBALL – throw, punt, catch, etc.
  - KNIFE – cut WITH, slice WITH, etc.

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CONTINUED

Measuring Treatment Progress

- Probe Protocol
  - Production/Comprehension Efficiency Probes
  - SVO Sentence Production Probe
  - Adjective-Synonym Probe (Control Task)

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CONTINUED

Clinical Application of Evidence Based Practice: Treatment Case Study #1

PIRATE

The Program for Intensive Residential Aphasia Treatment & Education

GRECC | VA Pittsburgh Healthcare System

52

Client 1: Profile

- Client's goals: Talking in complete sentences; improve upon "sound that won't come"
- Fiancé's goals: Strengthen his use of verbs and enhance feeling of empowerment that he can communicate effectively
- Primary social settings: Yoga studio and dinner with friends
- Communication partners: Fiancé, children, professionals and customers at his yoga studio
- Topics of interest: Yoga and outdoor activities (e.g. kayaking, climbing, skiing, and snowboarding)

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Client 1: Medical History

- 62 y/o veteran from Colorado
- S/p aortic dissection and L hemorrhagic CVA (5/2013) with residual aphasia and right-sided weakness

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Client 1: Social History

- Previously served a 20-year career in the Air Force
- Obtained his Master's degrees in electrical and mechanical engineering and has work experience in these areas
- Fiancé: identified surrogate

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Client 1: Speech/Language History

- Pre-PIRATE Evaluation completed November 2016; PIRATE session January 2017
- Received outpatient language services 2x/week
- Exhibited sparse, non-fluent, verbal output with an inordinate degree of noun production
- Notable verb > noun word retrieval difficulty

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CONTINUED

Assessments Supporting Treatment

- **Comprehensive Aphasia Test (CAT)**
  - (Swinburn, Porter, & Howard, 2004)

- **Story Retell Procedure**
  - (McNeil et. al, 2001)
- **Northwestern Assessment of Verbs and Sentences (NAVS)**
  - (Thompson, 2012)

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CONTINUED

Client 1: Comprehensive Aphasia Test (CAT)

- Naming Objects:
  - Objects Named: 16/24
  - Raw Score: 27/48
  - T-Score: 51
- Naming Actions:
  - Actions Named: 0/5
  - Raw Score: 0/10
  - T-Score: 39

- Note: T-Scores have a mean of 50, with a standard deviation of 10.

(Swinburn, Porter, & Howard, 2004)

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Client 1: Comprehensive Aphasia Test (CAT)

- Picture Description:
  - "uh **the man is**....**sitting**...**down**....**the**...**boy** was...the boy is...**the cat**, the cat...the boy is...the boy is ditting the cat uh...the...the cat is...is uh...**fish** uh the...window is...**on the floor**...the the the man is...the man is...floozing soozing...uh the uh um....the...**the books are**...**coming down**...coming down...the cat is...uh...the cat is...uh the fish...the uh no"

(Swinburn, Porter, & Howard, 2004)

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Client 1: Story Retell Procedure

Story Number	Number of Correct Informational Units	Percentage of Correct Informational Units
1	9/155	5.81%
2	13/156	8.33%
3	10/136	7.30%
Total	32/447	7.15%

(McNeil et. al, 2001)

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Client 1: Northwestern Assessment of Verbs and Sentences (NAVS)

	VNT % Correct	VCT % Correct
1-Place (Ob1)	80%	100%
2- Place (Ob2+ Op2)	90%	100%
3- Place (Ob3+Op3)	57%	100%
Total % Correct	77%	100%

Of note, the abbreviations above translate to mean the following:

Ob1 - Obligatory 1 place verbs
Ob2 - Obligatory 2-place verbs
Op2 - Optional 2-place verbs
Ob3 - Obligatory 3-place verbs
Op3 - Optional 3-place verbs

(Thompson, 2011)

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Why SPICES?

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Client 1: Treatment Case Study

- Participated in PIRATE 5 hours per day, 5 days per week, for 4 weeks
- Received other treatments in addition to SPICES as part of a treatment package
- Primary focus was on verbal production treatment

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Measuring Treatment Progress

- Probe Protocol
  - Production/Comprehension Efficiency Probes
  - SVO Sentence Production Probe
  - Adjective-Synonym Probe (Control Task)

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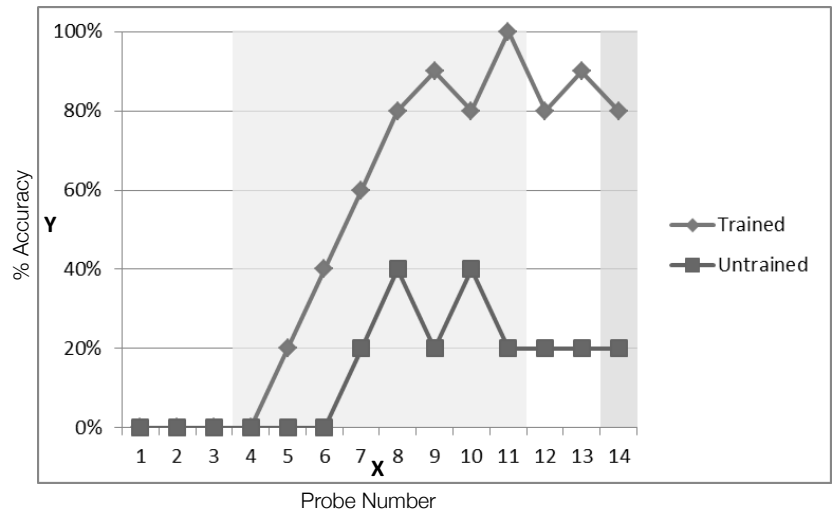
Probe Graph Description



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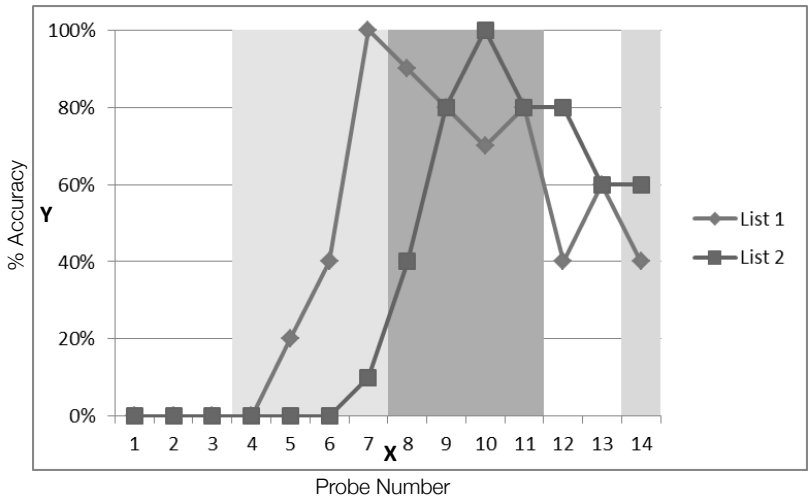
Probe Graph Description



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Production/Comprehension Efficiency Probes

- 1- minute timed trials for each of the following tasks
  - Production of Subjects
  - Production of Verbs
  - Comprehension of Subjects
  - Comprehension of Verbs

- Place a visual field of 10 pictured objects and SVO sentence structure in front of the client. Verify comprehension of the pictured objects.

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Production of Subjects/Verbs

- "I want you to tell me a person/action associated with the picture I point to, as quickly as you can."
  - Subjects: "For example, if I point to this object [pen] a person associated with it is an author"
  - Verbs: "For example, if I point to this object [pen] an action word associated with it is write".
- "I will give you up to 10 seconds to respond before we move on to the next item."

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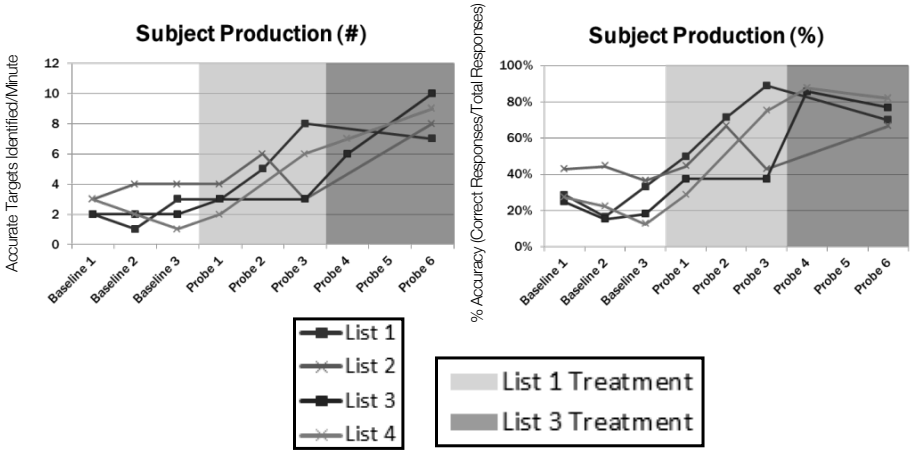
Production Efficiency Probes: Subject



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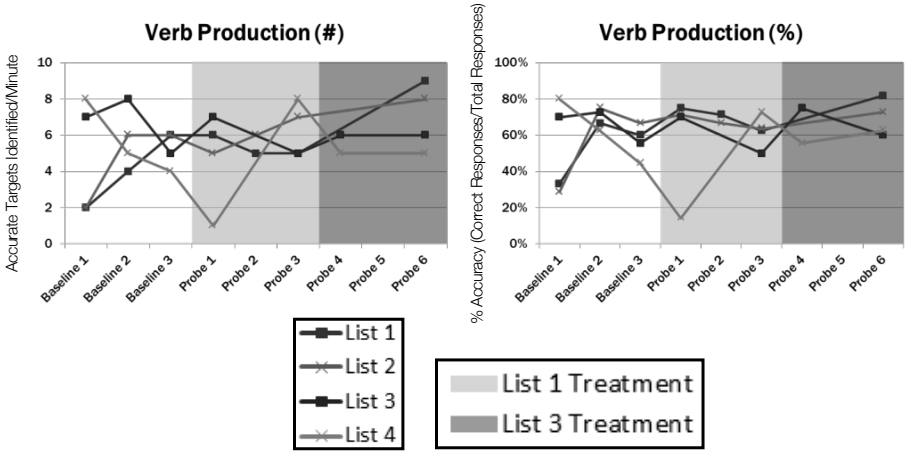
Production Efficiency Probes: Verb



70

Comprehension of Subjects/Verbs

- "I want you to point to the picture associated with the person/action word that I say, as quickly as you can."
  - Subjects: "For example, if I had these two objects [pen, phone] and I said 'telemarketer' which one goes with that person (phone)."
  - Verbs: "For example, if I had these two objects [pen, phone] and I said 'answer' which one goes with that action word (phone)."
- "I will give you up to 10 seconds to respond before we move on to the next item"

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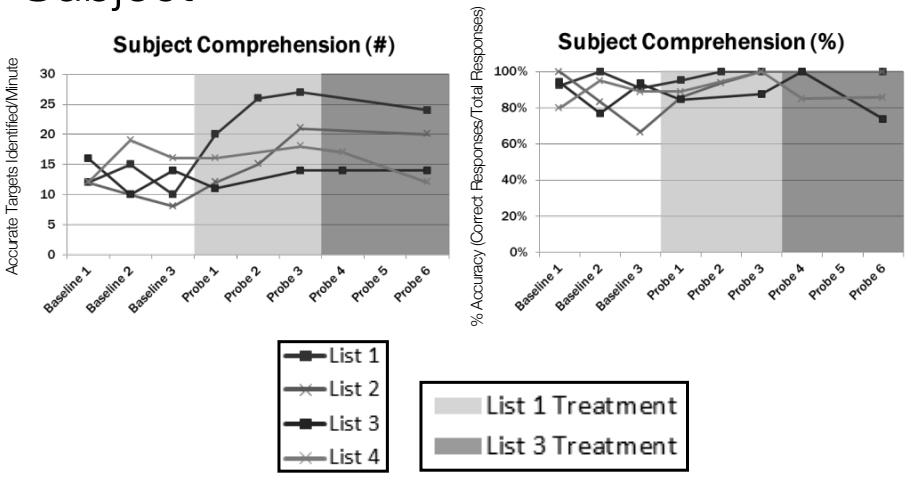
Comprehension Efficiency Probes: Subject



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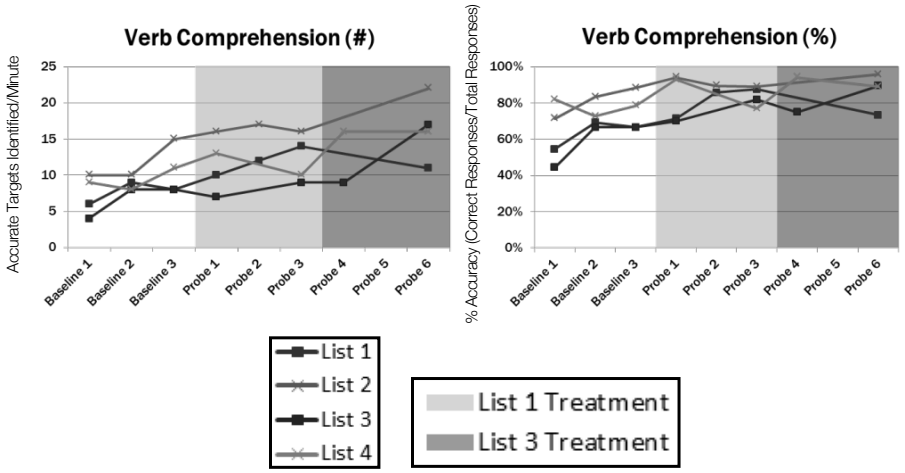
Comprehension Efficiency Probes: Verb



73

SVO Sentence Production Probes

- Place a visual field of 10 pictured objects and SVO sentence structure in front of the client. Verify comprehension of the pictured objects first.
- "I am going to point to a picture. I want you to make a sentence using that picture name as our object. I will give you up to 15 seconds to respond before we move on to the next item." (Reference visual as needed).

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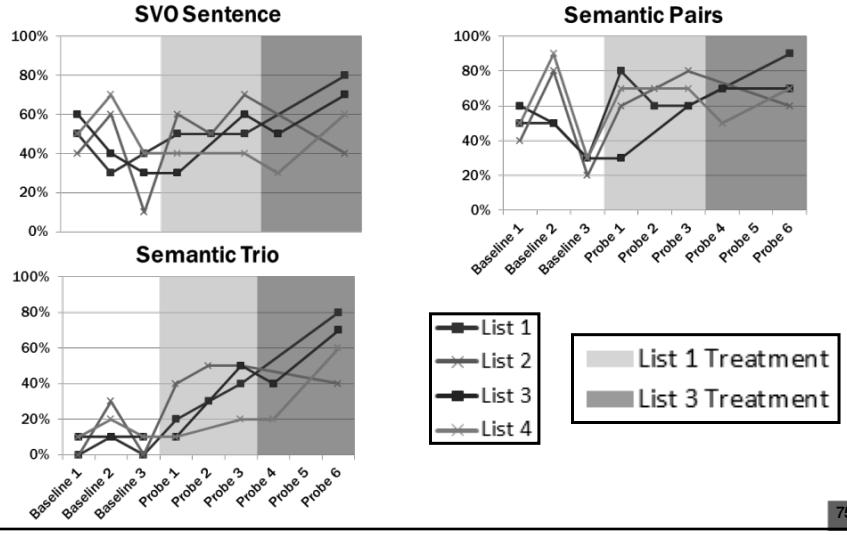
CONTINUED

Subject-Verb-Object Production Probes



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CONTINUED

Adjective-Synonym Probe

(adapted from Edmonds et al., 2009)

- Serves as a control task, meaning it should be stable throughout treatment
- No materials need to be in front of the client for this probe.
- The clinician says, "Listen carefully. Complete these sentences with a synonym, or word with a similar meaning, for each adjective. For example, 'Someone who is sick is also said to be ____ (ill).' I will give you up to 10 seconds to respond before we move on to the next item."

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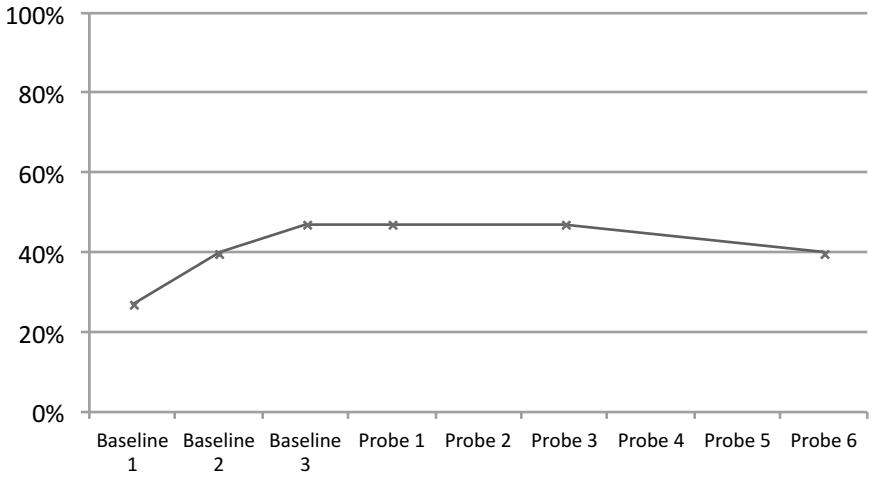
Control Task: Adjective-Synonym Production



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Client 1: Comprehensive Aphasia Test Results

	PRE-ENTRY Score T-Score	**EXIT** Score T-Score
Naming Objects	27/48 51	25/48 51
Naming Actions	0/10 39	4/10 50

(Swinburn, Porter, & Howard, 2004)

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Client 1: Story Retell Procedure

Story Number	PRE-ENTRY Percentage of CIUs	EXIT Percentage of CIUs
1	5.81%	12.74%
2	8.33%	2.52%
3	7.30%	6.25%
Total	7.15%	7.14%

(McNeil et. al, 2001)

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Client 1: Northwestern Assessment of Verbs and Sentences (NAVS)

	VNT % Correct PRE-ENTRY/EXIT	VCT % Correct PRE-ENTRY/EXIT
1-Place (Ob1)	80% - 100%	100% - 100%
2- Place (Ob2+ Op2)	90% - 90%	100% - 100%
3- Place (Ob3+Op3)	57% - 100%	100% - 100%
Total % Correct	77% - 95%	100% - 100%

Of note, the abbreviations above translate to mean the following:

Ob1 - Obligatory 1 place verbs
Ob2 - Obligatory 2-place verbs
Op2 - Optional 2-place verbs
Ob3 - Obligatory 3-place verbs
Op3 - Optional 3-place verbs

(Thompson, 2011)

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CONTINUED

Client 1: Performance Summary

- Improved production of highly relevant, semantically-related subjects, trained verbs and SVO sentences, per SPICES probes
- Stable performance on Naming Objects subtest of the CAT and the Story Retell Procedure
- Improved performance on Naming Actions subtest of the CAT and the Verb Naming Test of the NAVS

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CONTINUED

Clinical Application of Evidence Based Practice: Treatment Case Study #2

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Client 2: Profile

- Client's goals: Speaking in sentences; improve understanding of what is said/read; writing
- Wife's goals: Same as above; improve relationships with others
- Primary social settings: Home, neighborhood, church
- Communication partners: Wife, children, grandchild, neighbors, Bible study group
- Topics of interest: Handyman projects, the Bible

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Client 2: Medical History

- 69 y/o veteran from Pennsylvania
- S/p L frontoparietal CVA (4/2016) with residual aphasia and mild right-sided hemiparesis

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Client 2: Social History

- Previously served in the Army
- Attended school through grade 10; earned his GED
- Formerly worked as a bus driver as well as a janitor
- Wife: identified surrogate

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Client 2: Speech/Language History

- Pre-PIRATE Evaluation completed December 2016; PIRATE session January 2017
- Received outpatient language services 2x/week
- Exhibited a moderate aphasia c/b impairments across language domains
- Verbal output was generally grammatical with frequent pauses and abandoned utterances d/t word finding difficulty

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Assessments Supporting Treatment

- **Comprehensive Aphasia Test (CAT)**
  - (Swinburn, Porter, & Howard, 2004)
- **Nicholas & Brookshire Language Samples**
  - (Nicholas & Brookshire, 1993)
- **Story Retell Procedure**
  - (McNeil et. al, 2001)

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Client 2: Comprehensive Aphasia Test (CAT)

- Naming Objects:
  - Objects Named: 19/24
  - Raw Score: 34/48
  - T-Score: 54
- Naming Actions:
  - Actions Named: 5/5
  - Raw Score: 9/10
  - T-Score: 63
- Note: T-Scores have a mean of 50, with a standard deviation of 10.

(Swinburn, Porter, & Howard, 2004)

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Client 2: Nicholas & Brookshire Sample

- Picture Description:
  - "**The lady is spilling the sink over. The boy is getting the cookies down** here and **falling off this** ladder… I guess, yeah. I think she's doing it… no, he's getting the cookies and hadding **to the girl** and then he's falling off the ladder."

(Nicholas & Brookshire, 1993)

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Client 2: Story Retell Procedure

Story Number	Number of Correct Informational Units	Percentage of Correct Informational Units
1	22/155	14.2%
2	32/156	20.5%
3	29/136	21.2%
Total	83/447	18.5%

(McNeil et. al, 2001)

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Why SPICES?

Client 2: Treatment Case Study

- Participated in PIRATE 5 hours per day, 5 days per week, for 4 weeks
- Received other treatments in addition to SPICES as part of a treatment package
- Primary focus was on verbal production treatment

CONTINUED

Measuring Treatment Progress

- Probe Protocol
  - Production/Comprehension Efficiency Probes
  - SVO Sentence Production Probe
  - Adjective-Synonym Probe (Control Task)

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CONTINUED

Production/Comprehension Efficiency Probes

- 1- minute timed trials for each of the following tasks
  - Production of Subjects
  - Production of Verbs
  - Comprehension of Subjects
  - Comprehension of Verbs

- Place a visual field of 10 pictured objects and SVO sentence structure in front of the client. Verify comprehension of the pictured objects.

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Production of Subjects/Verbs

- "I want you to tell me a person/action associated with the picture I point to, as quickly as you can."
  - Subjects: "For example, if I point to this object [pen] a person associated with it is an author"
  - Verbs: "For example, if I point to this object [pen] an action word associated with it is write".
- "I will give you up to 10 seconds to respond before we move on to the next item."

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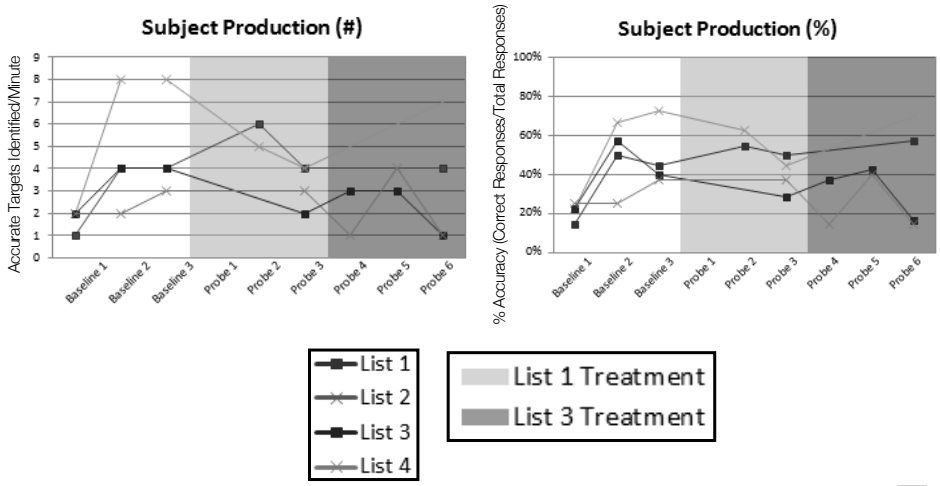
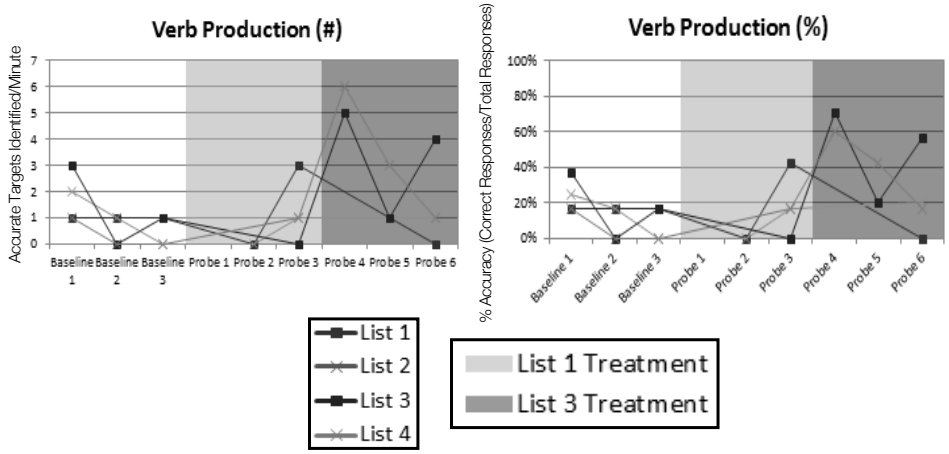
Production Efficiency Probes: Subject



96

Production Efficiency Probes: Verb



97

Comprehension of Subjects/Verbs

- "I want you to point to the picture associated with the person/action word that I say, as quickly as you can."
  - Subjects: "For example, if I had these two objects [pen, phone] and I said 'telemarketer' which one goes with that person (phone)."
  - Verbs: "For example, if I had these two objects [pen, phone] and I said 'answer' which one goes with that action word (phone)."
- "I will give you up to 10 seconds to respond before we move on to the next item"

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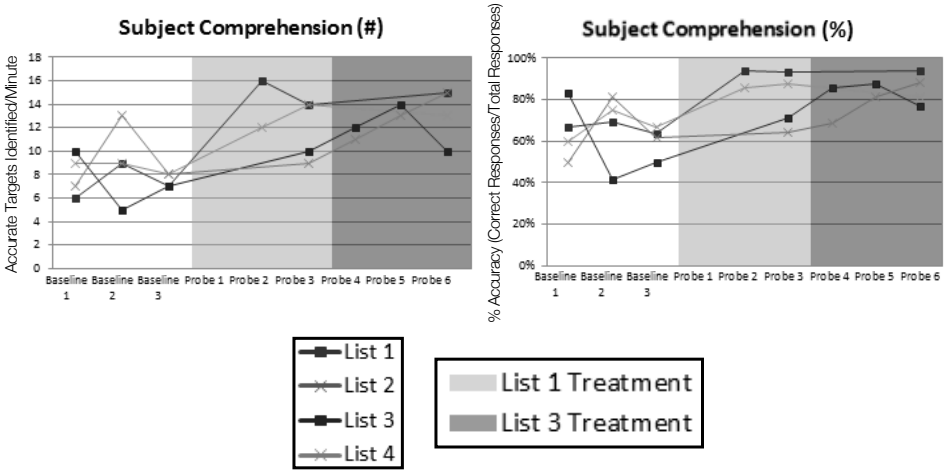
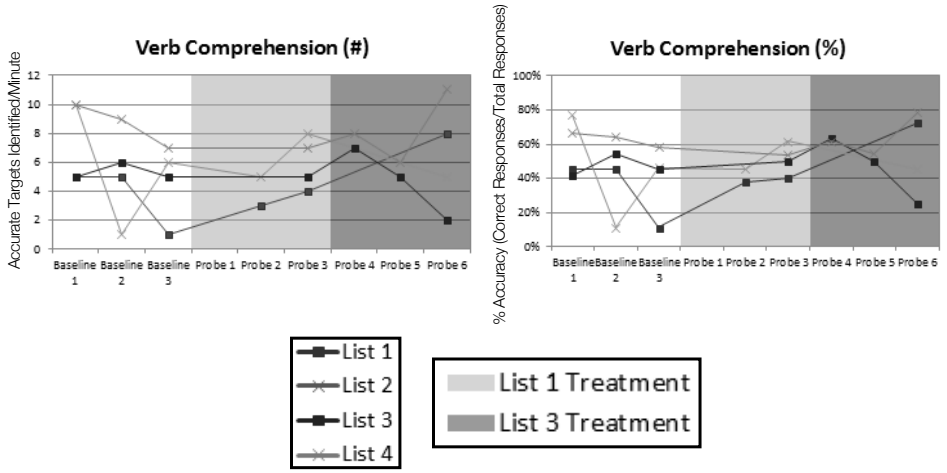
Comprehension Efficiency Probes: Subject



99

Comprehension Efficiency Probes: Verb



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SVO Sentence Production Probes

- Place a visual field of 10 pictured objects and SVO sentence structure in front of the client. Verify comprehension of the pictured objects first.
- "I am going to point to a picture. I want you to make a sentence using that picture name as our object. I will give you up to 15 seconds to respond before we move on to the next item." (Reference visual as needed).

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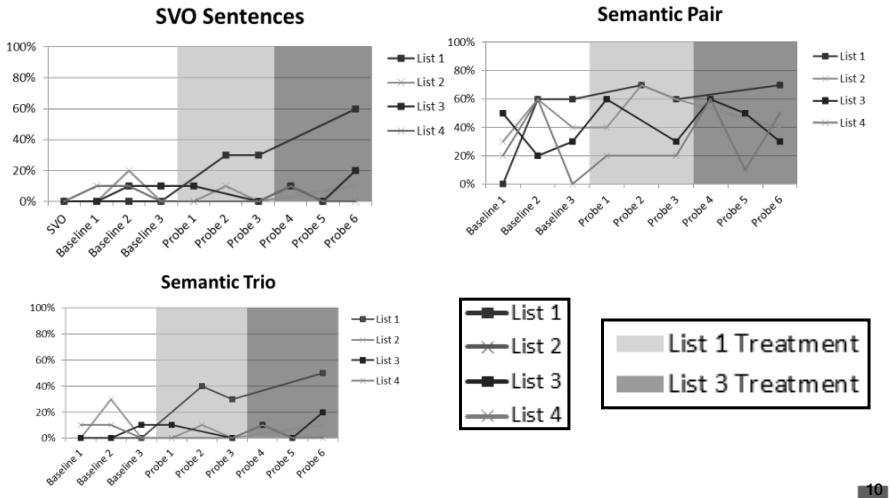
Subject-Verb-Object Production Probes



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Adjective-Synonym Probe

(adapted from Edmonds et al., 2009)

- Serves as a control task, meaning it should be stable throughout treatment
- No materials need to be in front of the client for this probe.
- The clinician says, "Listen carefully. Complete these sentences with a synonym, or word with a similar meaning, for each adjective. For example, 'Someone who is sick is also said to be ____ (ill).' I will give you up to 10 seconds to respond before we move on to the next item."

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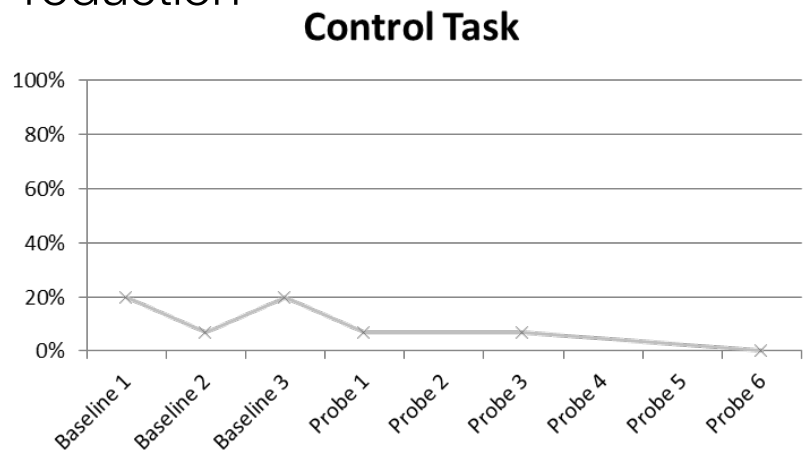
Control Task: Adjective-Synonym Production



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Client 2: Comprehensive Aphasia Test Results

	PRE-ENTRY Score T-Score	**EXIT** Score T-Score
Naming Objects	34/48 54	42/48 61
Naming Actions	9/10 63	10/10 69

(Howard, Swinburn & Porter, 2004)

Client 2: Story Retell Procedure

Story Number	**PRE-ENTRY Percentage of CIUs**	**EXIT Percentage of CIUs**
1	14.2%	22.29%
2	20.5%	35.85%
3	21.2%	19.38%
Total	18.5%	25.84%

(McNeil et. al, 2001)

Client 2: Performance Summary

- Variable performance overall per SPICES probe protocol
- Improved object naming on the CAT with stable* action naming
- Improved overall production of CIUs during the Story Retell Procedure

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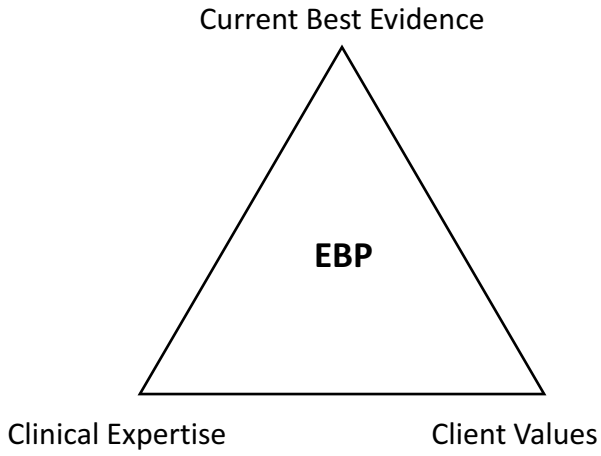
Review



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Questions?

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References

Adams, J. R., & Drake, R. E. (2006). Shared decision-making and evidence-based practice. *Community mental health journal*, *42*(1), 87-105.

Boyle, M., & Coehlo, C.A. (1995). Application of semantic feature analysis as a treatment for aphasic dysnomia. *American Journal of Speech Language Pathology, 4,* 94-98.

Collins, A.M., & Loftus, E.F. (1975). A spreading-activation theory of semantic processing. *Psychological Review, 82 (6),* 407-428.

Edmonds, L. A. (2016). A Review of Verb Network Strengthening Treatment: Theory, Methods, Results, and Clinical Implications. *Topics in Language Disorders, 36*(2).

Edmonds, L. A. (2014). Tutorial for Verb Network Strengthening Treatment (VNeST): Detailed description of the treatment protocol with corresponding theoretical rationale. *SIG 2 Perspectives on Neurophysiology and Neurogenic Speech and Language Disorders*, *24*(3), 78-88.

Edmonds. L. A. and Babb, M. (2011). Effect of Verb Network Strengthening Treatment in Moderate-to-Severe Aphasia. *American Journal of Speech-Language Pathology*, 20 (2): 131-145.

Edmonds, L. A., Mammino, K., & Ojeda, J. (2014). Effect of Verb Network Strengthening Treatment (VNeST) in persons with aphasia: Extension and replication of previous findings. *American Journal of Speech-Language Pathology*, *23*(2), S312-S329.

Edmonds, L. A., Nadeau, S. E., and Kiran, S. (2009). Effect of Verb Network Strengthening Treatment (VNeST) on Lexical Retrieval of Content Words in Sentences in Persons with Aphasia. *Aphasiology*, *23*(3): 402-424.

Edmonds, L.A., Obermeyer, J., and Keman, B. (2015).) Investigation of pretreatment sentence production impairments in individuals with aphasia: towards understanding the linguistic variables that impact generalisation in Verb Network Strengthening Treatment, Aphasiology, 29 (11), 1312-1344.

"Evidence-Based Practice (EBP)." *American Speech-Language-Hearing Association*. ASHA, n.d. Web. 16 June 2017.

Ferretti, T. R., Kutas, M., & McRae, K. (2007). Verb aspect and the activation of event knowledge. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *33*(1), 182.

CONTINUED

References

Hare, M., Jones, M., Thomson, C., Kelly, S., & McRae, K. (2009). Activating event knowledge. Cognition, 111(2), 151–167.

Loverso, F.L., Selinger, M, & Prescott, T.E. Application of Verbing Strategies to Aphasia Treatment. Clinical Aphasiology Conference: Clinical Aphasiology Conference; 1979. p. 229-238. BRK Publishers.

McNeil, M. R., Doyle, P. J., Fossett, T. R. D., Park, G. H., & Goda, A. J. (2001). Reliability and concurrent validity of the information unit scoring metric for the story retelling procedure. *Aphasiology, 15*, 991-1006.

McRae, K., Hare, M., Elman, J.L., Ferretti, T. (2005). A Basis for Generating Expectancies for Verbs from Nouns. *Memory & Cognition, 33(7): 1174-1184.*

McRae, K., Hare, M., Ferretti, T., & Elman, J. L. (2001). Activating verbs from typical agents, patients, instruments, and locations via event schemas. In *Proceedings of the Twenty-Third Annual Conference of the Cognitive Science Society* (pp. 617-622). Erlbaum Mahwah, NJ.

McRae, K., & Matsuki, K. (2009). People use their knowledge of common events to understand language, and do so as quickly as possible. *Language and Linguistics Compass, 3*(6), 1417–1429.

Nicholas, L.E., & Brookshire, R.H. (1993). A system for quantifying the informativeness and efficiency of the connected speech of adults with aphasia. Journal of Speech and Hearing Research, April 1993, 338-350.

Schumacher, J., Winans-Mitrik, R.., & Dickey, M. (2016). Semantic Priming to Improve Comprehension and Expression of Sentences (SPICES). Poster presented at: National Conference of The Association of Veterans Affairs Speech Language Pathologists; 2016 April 3-5; Austin, Texas.

Schumacher, J., Winans-Mitrik, R., Dickey, M. W., Owens, R., Doyle, P.J. (2017) Semantic Priming to Improve Comprehension and Expression of Sentences (SPICES). Roundtable presentation presented at: Clinical Aphasiology Conference; 2017 May 30-June 3; Snowbird, Utah.

Thompson, C. K. *Northwestern Assessment of Verbs and Sentences (NAVS).*

Swinburn, K., Porter, G., & Howard, D. (2004). Comprehensive Aphasia Test (CAT). Psychology Press.