Scripts: Training Everyday Conversations for Individuals with Aphasia

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The School of Human Communication Sciences, La Trobe University

Outline of Presentation
- Case studies
- Background and rationale for conversational scripts
- Guidelines for creating scripts
- Procedures for analyzing script productions
- Description and demonstration of AphasiaScripts computer program
- Research protocol

What is a Script?
- A sequence of sentences that a person typically speaks in routine communication situations
- Examples
  - Ordering pizza over the phone
  - Making a doctor’s appointment
  - Job interview

Background
- Scripts guide and facilitate identification of participants and actions involved in social situations
- Script knowledge includes understanding, remembering and recalling the temporal organization of events in routine activities
- Research indicates that script knowledge is not seriously compromised by aphasia, at least when the language deficit is mild to moderate thus making aphasic individuals candidates for script training (Armus et al, 1989; Lojeck-Osiejuk, 1996).

Script Training Rationale
- Instance Theory of Automatization
  - Automatic processing is fast, effortless, autonomous, stereotypic and unavailable to conscious awareness
  - Automaticity of skills achieved by retrieving memories of complete, context-bound, skilled performance
  - These memories are formed with repeated exposures to a consistent task (practice)

Instance Theory of Automatization
- Each instance of exposure contributes to the acquisition of a domain specific knowledge base when stimuli are mapped consistently on to the same responses
- Retrieval occurs automatically when the same stimuli from the practice environment are present
- Practice increases amount and speed of retrieval

(Logan, 1988)
Implications for Script Training

- Focus on complete meaningful segments rather than single words
- Use discourse relevant to daily life
- Practice with a communication partner
- Practice consistently
- Practice intensively

Cued Massed Practice

- Provides maximum support to facilitate accurate production; support is gradually decreased
- Intensive repetitive practice accomplishes automatization of script production
- Whole task, massed practice and drill can be accomplished by using repeated oral reading
- Cost effectiveness can be achieved with use of computers or other devices

Creating Scripts

- Considerations
  - Identifying patient’s communication needs and interests
  - Script topics
  - Type of script (dialogue or monologue)
  - Number and length of conversational turns
  - Grammatical complexity
  - Vocabulary selection

Activities Checklist for Script Identification: Examples

- Visit exhibitions, museums, libraries
- Visit friends or relatives
- Go to the movies, theaters, concerts, plays
- Go shopping
- Go to restaurants
- Play with or help children or grandchildren
- Visit friends or relatives
- Make appointments over the phone
- Talk on the phone to friends and family
- Order over the phone
- Make appointments over the phone
- Talk to sales people in stores
- Discuss finances with banker, accountant, lawyer
- Ask for directions
- Discuss your health with your doctor
- Discuss hobbies or interests
- Seeking or providing information

Personal Scripts and Stories

- We all like to talk about ourselves! Giving the PWA an opportunity to tell personal stories can be a very powerful experience.
- Examples of stories about one’s life:
  - Illness/stroke story
  - Big events (weddings, birth of children)
  - Work, career, or school history

Examples of conversation exchanges:

- Conversational starters
- Telling jokes
- Giving or requesting directions
- Making an appointment
- Reminiscing or telling personal stories
- Conversations with family
- Discussing hobbies or interests
- Seeking or providing information
Examples of topics used in RIC’s AphasiaScripts research studies:
- Ordering pizza over the phone
- Ordering breakfast or dinner in a restaurant
- Asking questions – conversational starters; getting to know you; children/siblings/grandchildren about their day; feelings
- Telling about a favorite vacation or trip
- Giving a testimonial in church
- Shopping – talking with sales clerk
- Telling a joke
- Talking to a doctor about allergies
- Making a doctor’s appointment over the phone
- Asking someone on a date
- Telling a favorite story about a pet
- Describing an interest like Fantasy Football
- Telling about aphasia and how it affects the person

Types of Scripts
- Monologue
- Dialogue with person with aphasia as initiator
- Dialogue with person with aphasia as responder

Monologue
- Welcome lords, ladies, gentlemen, and honored guests.
- My name is Jim.
- I had a stroke eight years ago.
- And like many of you, I have aphasia.
- Living with aphasia can be a challenge.
- But stop, look around, we are in this together.
- I may have trouble finding the words I want to say.
- But I still have my sense of humor.
- That reminds me of a joke.
- Before you criticize someone, walk a mile in their shoes.
- That way, when you criticize them,
- You’re a mile away and you have their shoes!
- Thank you and enjoy the wonderful day ahead.

Dialogue: PWA Initiator
B. Nice to meet you, Gina. Are you from New York originally?
Gina: Oh no, I moved here from Boston. I transferred jobs.
B: Where do you work?
G: I work at Citicorp in the mortgage loan department.
B: Oh I used to be with Citicorp Investment Bank. I used to do consulting for Merrill Lynch in the credit systems and credit department. So, what are interest rates like these days?
G: Well, we’re waiting to hear what Greenspan is gonna say next.
B: Do you follow the stock market for your line of work?
G: Not for work, but personally I do. I’ve got some money in stocks and the rest in a 401K.
B: What kinds of stocks have you invested in?
G: I’ve invested in some tech, some utilities and also health care. I think I’m well diversified.
B: That’s a good idea. It was nice talking to you. I’ve gotta run to an appointment.
Dialogue: PWA Responder

Waitress: Hi, Welcome to Family Kitchen. Can I get you some coffee, tea or a pop?

Ben: Yes, I'd like coffee with 3 and a half spoons of sugar and a teaspoon of cream.

Waitress: Okay. I'll be right back with the coffee and take your order.

Ben: Thank you very much.

Waitress: Here's your coffee. What would you like to order?

Ben: I'd like to have eggs, sausage, hash browns.

Waitress: Sure. How do you want your eggs? Scrambled, over easy, or sunny-side up?

Ben: Tell me them again?

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Script Themes in Monologues

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<th>Topics</th>
<th># of monologues</th>
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<td>• Story of my stroke</td>
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</tr>
<tr>
<td>• Pre-stroke story</td>
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<tr>
<td>• Retelling an impersonal story or event</td>
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<tr>
<td>Prayers, testimonials, speeches and lectures</td>
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<tr>
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<td>Making plans</td>
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Script Themes in Dialogues

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<tr>
<td>Seeking or providing information</td>
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<tr>
<td>• About strangers</td>
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<tr>
<td>• About family</td>
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<td>3</td>
<td>4</td>
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<tr>
<td>• From salespeople</td>
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<td>3</td>
<td>5</td>
</tr>
<tr>
<td>• Asking/Answering Questions</td>
<td>2</td>
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</tr>
<tr>
<td>Outside interests</td>
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<tr>
<td>Phoning</td>
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<tr>
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<tr>
<td>• Pre-stroke</td>
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<tr>
<td>• Retelling an impersonal story or event</td>
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<td>Making plans</td>
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<td>32</td>
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Number and Length of Conversational Turns

- Severity of production deficits helps determine length of each turn
- Comprehension deficits help determine number of turns (total length of conversation)
- Keep the communication partner’s lines as short as possible.

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Grammatical Complexity

- Measured by the number of morphemes
- Definition of morpheme:
  - Smallest language unit that carries a semantic interpretation; a combination of sounds that carry meaning.
- Increasing number of morphemes increases grammatical complexity

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Morpheme Count: Examples

- Jump = 1 morpheme
- Jumps, jumped, jumping = 2 morphemes
- Cake = 1 morpheme
- Cakes, cheesecake = 2 morphemes
- Happy = 1 morpheme
- Unhappy, happier = 2 morphemes
- Unhappier = 3 morphemes

Remember that irregular past tense verbs count as two morphemes, just like regular past tense verbs.
### Grammatical Complexity
- Include a variety of different grammatical structures so that the script represents real-life conversation
  - Avoid using the present progressive “is + ing” for every sentence.
- Use syntax that the PWA would typically produce in conversations rather than perfectly correct grammatical sentences.
  - Consider using phrases and sentence fragments, rather than complete sentences.

### Vocabulary Selection
- High interest to the patient
- Potential frequency of use by patient
- Word length and phonemic complexity
- High vs. low frequency
- Concrete vs. abstract
- Noun, verb, modifier count

### Writing the Script
- Clinician and aphasic person collaborate
  - Draft of script is written
  - Reviewed by patient and others selected by the patient
  - Script is edited; may take several review cycles before patient provides final approval

### Analyzing Patient Progress
- Requires analysis of:
  - Target script
  - Baseline pre-treatment performance
  - Post-treatment performance
- Recommend audio recording of baseline and post-treatment performance

### Measures
- Percent script related words
- Rate of production of script related words
- Numbers of nouns, verbs and modifiers
- Number / % of morphemes

### Script training - evidence
- Youmans, G., Youmans, S.R., Hancock, A.B. Script training treatment for adults with apraxia of speech, AJSLP, in press.
Computerizing Script Training

- Used technology from The Center for Spoken Language Research (CSLR) at the University of Colorado
- Developed animated computer characters that synthesize accurate visible speech, contextually appropriate facial expressions, eye movements, and head, hand, and body movements
- Applied to profoundly deaf children, autism spectrum disorder, and children with reading problems

Investigators

- Rehabilitation Institute of Chicago
  - Leora R. Cherney, PhD, CCC-SLP, BC-NCD
  - Anita S. Halper, MA, CCC-SLP, BC-NCD
  - Edie Babbitt, MEd, CCC-SLP
  - Rosalind Hurwitz, MA, CCC-SLP
  - Jaime Lee, MA, CCC-SLP
- Center for Spoken Language Research
  - Ron Cole, PhD
  - Sarel Van Vuuren, PhD
  - Nattawut Ngampatipatpong, MS
- Consultant
  - Audrey L. Holland, PhD, CCC-SLP, BC-NCD

AphasiaScripts

- Computer program providing practice in conversational script training
  - Uses an animated agent with visible speech
  - Allows repeated practice of an individualized conversational script

Training Sequence

- Listening/reading whole conversation
- Single sentence practice
  - Self-monitoring
  - Individual word practice
- Conversation practice
  - Removing cues (face, voice, written words)

AphasiaScripts

- Sentence and conversation practice involves reading the script aloud with the following cues:
  - Visual verbal - words are highlighted on the screen
  - Visual motor – correct articulatory movements are seen on an animated agent
  - Auditory - words are heard
- Conversation practice - cues are removed in a step-by-step process in a fixed order
Whole Conversation

Pizza Man: Hello, can I help you?
You: I want to order a large pizza.
Pizza Man: What size would you like?
You: Pepperoni and extra cheese.
Pizza Man: What's your address?
You: 4945 East Corinna Court.
Pizza Man: Cross streets?
You: Swan and Fox Drive.
Pizza Man: What's your phone number?
You: 243-2931.
You: How much will it cost?
Pizza Man: Fourteen dollars and thirty-two cents.
You: How long will it take?
Pizza Man: It'll be there in half an hour.
You: Thank you.

Sentence Practice

Rare.

Thank you.

Conversation Practice

Readie: Hi, how are you today? Would you like a drink?
You: Yes, Decaf coffee, please.
Readie: Are you ready to order?
You: Yes, I'll try the hamburger.
Readie: How would you like it?
You: Rare.
Readie: Do you want baked or fried mashed potatoes?
You: Mashed potatoes.
Readie: That's the hamburger plate. You: Yes, it's ordered.
Readie: What would you like?
You: Do you have lemonade or?
Readie: No, and orange juice.
You: Okay, then make it tall.
Readie: Some, folding that at the end of your meal.
You: Thank you, Readie.
Tracking Compliance

- Subject keeps paper/pencil log
- Computer tracks every key stroke
- Computer stores recorded sentences (only last sentence)
- Summary data on computer reviewed each week and compared to paper/pencil log

Keyboard Use

- Option of either mouse or keyboard available
- Keyboard
  - Spacebar moves program to next step or to select options
  - Any other key serves as an enter key
- Automatic vs. manual

Authoring

- Each script recorded
  - Select number of lines
  - Select order of speakers – can be reversed in the middle of the script
  - Rate of recording individualized for subject

Research Protocol

- Three scripts are developed for each subject
- Each script is practiced for three weeks
- Scripts are practiced daily at home for at least 30-minutes on a loaned laptop
- Once-weekly sessions with SLP to check status and ensure compliance
  - First and last scripts are transcribed and coded according to the previously described procedures
Script Training Sequence by Week

1. Needs assessment: identification of potential script scenarios & prioritization
2. Develop three different short scripts or one long script divided into three parts
4. Computerization of script Baseline measures of script performance & other probes

5 - 7 Home Computer Practice - Script 1 Weekly measures of script performance & other probes
8-10 Home Computer Practice - Script 2 Weekly measures of script performance & other probes
11 -13 Home Computer Practice -Script 3 Weekly measures of script performance & other probes

Subject Inclusion Criteria

- Moderate or mild aphasia after left-hemisphere stroke
  - Type and severity of aphasia determined by performance on the Western Aphasia Battery
- At least six months post stroke.
- Right hand-dominant, with no history of other premorbid neurological or psychiatric disorders.
- At least eighth grade and literate in English prior to stroke

Outcome Measures

- ASHA Quality of Communication Life Scale
- Western Aphasia Battery
- Burden of Stroke Scale
- Language Sample: Picture Description and Story Retelling
- Boston Naming Test
- Exit Interview

Communication Confidence Rating Scale

1. How confident are you about your ability to talk with people?

<table>
<thead>
<tr>
<th>Score</th>
<th>Not Confident</th>
<th>Moderately Confident</th>
<th>Very Confident</th>
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2. How confident are you about your ability to stay in touch with family and friends?

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Multiple Baseline: Language Probes

- Accuracy and speaking rate on:
  - Script currently being trained
  - Untrained scripts (specific to the individual)
  - Untrained control script (used for all subjects)
  - Picture description

- 30% of all probes rescored for point-to-point inter-rater reliability

Summary: Exit Interview Themes

- Increased verbal communication
- Generalization to other modalities and situations
- Improvements noticed by others
- Increased confidence
- Satisfaction with program

Conclusions

- Conversational script training resulted in improved production of the practiced scripts
- Reports from patients and family indicated improved communication skills in other situations
- Computer script training using virtual therapist software may be cost-effective means of delivering therapy
- Analysis of data from a larger sample of participants is underway

AphasiaScripts

- Available in March 2011 from: www.ric.org/aphasia

Email: aphasiascripts@ric.org

Talking Photo Album


Temporal window hypothesis: Rapid decay and/or slow retrieval of linguistic information prevent the agrammatic speaker from holding sentence elements simultaneously in working memory, as would be necessary to integrate them into a larger structure.
SentenceShaper: A processing prosthesis for the performance limitations of aphasia
- Supports language production
  - Users record words or phrases in their own voice
  - Recorded utterances are linked to visual icons (shapes)
  - Users click on icon to replay the recorded segment, or drag icons across computer screen and order them into larger units such as sentences and narratives.

SentenceShaper

Website:
http://www.sentenceshaper.com/

VAST – Video assisted speech technology
Speak in Motion
http://www.speakinmotion.com/

E-Mails
- Templates
  - Copying
  - Cut and paste
Hi ______________!  
Greetings____________.  
Dear______________,  
Hello______________.

Hope all is well with you.  
It’s been a long time!  
How are you?  
What’s new with you?  
Did you see that football game?  
What have you been up to?  

I’ve been busy with  
working out on the treadmill.  
working out at the gym  
speech therapy  
golf  
the grandkids

I went to a great restaurant last night.  It was a place called__________  
with__________ food.

Jenny and ____________ have been spending time with the kids.  
have been relaxing.  
want out to eat.  
saw a great movie.

I am looking forward to___________  
seeing you soon.  
going to Florida.  
playing golf.  
seeing the kids.  
this weekend.  
the Bears game

Would you like to get together soon?  
Next time you are in Chicago, give me a call!

Hope all is well.  
I would love to hear from you.  
Hope to talk to you soon.

Love, John


Aims: The study involved the development of a video-based script training programme. The objective was to show the positive effects and usefulness of the programme.

Methods & Procedures: The study is a case series consisting of a pre-test, 10 days of computer-based therapy with 3 hours of daily training, and two follow-up evaluations at 4 weeks and 6 months respectively. The material included 50 conversational scripts that were presented in video scenes filmed at original locations. The baseline and post-treatment scripts were audio taped, transcribed, and compared with the target scripts on the point scale of the subtest “classification of sentences” of the Aachener Aphasia Test (AAT). Additionally, language skills were tested with the AAT and various questionnaires were filled out together with the participants and their partners to evaluate the effects of the training in the patients’ everyday lives. Five participants with chronic aphasia took part in the study. All were German speakers aged 45 and upwards. They exhibited a variety of types and degrees of severity of aphasia. Word-finding difficulties accounted for a significant part of their aphasia.

Outcomes & Results: The quality and quantity of production of script-related words improved in every patient. Three positive themes were identified from the questionnaires and interviews: increased verbal communication skills, improvement in communication skills evident in various everyday situations, and increased confidence.

Conclusions: Video-based script training was found to be an effective treatment for chronic aphasia.