

Clinicians are often faced with the challenge of characterizing the communicative functionality of clients with aphasia (Elman & Bernstein-Ellis, 1995; Simmons-Mackie, Threats, & Kagan, 2005; Baylor, Burns, Eadie, Britton, & Yorkston, 2011). This challenge is often greater when a client has mild aphasia (e.g., Armstrong, Fox, & Wilkinson, 2012). Performance on standardized tests may only partially predict a client's level of functional preservation or the activity limitations and participation restrictions that he or she may be experiencing (Simmons-Mackie & Kagan, 2007). The inability of standardized tests to predict a client's functional abilities is all the more apparent when a client's formal test scores are in the normal range yet the client reports persistent difficulties with his or her communicative functionality.

Discourse analysis has been proposed as one way to characterize a client's communicative functionality. For example, Nicholas & Brookshire (1993) cite the importance of measures of informativeness and efficiency for assessment of the discourse productions of speakers with aphasia. Armstrong et al. (2012) highlight the value of a discourse analysis focused on client-reported functional difficulties. Olness, Gyger, and Thomas (2012) and Olness and Ulatowska (2011) propose a framework for analyzing narrative functionality, motivated by the ubiquity of personal stories in everyday life and the important intrapersonal and interpersonal functions that they fill.

The current discourse-based study presents a case history of a Ph.D.-educated mechanical engineer with conduction aphasia (C-APH01). His most recent standardized test scores were within normal limits, but he reported persistent restrictions in his social and professional interactions. Narrative analysis frameworks designed to reflect narrative functionality were used: analysis of narrative storyline and background functions (Longacre, 1989, 1996); analysis of the referential and evaluative (prominence-adding) functions in narratives (Labov, 1972, 1997; Olness et al., 2012); and analysis of efficiency of transmission of narrative information (Nicholas & Brookshire, 1993).

Method

Participant

C-APH01 (63 years of age, right-handed, English-speaking) was a recently re-married mechanical engineer with a Ph.D. who ran his own consulting business and led an active social life. He was six months post-onset of his most recent stroke: an acute left parieto-occipital and partial temporal stroke in the posterior left middle cerebral artery/posterior watershed distribution, following which he acquired aphasia. (Three earlier strokes, associated with remote subcortical infarcts bilaterally, had not resulted in any previous aphasic signs or symptoms.)

Western Aphasia Battery-Aphasia Quotient (WAB-AQ) scores and subtest scores (Kertesz, 1982) had been obtained at 3 days and 22 days post-onset of stroke. His WAB-AQ profile, his

level of fluency and strong auditory comprehension, and the literal paraphasias, paragrammatisms and *conduits d'approche* in his speech were consistent with a mild-moderate to mild conduction aphasia (Ardila, 2010). At the time of discharge from therapy, 6 months post-onset of stroke, the participant enrolled in the current discourse study. As part of the study, the WAB was re-administered; AQ scores at that time were in the normal range. (See Figure 1.)

At discharge, the client's prognosis for continued functional improvements was judged to be good. However, he voiced concerns regarding persistent activity limitations and participation restriction (cf. Baylor et al., 2011). He described his subjective symptoms: "I have issues with sequencing...my mind [is like] a pipeline...it's like putting different colored balls in a pipe, they come out the end of the pipe, I remember the colors that went into the pipe, but now I have to remember the sequence." He commented that pre-stroke, he conducted business over the phone or in person, but post-stroke he preferred to communicate via e-mail and hesitated to initiate business contacts with unfamiliar clients. He reported reduced conversational participation in social group situations since his stroke, although he maintained an active social life (tennis, dancing, etc.).

Narrative sampling procedure

Ten oral narrative samples were audio recorded and orthographically transcribed, two of which were personal narratives. (See Appendix A.) The personal narratives related two events: flying as a passenger in a small plane during a severe storm and eating dinner with a famous actor who choked during the meal. Discourse responses to prompts for two other personal narratives were not included in the narrative analysis, because the responses represented an expository discourse genre and not a narrative genre (Longacre, 1996).

Analysis

Analyses were selected to represent the primary narrative features that contribute to the overall coherence of a story (Ulatowska & Olness, 2004) and the efficiency of information transmission in narrative. (See Appendix B.)

Forms used to communicate information in the narrative storyline and the narrative background. The backbone of the narrative discourse genre is its temporal-causal storyline. The storyline is supported by narrative background information. The storyline function is expressed as punctiliar, sequential happenings in the text world; action, motion and events (cognitive or otherwise) are expressed with verbs, verb morphology, and adverbials that are redundantly punctiliar in aspect. In contrast, the background function is expressed as non-punctiliar, non-sequential activities and states, often expressed in progressive aspect, often atelic, and sometimes marked with durative adverbs (Longacre, 1989, 1996; Olness, 2006). Analysis consisted of analyzing whether the verbs, verb morphology, and adverbials used by C-APH01 fulfilled or disrupted the storyline and background functions. See Appendix B.

Forms used to fill referential and evaluative functions. Two key functions of any narrative are to convey the ‘*who what, where and when*’ (referential function) and to highlight or add prominence to selected information in the narrative, to express the narrator’s attitudes, opinions, or stance regarding the narrative event (evaluative function). C-APH01’s successes and disruptions in using the forms necessary to achieve these functions were analyzed, following Olness et al. (2012) and Olness, Matteson, & Stewart (2010). See example analysis in Appendix B.

Efficiency of information transmission. Calculated as words per minute (Nicholas & Brookshire, 1993).

Results

Illustrative analysis of one of C-APH’s narratives is found in Appendix B. Literal paraphasias and phonemic conduits d’approche were rarely observed in C-APH01’s narratives. Semantic paraphasias and paragrammatisms were rare, at least for most of the nominals and verbs in his stories. However, mis-worded paraphrases and inaccurate approximations of fixed, automatic expressions were evidenced.

Analysis revealed frequent successful fulfillment of storyline and background functions and referential and evaluative functions. However, these successes were punctuated by disruptions of these same functions, associated with subtle semantic paraphasias and mis-worded paraphrases. The rate of speaking was slow and measured, relative to available speaking rate norms.

Discussion

One of the strengths of case study design is its ability to elucidate important clinical issues and to highlight new areas for exploration (Yin, 2009; Sorin-Peters, 2004). This case illustrates one approach to analysis of narrative functionality that may be particularly useful in cases of very mild, fluent aphasia, and particularly for clients whose work and social life require subtle manipulations of discourse content. This man’s case raises questions regarding how the underlying deficits associated with conduction aphasia (Ardila, 2010) may affect production above the phonemic level (Meyer, Wheeldon, & Krott, 2007; Chafe, 1994), which in turn may impact discourse-level activities and participation. The case also raises questions about appropriate intervention strategies in such cases, which may require an approach based on the communicative functions of grammar (Leech & Svartvik, 1975) rather than on grammatical structure proper, to meet the increasing demand for intervention that has functional impact.

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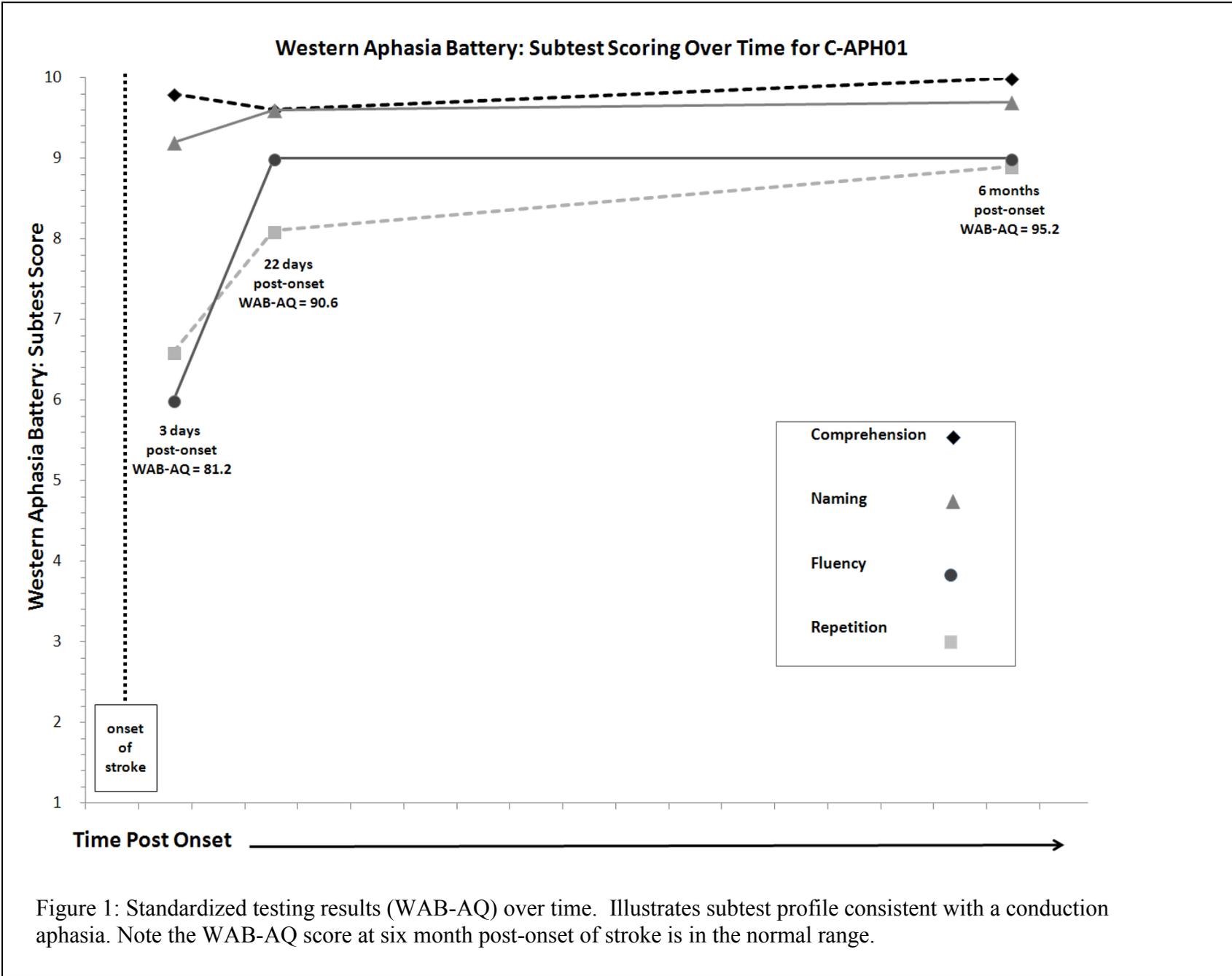


Figure 1: Standardized testing results (WAB-AQ) over time. Illustrates subtest profile consistent with a conduction aphasia. Note the WAB-AQ score at six month post-onset of stroke is in the normal range.

Appendix A Narrative Sampling Procedure

Single Pictures: Participant was asked to tell a story based on the picture, with a “beginning, middle and end.”

1. Road Block (Rockwell, 1949)
2. Sunday Morning (Rockwell, 1959)
3. Teen Rescued from Flood Waters (Wells, 1996)

Picture Sequence: Participant was asked to tell a story based on the picture sequence.

1. Boys and Apples (depicts the story of two boys foiled in their attempt to steal apples from an orchard)
2. Cat in Tree (depicts the story of a man who becomes caught in a tree following his attempt to rescue a cat stranded in the tree)

Story Retell: Narrative was presented to participant both auditorily and in print. Participant was asked to retell each story in his own words.

1. Farmer and Sons (on his deathbed, the owner of a vineyard teaches his sons the value of hard work)
2. Starfish (an old man teaches a boy the value of each life, even those that may seem insignificant)

Story Completion: The first part of a story is told to the participant, up to the point of the narrative climax, and the participant is asked to complete the story.

1. Mrs. Wilson (adapted from one of the practice stories in the Discourse Comprehension Test (Brookshire & Nicholas, 1997))

Personal Narrative:

1. Frightening experience (request for a personal narrative about an event that made the participant “frightened or scared”)
2. Frequently told story (request for a favorite or frequently told personal narrative)

Appendix B
Analysis of Narrative Produced in Response to the
“Road Block” Picture (Rockwell, 1949)

- Prompt: (Interviewer: *Alright, you wanna go ahead and do the story then with a beginning, middle and end? You could say like, ‘once there’ ...*) Yeah, at-at-at, at once?
(Interviewer: *Oh no.*) At one a time (Interviewer: *Once, once, once there was or something or whatever. Yeah.*) Once...once upon a time.¹
- Narrative: [start time: 5:38] *Well, there’s it looks like a furniture van decided² to go down an alley.*³ *Very, very narrow.*³ *Uh, each side⁴ of the truck was almost a foot away⁴ from the walls. And at one point, and they were trying to snake their way⁵ through the alley. A little girl,⁶ *uh, was bringing a, a dog⁶ somewhere nearby, and the dog went⁷ into the alley and stopped⁷ the big truck. And at that one point,⁸ *uh, several of the people⁹ had to come out of the truck and coax the little bulldog away, to get away from the alley. And the little girl was also concerned about this.¹⁰ And eventually, uh, one of the dryer pit, drivers picked¹¹ up the dog, moved him¹² to the end of the alleyway, and the little girl got her way¹³ and took the dog¹⁴ on home.* [end time: 6:46; 141 words]**

- 1: Speech of interviewer and participant overlaps extensively, following the interviewer’s initial prompt for a narrative. The participant’s repeated attempts to produce a formulaic narrative onset (e.g. *once there was* or *once upon a time*) may be a coalescence of fixed, automatic phrases containing *one/once* such as: *at once, all at once, at one time, one time, one at a time, once upon a time*. Most of these do not fill a narrative onset role, thus affecting the narrative onset.
- 2: Use of a cognitive verb (*decided*) with an inanimate argument (*a furniture van*) may disrupt the referential function, relative to the potentially intended ‘*Two men in a furniture van decided to go down an alley*’. However, the verb *decided* still fulfills the storyline function.
- 3: Fulfills referential function (*alley*). Fulfills evaluative function (*very, very narrow*).
- 4: This sentence is an attempt to further emphasize how narrow the alley is (evaluative function). The lexical substitution of the nominal and predicate modifiers *each* and *almost* for *both* and *only about* may disrupt the evaluative function here, relative to the potentially intended ‘*Both sides of the truck were only about a foot away from the walls.*’
- 5: Fulfills background function (*they were trying to snake their way through the alley*). *Snake* re-emphasizes narrowness of alley.
- 6: Fulfills referential function (*little girl, dog*). However, the background function is disrupted. The progressive *-ing* on the verb is associated with the background function, while the punctiliar aspect of the verb itself (*bring*) is associated with a narrative storyline function (Longacre, 1996). Less disruptive to the narrative would consistency of marking of background in both verb and morpheme (e.g., *A little girl was walking a dog...*)

- 7: Fulfills storyline function. The verbs *went* and *stopped* represent punctiliar, sequential happenings, which advance the event line of the narrative (Longacre, 1989; 1996).
- 8: Potentially disrupted storyline function—*at that one point*. Participant’s attempt to produce a punctiliar adverbial phrase may be a coalescence of *at that point* and *at one point*, the former of which was potentially the intended target production.
- 9: Disrupted referential function—*several of the people had to come out of the truck*. Although there are several people in the picture, only two were in the truck, and only one of those came out of the truck to coax the dog.
- 10: Disrupted referential function. Cohesive ties (*also* and *this*) do not tie back to any previous content. Successful background function-- *the little girl was...concerned*
- 11: Fulfills storyline function (*picked up the dog*). However, the conduit d’approche reduces the overall efficiency of the narrative, as defined by Nicholas and Brookshire (1993).
- 12: Fulfills storyline function—*moved him*.
- 13: Disrupted storyline function—*got her way*, which implies winning in an argument or disagreement. May be a coalescence of *got her dog*, *went on her way*, and/or *got on her way*.
- 14: Fulfills storyline function—*took the dog on home*

Summary of narrative functionality of “Road Block” narrative sample

<u>Narrative function</u>	<u>Fulfillment of function</u>	<u>Disruption of function</u>
Story initiation	--	1: <i>at once, at one a time, once upon a time...</i>
Storyline function: Advancing the main temporal-causal sequence of events/actions	2: <i>decided to go down an alley</i> 7: <i>the dog went into the alley and stopped the truck</i> 11: <i>picked up the dog</i> 12: <i>moved him</i> 14: <i>took the dog on home</i>	8: <i>and at that one point</i> 13: <i>got her way</i>
Background function: Establishing actions and states that form the background to the storyline	5: <i>they were trying to snake their way through the alley</i> 10: <i>the little girl was...concerned</i>	6: <i>A little girl was bringing a dog</i>
Referential function	3: <i>alley</i> 6: <i>a little girl</i> 6: <i>a dog</i>	2: <i>a furniture van decided...</i> 9: <i>several of the people had to come out of the truck</i> 10: <i>also concerned about this</i>
Evaluative function: Emphasis of content	3: <i>very, very narrow</i> 5: <i>snake</i> (emphasis of narrowness)	4: <i>each side of the truck was almost a foot away</i>

Efficiency of information transmission

Rate of 117.5 wpm, relative to estimated normal average wpm of 190 wpm (Yorkston & Beukelman, 1981). Efficiency also reduced by one conduit d’approche (note 11).