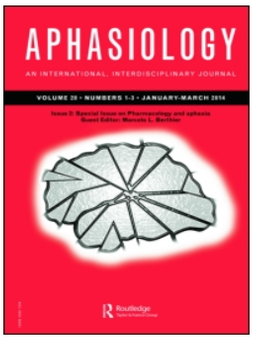

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Relationship between discourse and Western Aphasia Battery performance in African Americans with aphasia

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Background: There is a need for discourse research with African Americans who have aphasia, highlighted by ethnic group differences in stroke prevalence, and potential ethnic group differences in dialect. Identification of ethnic dialect is critical to differentiate communication changes associated with pathology from normal communicative differences associated with ethnicity. Also, preliminary research on adults with aphasia indicates an uncertain relationship between discourse performance and standardised test performance.
Aims: This study was designed to assess: (1) the relationship between performance on a standardised language measure and discourse performance, and (2) the use of ethnic dialect and discourse features, in the narrative productions of African-American adults with moderate aphasia on a variety of discourse tasks.
Methods & Procedures: We investigated the discourse of 12 African Americans with scores in the moderate severity range on the Western Aphasia Battery, Aphasia Quotient (WAB-AQ). Each subject produced a fable retell, a story derived from a picture sequence, two stories derived from single pictures, and a topic-elicited personal narrative of a frightening experience. Analysis consisted of ratings of discourse quality (coherence, reference, and emplotment); a measure of discourse quantity (number of propositions); and a tally of the presence or absence of ethnic dialect and discourse features.
Outcomes & Results: The correlation between WAB-AQ and discourse quality was statistically significant on the picture sequence task and one single-picture task, but not on the other discourse tasks. There was a significant relationship between WAB-AQ and overall quality ratings of coherence, reference, and emplotment. The correlation between WAB-AQ and discourse quantity was not significant for any task, and discourse quality was not significantly correlated with discourse quantity. Ethnic features appeared most often on one single-picture task and the personal narrative. No ethnic dialect features occurred on the fable retell.

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Conclusions: These findings suggest the need to supplement standardised assessment of aphasia with assessment of discourse performance, using less structured discourse tasks, such as a personal narrative task. Less structured discourse tasks may also be optimal for eliciting natural ethnic patterns of communication. The lack of relationship between narrative quantity and narrative quality may not generalise to individuals with aphasia that is severe or mild. This study contributes towards development of a discourse assessment tool for culturally and linguistically diverse populations that may supplement information provided by standardised testing.

Several factors point to the need for discourse research with African Americans who have aphasia. The incidence of stroke, and hence the probability of aphasia, is higher in African Americans than in Caucasians (Kittner, White, Losonczy, Wolf, & Hebel, 1990). Moreover, many African Americans are speakers of a distinct ethnic dialect. While ethnicity does not determine ethnic dialect use, previous research has confirmed its presence in some African Americans with aphasia on certain tasks (Ulatowska & Olness, 2001). Identification of ethnic dialect is critical to differentiate communication change associated with pathology from normal communicative differences associated with ethnicity (Wolfram, 1992), especially when surface features of the ethnic dialect overlap with features of aphasia. Unfortunately, clinical discourse research has traditionally excluded African Americans or, when they are included, has not differentiated subjects according to ethnicity (Ulatowska & Chapman, 1994; Wallace, 1996).

Aphasia assessment for any ethnic group requires procedures that reflect an individual's level of impairment as well as functional communication ability. Impairment measures, such as the Western Aphasia Battery (WAB, Kertesz, 1982) provide profiles of basic language skills. In contrast, discourse measures are thought to be a reflection of daily, functional language (Chapman, Highley, & Thompson, 1998; Holland, 1983; Ulatowska & Chapman, 1994). Because discourse tasks require skills close to those required in daily life, they often display ethnic styles of communication (Ulatowska & Olness, 2001; Ulatowska, Olness, Hill, Roberts, & Keebler, 2000). The relationship between discourse performance and performance on the lexico-syntactic skills addressed by impairment measures is not well understood (Ulatowska & Olness, 2000).

This study assesses the extent to which various discourse tasks provide information that may either duplicate or supplement information gained from use of standardised aphasia tests. The first purpose of this study was to examine the relationship between discourse performance and standardised test performance in African Americans with moderate aphasia. The second purpose was to determine whether ethnic features of dialect and discourse (i.e., reflections of natural, functional language) are present in the discourse of African Americans with moderate aphasia and whether their presence differs among discourse tasks. The standardised test used for this study was the Western Aphasia Battery (WAB, Kertesz, 1982), and the discourse tasks were part of a larger seven-task battery used to study narratives of African Americans and Caucasians with and without aphasia (Wertz et al., 2000).

Research on adults with aphasia indicates that discourse performance and standardised test performance are not significantly related for some discourse tasks, and are significantly related for others. Two studies have examined the relationships between discourse performance and standardised test performance among African Americans with relatively mild aphasia. The first of these (Ulatowska et al., 2001a) found a nonsignificant correlation between performance on a personal narrative of a frightening experience and performance in the Western Aphasia Battery, Aphasia Quotient (WAB-AQ). Neither the

quantity of language in the narrative task (measured in propositions), nor the quality of the narrative (measured on a narrative quality scale) was correlated with WAB-AQ scores. A second study (Ulatowska, 2001b) examined the relationship of WAB-AQ with (1) interpretations of ''mini-narratives'' (in this case, interpretations of proverbs); and (2) the ability to comprehend and express the lesson derived from didactic narratives (in this case, fables). WAB-AQ was found to correlate with the overall generalisation level, accuracy, and completeness of spontaneous interpretations of proverbs, and with the generalisation level of lessons derived from an auditory fable (Ulatowska et al., 2001b). The same study did not find significant correlations between WAB-AQ and: (1) a lesson derived from a picture-sequence fable; or (2) multiple-choice proverb interpretation.

A recent case series study (Ulatowska, Olness, Hill, Samson, & Goins, 2002) suggests the importance of studying the discourse and standardised test performance of individuals with moderate aphasia, in contrast to the previous studies focusing on mild aphasia. Subjects for this study of individuals with moderate aphasia were drawn from the larger comparative study previously cited (Wertz et al., 2000). Individuals with aphasia in the moderate severity range, i.e., with similar aphasia severity as measured by the WAB, were found to vary widely in their ability to produce stories that were coherent, referentially clear, and contained all elements of the story or scenario. Individuals with moderate aphasia appear to be an informative group for study because they have the ability to produce discourse-length responses (unlike individuals with severe aphasia), yet display various patterns of discourse disruption (unlike many individuals with mild aphasia).

This study was designed to answer the following questions:

(1) What is the relationship between performance on a standardised language measure and discourse performance on a variety of discourse tasks in African-American adults with moderate aphasia?
(2) Are ethnic dialect and discourse features present in the discourse of African-American adults with moderate aphasia, and if present, does their appearance differ among discourse tasks?

METHODS

Subjects

Twelve African-American adults with aphasia subsequent to a left-hemisphere stroke participated in the study. Participants were selected from a larger discourse investigation (Wertz et al., 2000), based on standardised test scores in the moderate aphasia severity range on the Western Aphasia Battery, Aphasia Quotient (WAB-AQ) (Kertesz, 1979, 1982). Table 1 provides participant demographics. Socioeconomic status (SES) was rated on a 1–7 scale (adapted from Featherman & Stevens, 1980), where a higher number indicates lower SES. All participants were native speakers of English and were raised in the southern United States. Table 2 displays participants' WAB scores.

Discourse tasks

Five discourse tasks that varied in the type of demand placed on the speaker, amount of information in the stimulus, and stimulus modality (visual or auditory) were presented. All the tasks were designed to elicit narrative discourse, through selection of stimuli that could be expressed as a sequence of events containing some complicating action or

TABLE 1
Demographic and clinical data

	Participant number											
Variables	*01*	*02*	*03*	*04*	*05*	*06*	*07*	*08*	*09*	*10*	*11*	*12*
Sex	Male	Male	Male	Male	Male	Male	Male	Male	Female	Male	Female	Female
Age	46 years	57 years	68 years	52 years	48 years	52 years	55 years	41 years	62 years	41 years	55 years	61 years
Education	8 years	12 years	13 years	18 years	16 years	4 years	13 years	12 years	12 years	16 years	12 years	14 years
Socioeconomic status	7	5	5	2	4	6	6	4	5	4	7	5
Amount of speech-language therapy	12 months	10 months	5 months	12 months	5 months	Unknown	9 months	Unknown	48 months	Unknown	Unknown	7 months
Handedness	Left	Right	Right	Right	Right	Right	Right	Right	Right	Right	Right	Right
Site of lesion	Left temporo-parietal lobe	Left internal capsule	Left CVA	Left fronto-parietal and temporal lobe	Left CVA	Left CVA	Left CVA	Left CVA	Left MCA	Left MCA	Left MVA	Left CVA
Aphasia classification*	Anomic	Anomic	Anomic	Anomic	Anomic	Anomic	Anomic	Broca's	Conduction	Conduction	Anomic	Conduction

* Classification is based on performance on the Western Aphasia Battery (Kertesz, 1982).

TABLE 2
Western Aphasia Battery (WAB) scores

	Participant number											
Subtests	*01*	*02*	*03*	*04*	*05*	*06*	*07*	*08*	*09*	*10*	*11*	*12*
Spontaneous speech	13.0	13.0	13.0	16.0	10.0	12.0	10.0	13.0	14.0	13.0	11.0	14.0
Content	8.0	8.0	8.0	7.0	5.0	7.0	5.0	9.0	9.0	8.0	6.0	9.0
Fluency	5.0	5.0	5.0	9.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0
Comprehension	8.6	9.3	9.4	8.4	9.9	8.9	9.6	9.0	9.8	8.4	7.8	7.1
Repetition	9.9	9.2	8.4	8.8	10.0	8.0	9.4	7.2	4.8	6.2	9.0	3.2
Naming	8.9	8.1	8.2	5.6	8.3	8.6	8.3	7.3	7.8	8.6	6.4	5.6
AQ	80.8	79.1	78.0	77.5	76.3	74.9	74.6	72.9	72.8	72.4	68.4	59.8

situation. The five tasks, ordered by the degree to which each inherently specified the structure and content of the participants' response, from most specification to least, were: retell of a fable (''Farmer and Sons''); ''tell a story'' based on a picture sequence (''Apple Theft''); ''tell a story'' based on a single picture (''Counting Money''); ''tell a story'' based on a single picture (''Easter Morning''); and a topic-elicited personal narrative of a frightening experience. Five of the participants were interviewed by an African-American clinician, and seven were interviewed by a Caucasian clinician.

Analysis

Three measures (see Appendix) were used to rate the quality of participants' discourse: coherence, reference, and emplotment. All three of these dimensions reflect quality of information processing in the narrative and are not necessarily a direct reflection of word- or sentence-level skills. Two of them are basic properties of discourse in general, whereas emplotment is a quality specific to the narrative discourse genre. Coherence is a cognitive-linguistic property of the text, specifying how well the story makes sense as a whole. This core property of narratives differentiates a coherent story from an unrelated sequence of sentences. The coherence rating represented how well information was connected in the stories. Reference signals the elements talked about in the story, such as characters, locations, time, etc. The reference system appears to be more vulnerable than other discourse systems in aphasia and other language disorders (Chapman & Ulatowska, 1989). The reference rating represented how well information elements were unambiguously signalled in the story. Emplotment is the ability to express information about an event in a narrative structural form, including all elements of the story or scenario. The emplotment rating represented how well the information in a story formed a complete story. Each aspect of narrative quality (coherence, reference, and emplotment) was measured by rating on a 5-point (0–4) scale. Thus a total quality score of 12 was possible for each task. Rating systems were used because these fundamental dimensions of narrative quality are not directly related to features of sentential structure, and thus are difficult to associate empirically with any particular linguistic material contained in the discourse (Patry & Nespoulous, 1990).

Discourse quantity for each task was measured in number of propositions (Mross, 1990). This measure represented the quantity of information contained in a production, as a complement to the rating scales, which assessed the quality of the information produced.

The presence or absence of ethnic dialect and discourse features (Mufwene, Rickford, Baily, & Baugh, 1998; Ulatowska & Olness, 2001) on each task was recorded. To identify ethnic dialect features, we focused on the verb system of African-American Vernacular English (AAVE) for three reasons. First, the verb system is one of the more complex and pivotal of the grammatical systems of AAVE (Green, 1998; Wolfram & Fasold, 1974), distinctive from other dialects of American English. Second, the verb carries the temporal and aspectual information that forms the backbone of narratives, and narratives were elicited in this study. Third, morpho-syntactic features of the verb are highly prone to disruption in aphasia. Thus, the verb system was a natural choice of focus, for its complexity, distinctiveness, its importance in narratives, and its ability to reflect aphasic disruptions. Example verb forms from the sample included habitual aspect BE (''My father said, 'Don't *be* playing with those guns'.''), and perfective aspect DONE (''He said, 'It kinda look like she *done* had a stroke'.''). Discourse features of repetition and direct speech were also identified. Repetition included both partial and full

repetitions of previous portions of an utterance, and instances of direct speech were reproductions of the speech produced by characters in a narrative. These features are common in the oral storytelling styles of many African Americans (Mitchel-Kernan, 1972; Ulatowska et al., 2000) and act to highlight information and increase vividness in narratives. Examples are: ''I was laying on the hospital, *can't walk, can't talk, can't move*. . . . I *couldn't walk, talk, nothing*'', and ''They said, 'Oooh, girl, they gon get you tonight, they gon get you'. ''

Six raters, including two African-American clinicians, were trained to discriminate the points on the rating scales. The stories were then rated, and disagreements were resolved by group consensus. For each task, the relationship between the discourse measures (quality and quantity) and WAB-AQ was determined by computing correlations (Spearman and Pearson, respectively). Alpha was adjusted to .01 to control for family-wise error.

Reliability

Interrater reliability of the ratings for coherence, reference, and emplotment was analysed by comparison of the original group ratings with ratings of an individual rater on complete data from six of the twelve subjects. Point-by-point interrater agreement was 90% for the coherence rating, 70% for the reference rating, and 75% for the emplotment rating. The final rating assigned to each response was that of the original six raters, whose disagreements had been resolved by group consensus.

RESULTS

Quality scores are shown in Table 3. A Spearman correlation, adjusted for family-wise error (alpha = .01), between WAB-AQ and discourse quality was statistically significant on the picture sequence, $r_s(10) = .82$, $p < .01$, and single picture ''Easter Morning'', $r_s(10) = .83$, $p < .01$. Correlations between WAB-AQ and discourse quality were non-significant at an alpha level of .01 for the other tasks: fable retell, $r_s(10) = .76$; single picture ''Counting Money'', $r_s(10) = .74$; and personal narrative, $r_s(10) = .15$.

Table 4 shows participants' combined quality ratings—coherence, reference, and emplotment—across the five discourse tasks. The maximum possible score in each cell of this table is 20 (maximum of 4 points per rating, multiplied by 5 different tasks). This score represents the individuals' overall ability to produce quality narratives, since coherence, reference, and emplotment are general qualities of narrative, irrespective of task. Spearman correlations revealed a significant relationship between WAB-AQ and each quality rating: coherence, $r_s(10) = .91$, $p < .01$; reference, $r_s(10) = .79$, $p < .01$; and emplotment, $r_s(10) = .90$, $p < .01$.

Quantity of discourse (number of propositions) is shown in Table 5. Pearson correlations revealed no significant relationship between WAB-AQ and quantity of discourse on any task, with alpha at .01: fable retell, $r(10) = -.21$; picture sequence, $r(10) = .001$; single pictures ''Counting Money'', $r(10) = .11$, and ''Easter Morning'', $r(10) = -.17$; and personal narrative, $r(10) = -.20$. Moreover, a Spearman correlation between participants' discourse quality ratings and their discourse quantity across tasks was not significant, with alpha at .01, $r_s(58) = .30$.

Table 6 shows the presence or absence of ethnic dialect or discourse features across discourse tasks. Ten of the twelve participants displayed at least one ethnic feature on at least one task. Five of these ten were interviewed by an African-American clinician, and five were interviewed by a Caucasian clinician. Presence of ethnic features in subjects'

TABLE 3
Quality scores

	Discourse tasks				
*Participant number**	*Father & Sons (retell)*	*Boys & Apples (picture sequence)*	*Counting Money (single picture)*	*Easter Morning (single picture)*	*Frightening Experience (personal narrative)*
01	10	9	12	12	11
02	7	10	4	7	10
03	11	7	7	9	8
04	8	10	11	9	9
05	3	10	12	11	8
06	5	8	6	6	0
07	7	9	3	9	5
08	5	6	0	7	4
09	5	6	9	10	9
10	4	4	8	4	8
11	6	3	6	3	8
12	3	4	6	5	11
M	6.17	7.17	7.00	7.67	7.58
Range	3–1	3–10	0–12	3–12	0–11
SD	2.55	2.55	3.67	2.81	3.18

Sum of the three quality response scores (Coherence, maximum 4 points; Reference, maximum 4 points; Emplotment, maximum 4 points) for the 12 participants' responses on five discourse tasks.

* Participants are listed in order by decreasing WAB-AQ score.

TABLE 4
Combined quality ratings

	Discourse quality measures		
*Participant number**	*Coherence*	*Reference*	*Emplotment*
01	18	17	19
02	11	11	16
03	13	13	16
04	15	13	15
05	15	15	14
06	8	8	9
07	11	9	13
08	7	6	9
09	12	12	15
10	9	9	10
11	9	9	8
12	10	8	11
M	11.50	10.83	12.92
Range	7–18	6–17	8–19
SD	3.26	3.24	3.48

Sum of each of the discourse quality measures for responses of the 12 participants across five discourse tasks (retell, picture sequence, two single pictures, and personal narrative), with maximum score of 20 points (4 points per measure across 5 tasks).

* Participants are listed in order by decreasing WAB-AQ score.

TABLE 5
Quantity scores

	Discourse tasks				
*Participant number**	*Father & Sons (retell)*	*Boys & Apples (picture sequence)*	*Counting Money (single picture)*	*Easter Morning (single picture)*	*Frightening Experience (personal narrative)*
01	8	10	9	4	5
02	8	15	5	6	13
03	5	5	5	6	6
04	6	10	4	10	29
05	3	7	4	4	4
06	4	5	4	4	0
07	7	9	4	4	13
08	7	4	0	4	27
09	16	26	8	8	19
10	3	6	4	5	6
11	5	5	4	6	6
12	10	11	6	7	19
M	6.83	9.42	4.75	5.67	12.25
Range	3–16	4–26	0–9	4–10	0–29
SD	3.59	6.14	2.26	1.92	9.43

Quantity (number of propositions) in discourse responses of 12 African-American adults with aphasia on five discourse tasks.

* Participants are listed in order by decreasing WAB-AQ score.

TABLE 6
Ethnic dialect and discourse features

	Discourse tasks				
Participant number	*Father & Sons (retell)*	*Boys & Apples (picture sequence)*	*Counting Money (single picture)*	*Easter Morning (single picture)*	*Frightening Experience (personal narrative)*
01	(−)	(−)	(+)	(+)	(+)
02	(−)	(−)	(−)	(+)	(−)
03	(−)	(−)	(−)	(−)	(−)
04	(−)	(−)	(−)	(−)	(+)
05	(−)	(−)	(+)	(+)	(−)
06	(−)	(−)	(−)	(+)	n.r.*
07	(−)	(+)	(−)	(+)	(−)
08	(−)	(+)	n.r.*	(+)	(−)
09	(−)	(−)	(−)	(−)	(+)
10	(−)	(−)	(−)	(−)	(−)
11	(−)	(+)	(−)	(+)	(+)
12	(−)	(+)	(+)	(+)	(+)
Total +s	0	4	3	8	5

Presence (+) or absence (−) of ethnic dialect and discourse features in responses by 12 African-American adults with moderate aphasia on five discourse tasks.

* n.r. = no response.

responses did not differ by ethnicity of the interviewer. Ethnic features appeared most often on one single-picture task (''Easter Morning'') and the personal narrative. No ethnic dialect features occurred for any participant on the fable retell.

DISCUSSION

The current study adds to our knowledge of what appears to be an inconsistent pattern of relationship between performance on language impairment measures and performance on discourse tasks (Ulatowska et al., 2001a, 2001b). Although the findings suggest that overall dimensions of narrative quality (coherence, reference, and emplotment) may be related to performance on the WAB-AQ, this relationship may be task-specific. In particular, the quality of personal narratives does not appear to be related to aphasia severity level as measured by the WAB, at least among these individuals with moderate aphasia. Of the tasks in this discourse battery, the personal narrative most closely reflects functional communication, allowing subjects full latitude in task interpretation, story evaluation, and creativity. Overall, this group of findings suggests that less structured discourse tasks and the WAB-AQ assess different linguistic domains. However, confirmation of these possibilities is beyond the power of correlational analyses. Nevertheless, the absence of significant relationships may suggest supplementing standardised aphasia tests with functional discourse measures in aphasia assessment.

The findings also provide evidence that the more functional and open-ended the discourse task, the more frequent the production of ethnic features of communication. Almost all the participants in this study displayed ethnic dialect or discourse features on one or more discourse tasks, irrespective of the ethnicity of the interviewer. This was most common on one single-picture task (''Easter Morning'') and the personal narrative task and completely absent on the fable retell. The tasks that most frequently elicited ethnic features did not require close replication of a stimulus provided by the experimenter. Subjects incorporated more interpretive material in responses on these tasks, and their personal involvement in creating the response yielded more natural, ethnically marked language. For example, two seemingly identical tasks, i.e., the two single-picture tasks ''Counting Money'' and ''Easter Morning'', differed in their frequency of elicitation of ethnic features. This difference may be accounted for, in part, by differences in the pictures' effectiveness in evoking personal involvement on the part of the responder. ''Counting Money'' depicts a dated scene of adult characters counting their savings in the form of hard currency, while ''Easter Morning'' is a more plausible scenario in personal life, i.e., family conflict over church attendance. In contrast, the task that most closely constrained the content of the subjects' responses and which was least likely to involve personal involvement by the speaker (i.e., fable retell) did not elicit any ethnic features. The fable used for the fable retell task was presented in Standard American English, and subjects rarely if ever incorporated interpretive information in the responses on this task. In summary, it would appear that more functional tasks, such as a personal narrative task, may supplement language impairment measures, both in the cognitive-linguistic skills they require, and in the degree to which they are able to elicit natural ethnic patterns of communication.

Because this article addresses the ways in which discourse testing may complement standardised testing, a logical extension of the analysis would be to examine responses to the WAB Picnic Picture for presence or absence of ethnic features. This task is unlikely to evoke personal involvement on the part of the listener, or to reflect natural language, because subjects are instructed only to tell the examiner what they see in the picture, i.e.,

to describe. Descriptive discourse is less likely than narrative discourse to elicit narrative features (Olness, Ulatowska, Wertz, Thompson, & Auther, 2002).

Another finding with potential clinical implications is the lack of significant relationships between the WAB-AQ and discourse quantity (number of propositions). Thus, severity of aphasia, as indicated by the WAB-AQ, does not seem to predict the number of propositions a person with aphasia will produce on a discourse task, at least for the group of individuals with moderate aphasia considered here. In addition, discourse quality ratings were not significantly related with discourse quantity ratings. One must remember, however, that all the subjects in this small sample had aphasia of moderate severity; interpretation of a lack of relationship between narrative quantity and narrative quality cannot be generalised to individuals with aphasia that is either severe or mild. One might predict that individuals with severe aphasia produce discourse that is both short and relatively poor, while individuals with mild aphasia produce discourse that is relatively longer and higher in quality. Expansion of the aphasia severity range might be predicted to yield a relationship between discourse quality and discourse length.

In summary this study provides performance information on those tasks that may elicit natural language, with ethnic features, and those that may not. It also expands our knowledge of performance profiles on a variety of discourse tasks, such as retell, personal narrative, and narrative elicited with pictures. Thus, it brings us one step closer to development of a discourse assessment tool for culturally and linguistically diverse populations which may serve to supplement information provided by standardised testing.

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APPENDIX
QUALITY RATING SYSTEM

Coherence

4 – All portions of the response are interconnected and clear
3 – Most of the response is connected and clear, with some problems
2 – Some of the elements of the response are connected
1 – The discourse is not interpretable
0 – No response

Reference

4 – All referents and the relationship between them are clear
3 – Some reference errors
2 – Many reference errors
1 – None of the referents, nor their relationship, is interpretable
0 — No response

Emplotment

4 – Full scenario is produced
3 – Story or scenario is produced with some elements missing
2 – Story or scenario is produced with many elements missing
1 – Only brief mention of elements with no story or scenario observable
0 – No response