Global coherence in structured and unstructured discourse types in neurotypical adults

Ruba Selvaraj[1] and Savitha Vadakkanthara Hariharan[1*]

*Correspondence:
savithavh@gmail.com

[1] Department of Audiology and Speech Language Pathology, SRM Medical College Hospital and Research Centre, SRM Institute of Science and Technology, Kattankulathur Campus, Chennai, Tamil Nadu 603203, India

Abstract

Background: Research on global coherence in neurotypical aging has predominantly focused on different methods of elicitation and their impact on age. The use of structured versus unstructured discourse tasks can have varying effects on global coherence. Comparative studies investigating this effect within Tamil language-speaking populations are scarce. This study seeks to address this gap by examining global coherence in structured and unstructured tasks among speakers of Tamil language.

Aim: This study aimed to identify any significant differences in the global coherence of discourse, as measured through structured (picture description) and unstructured (conversation) tasks, in middle-aged and older neurotypical individuals across ages and genders.

Method: Thirty Tamil-speaking individuals participated in the study, which included 15 middle-aged adults (aged 44–59 years) and 15 older adults (aged 60–80 years), with an equal number of males and females. Discourse samples were audio recorded using structured (picture description) and unstructured (conversational discourse) tasks. The picture description task included describing a single picture (of a birthday scene) and a sequential picture stimulus (depicting an argument event). The conversational task consisted of two topics of conversation (family and work) with the investigator. Each discourse task lasted for at least a minute. The recorded samples were transcribed verbatim and analyzed using a 4-point Global Coherence Rating Scale.

Results: Participants exhibited significant differences, with the unstructured discourse task having a significantly higher global coherence rating ($p \leq 0.05$) than both structured discourse tasks. The varying cognitive demands, functional purposes, and contextual factors across various discourse elicitation tasks could be attributed to these differences. No significant differences were observed in the coherence ratings between middle-aged and older adults or between genders.

Conclusion: The method used to elicit discourse and the type of discourse need to be considered when exploring global coherence measures. The current study has important methodological implications for the coherence analysis of the Tamil-speaking population in both structured and unstructured tasks.

Keywords: Global coherence, Aging, Discourse, Structured discourse task, Unstructured discourse task

Introduction

Global coherence is a key aspect of communication that guarantees the overall meaning and organization of a discourse. It refers to preserving thematic unity and creating a link between different ideas or concepts (Polakova et al., 2021; Coelho & Flewellyn, 2003). The concept of global coherence in discourse analysis has been studied extensively and has implications for numerous domains such as language processing, cognitive development, and communication disorders (Babaei et al., 2019; Burke et al., 2023; Ellis et al., 2016; Maddy, 2017; Wright et al., 2013).

As individuals age, there may be a disruption in globally coherent speech. This has been observed in both unstructured and structured discourse tasks. Older adults produce less global coherence in discourse than younger adults. The speaker's and listeners' aptitude to transfer and understand information can be significantly impacted by disruptions in global coherence. It may be more challenging for the speaker to convey their intended meaning and retain their attention on the topic at hand if they produce less globally coherent language. Moreover, the lack of global coherence in discourse makes it difficult for the listener to infer and grasp the intended meaning. These changes in the global coherence of discourse abilities have been noted in both neurocommunication disorders and cognitively healthy aging (Andreetta & Marini, 2014; Dijkstra et al., 2004; Marini et al., 2011; Swaab et al., 2013).

Numerous studies have investigated global coherence in the aging population and its influence on discourse abilities (Glosser & Deser, 1992; Marini et al., 2005; Wright et al., 2014). Research conducted by Marini et al. (2005) studied global coherence abilities in adults aged 20–84 years. The findings showed that the oldest age group (74–84 years) had significantly lower global coherence scores than the younger and middle age groups (20–24, 25–39, and 40–59 years). Further studies have discovered the neural connections of coherence measures, identifying that several cognitive processes contribute to greater global coherent discourse (Azad, 2023). In addition, the effects of various types of discourse tasks on global coherence abilities in older adults have also been studied. Ellis et al. (2016) found that maintaining global coherence can vary based on the demands of discourse tasks, with some tasks requiring greater cognitive loads on older adults and possibly worsening global coherence deficits. Further, studies have indicated that maintaining global coherence in discourse is not determined exclusively by age-related cognitive changes (Wright et al., 2013). Aspects such as language proficiency, visual literacy, working memory capacity, and attentional abilities also play a role in determining the level of global coherence in discourse for both younger and older adults.

To examine global coherence, studies utilizing various types of discourse elicitation tasks have produced different findings (Glosser & Deser, 1992; Marini et al., 2005; Van Leer & Turkstra, 1999; Wright et al., 2014). For illustration, research indicates that recounts and procedural discourse tasks are less impacted by the decline in coherence often associated with aging, due to their task familiarity and predictable nature (Marini et al., 2005; North et al., 1986). On the other hand, other studies have demonstrated that older adults tend to produce less globally coherent discourse than younger adults in personal recounting or narration tasks (Glosser & Deser, 1992). Moreover, studies have shown that while maintaining global coherence in picture description tasks, older people showed higher coherence levels in sequential picture description tasks than in single

description tasks. This is probably because sequential pictures provide a clear structure and path for the narrative, where single descriptions allow individuals to interpret the sequence of events (Capilouto et al., 2005; Duong & Ska, 2001; Wright & Capilouto, 2009; Wright et al., 2013). These divergences in research findings emphasize the need to study global coherence through various discourse tasks to fully understand how it affects aging and discourse production.

Various factors influence global coherence in the aging population. According to Duchan (2013), speakers' knowledge and familiarity with discourse schemas affect their ability to produce a coherent discourse. Other factors, such as cognitive processes and discourse types, influence global coherence abilities (Azad, 2023; Wright et al., 2014). The maintenance of discourse coherence has been linked to cognitive changes that occur with healthy aging (Arbuckle & Gold, 1993; Glosser & Deser, 1992; Rogalski et al., 2010).

The choice of discourse elicitation task can affect the evaluation of global coherence in aging. It is vital to consider both structured and unstructured tasks when studying global coherence in middle and older adults, as different discourse tasks may elicit various coherence levels. Hence, this study aims to compare global coherence measured using structured and unstructured discourse tasks in neurotypical Tamil-speaking adults.

The specific objectives of the study were as follows: (1) to identify whether there were significant differences in global coherence between structured (picture description) and unstructured (conversation) tasks in middle-aged and older neurotypical individuals, (2) to identify whether there were significant differences in global coherence between middle-aged and older individuals across discourse types, and (3) to identify whether there were significant differences in global coherence between genders across discourse types.

Methods

Participants

Thirty participants were divided into two groups: Group A consisted of 15 middle-aged individuals between the ages of 44 and 59 years, and Group B consisted of 15 older adults aged 60 to 80 years. All participants had to meet the inclusion criteria, including being a native Tamil speaker, having at least a fifth-grade education level, normal cognitive functioning, adequate visual acuity, normal hearing sensitivity, and no depression. Participants' Tamil language proficiency was measured according to the Language Experience and Proficiency Questionnaire (Marian et al., 2007), cognitive function was screened using the Montreal Cognitive Assessment (Nasreddine et al., 2005), hearing ability was assessed informally at a distance of 5 ft, visual acuity was determined by screening with the Snellen eye chart test (Sue, 2007), and depression was indicated by their performance on the General Health Questionnaire (Goldberg & Williams, 1988). In addition, participants who had a history of stroke, head injury, or any neurological or neurodegenerative disorder that could impact communication abilities and participants with psychiatric disorders such as depression, anxiety, or post-traumatic stress disorders were excluded.

Sample elicitation

The sample was collected using two distinct discourse tasks: structured and unstructured. The structured task required participants to describe scenes from the single and

sequential picture descriptions of Nicholas and Brookshire (1993). The single picture involved a description of a birthday party, and the sequential picture involved a series of six pictures describing an argument scene. Participants were asked to provide descriptions of these pictures. The unstructured discourse task involved engaging in a conversation with the examiner on two topics (topic I: Family and topic II: Work). Each discourse task lasted a minimum of at least 1 min. All audio samples were obtained in a quiet room environment at the participants' residence.

Global coherence analysis

The discourse samples were audio recorded and transcribed verbatim and then segmented into communication units (C-units). This C-unit segmentation method involves breaking down the samples into independent clauses with their modifiers, which is a commonly used approach in discourse analysis (Fergadiotis & Wright, 2011; Hughes et al., 1997; Loban, 1976). Each C-unit segmentation sample was then analyzed for global coherence using the 4-point Global Coherence Ratings Scale. The mean global coherence score was then computed for each discourse task to assess the overall level of coherence in the samples. An example of a sample analysis using a 4-point Global Coherence Rating Scale is given in Table 1.

Ethical issues

Before the commencement of the study, informed consent was obtained from all potential participants, ensuring they were fully aware of the purpose and procedures as well as their rights as participants. The audio-recorded data from the discourse samples were stored securely and confidentially, only accessible to the researchers involved in the study. The data was stored following the guidelines provided by the university's research ethics committee. The researchers also adhered to ethical guidelines and standards throughout the study.

Statistical analysis

This study used a nonparametric test because the data were not normally distributed after a normality test was conducted. Nonparametric tests, such as the Wilcoxon signed-rank test and Mann–Whitney U-test, were used in the statistical analysis. First,

Table 1 Example of analysis of global coherence using the 4-point Global Coherence Rating Scale (Wright et al., 2014): task-single picture description

Utterances (Tamil language)	Utterances (English translation)	Scores	Reason for score
antha viitula pirantha naal kondaaduraanga	Birthday party is celebrated in that house	4	A statement is directly connected to a stimulus
athu sofakku kiila ukkanthuruku	That is sitting under the sofa	3	An utterance has meaning, although it could be lacking some details (i.e., who is sitting under the sofa)
sonthakaaranga bas miss pannittu letaa varaangannu nenaikuren	Relatives are arriving late; probably, they missed the bus	2	An utterance has extra information that is only tangentially connected to the stimuli
naan chinna vayasula pirantha naal kondaadala	I did not celebrate a birthday when I was young	1	An utterance is not connected to the stimulus

Table 2 Representing inter- and intra-rater reliability for word-by-word agreement, C-unit segmentation, and global coherence

	Word-by-word agreement	C-unit segmentation	Global coherence rating
Inter-judge reliability	97.85%	93.49%	91.66%
Intra-judge reliability	98.23%	95.98%	95.83%
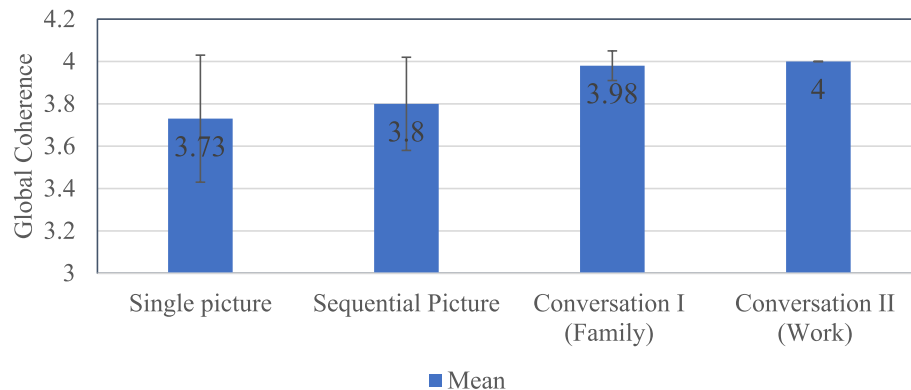
Fig. 1 Mean and SD of global coherence scores of structured and unstructured discourse tasks in middle and older individuals

descriptive analysis was used to examine the fundamental characteristics of the data. The Mann–Whitney U-test was used to compare coherence scores across different age and gender groups. In addition, a Wilcoxon rank-sum test was performed to compare coherence scores among different discourse tasks.

Results

Based on the study data, the total number of C-unit segmentation samples ranged from 291 to 422, and the average number of C-unit segmentations per participant ranged from 10 to 14 across each discourse task.

To ensure reliability, 20% of the total discourse samples ($n=6$) were randomly selected and used for intra- and inter-reliability checks in terms of word accuracy, c-unit segmentation, and global coherence rating. An experienced speech-language pathologist trained to evaluate the data by giving multiple examples and who was blind to the participants and data conducted an inter-rater reliability analysis. Agreements and disagreements were subjected to the following formula: total agreements/[total agreements + total disagreements] × 100. The results are shown in Table 2. Intra- and inter-reliability were found to be good. It ranges from 91.6 to 98.2%. Agreement percentages are comparable with those of previous studies that included coherence measures (Rogalski et al., 2010; Wright et al., 2014).

Participants' mean age and standard deviation (SD) was 50.6 ± 3.22 years for middle age and 68.8 ± 5.28 years for older age. The mean and standard deviation (SD) of global coherence scores of structured and unstructured discourse tasks in middle-aged and older individuals are shown in Fig. 1.

Table 3 Representing Mann–Whitney *U*-test results for global coherence difference between middle and older individuals

Discourse task		Middle age		Older age		*p*-value
		Mean	SD	Mean	SD	
Structured task	Single picture	3.85	0.18	3.62	0.35	0.06
	Sequential picture	3.83	0.16	3.77	0.27	0.77
Unstructured task	Conversation I (family)	4.00	0.00	3.96	0.10	0.53
	Conversation II (work)	4.00	0.00	4.00	0.00	1.00

Table 4 Representing Mann–Whitney *U*-test results for global coherence difference between male and female

Discourse task		Male		Female		*p*-value
		Mean	SD	Mean	SD	
Structured task	Single picture	3.72	0.31	3.74	0.29	0.95
	Sequential picture	3.76	0.26	3.84	0.17	0.60
Unstructured task	Conversation I (family)	3.98	0.07	3.98	0.07	0.92
	Conversation II (work)	4.00	0.00	4.00	0.00	1.00

Comparing the global coherence levels between structured and unstructured discourse tasks for both middle-aged and older participants indicated significant differences ($p \leq 0.05$) in global coherence across structured and unstructured discourse tasks, including single picture description vs. conversation I family ($p = 0.00$), single picture description vs. conversation II work ($p = 0.00$), sequential picture description vs. conversation I family ($p = 0.00$), and sequential picture description vs. conversation II work ($p = 0.00$) among middle-aged and older individuals. Notably, participants exhibited higher performance on unstructured discourse tasks, such as conversational discourse, compared to structured tasks involving picture descriptions.

The second aim of the study was to examine any significant difference in global coherence between younger and older individuals across different discourse types. Results from Mann–Whitney tests are displayed in Table 3, indicating that there are no significant differences in global coherence between the younger and older groups on various tasks, including single picture description ($p = 0.06$), sequential picture description ($p = 0.77$), conversation I family ($p = 0.53$), and conversation II work ($p = 1.00$).

The third aim of the study was to investigate any significant differences in global coherence between males and females across different tasks. The results from Mann–Whitney tests presented in Table 4 indicate that there are no significant differences in global coherence between males and females across discourse tasks, including single picture description ($p = 0.95$), sequential picture description ($p = 0.60$), conversation I family ($p = 0.92$), and conversation II work ($p = 1.00$).

Global coherence errors

The sample revealed four types of coherence errors, aligning with the classifications established by Marini et al. (2005). These errors received a coherence score of 1 to 3 on

the 4-point Global Coherence Rating Scale (Wright et al., 2014). Details regarding the linguistic aspects of the audio samples are provided below:

a) *Tangential information*: This error occurs when the speaker includes off-topic or irrelevant details that diverge from the main topic or stimulus. Including tangential information disrupts the overall coherence because it can confuse the listener or reader about the central message.

b) *Conceptually incongruent utterances*: These are statements or phrases that do not conceptually align with the preceding discourse. They create confusion because the ideas expressed are not logically connected or relevant to the current topic or stimulus.

c) *Propositional repetitions*: This coherence error involves unnecessarily repeating the same idea or proposition within a discourse. Instead of advancing the conversation, it stalls the progression of ideas, which can be perceived as a lack of fluency or an inability to introduce new, pertinent information.

d) *Fillers*: Fillers are words or sounds that people use to fill pauses during speech, often without adding any meaningful content. Examples include "uh," "um," or "so." Frequent use of fillers can disrupt communication and suggest a lack of preparation or uncertainty about the topic.

Each of these errors, when present in discourse, leads to a breach in coherence, making it difficult for the listener to follow along and grasp the overarching message or point of the conversation or picture description.

Discussion

Based on the results of the study, it can be inferred that unstructured discourse tasks, such as conversational tasks, yield higher levels of global coherence in middle-aged and older neurotypical individuals. This could be because conversational tasks allow for more flexibility and a natural flow of conversation, which may make it easier for participants to maintain global coherence (Doyle et al., 1995; Kim et al., 2017). On the other hand, structured tasks involving picture descriptions may require more cognitive demand, which could explain the lower levels of global coherence observed in this study (Marini et al., 2005; Wright et al., 2014). Earlier studies have also renowned disparities in discourse production based on the type of discourse task, which is consistent with our findings (Doyle et al., 1995; Glosser & Deser, 1992; Kim et al., 2017; Marini et al., 2005; Van Leer & Turkstra, 1999; Wright et al., 2014). Furthermore, picture description tasks require higher involvement of short-term memory compared to conversational tasks, whereas conversational tasks require higher involvement of long-term memory than picture description (Kim et al., 2017; Marini et al., 2005; Rogalski et al., 2010; Wright et al., 2014). This suggests that the cognitive demands of various discourse tasks can affect discourse coherence.

One more possible explanation for conversational discourse tasks being better than picture description tasks is that conversational discourse tasks necessitate both referential (expressing factorial information) and evaluative language (expressing opinions and reactions), whereas picture description involves only referential language (Labov,

1972; Olness et al., 2010). This combination of language types permits a richer and more meaningful information discussion. Moreover, conversational discourse tasks happen within an interpersonal framework and aid interpersonal determination, which might enhance motivation and engagement for participants. Additionally, conversational discourse tasks deliver a more natural and dynamic setting for discourse production compared to structured discourse tasks like picture description (Eisenbeiss, 2010; Mac-Donald, 2013; Nakahama et al., 2001; Tanenhaus & Brown-Schmidt, 2008). The observed challenges in maintaining coherence during picture description tasks could be attributed to greater interpretative demands and the absence of sequential cues in contrast with the conversational discourse tasks that inherently encourage a richer and more coherent structure. These factors, along with the occasion for interactive and spontaneous communication, may contribute to the superiority of conversational discourse tasks. Another possible factor that could contribute to the differences between the conversational and picture description tasks is the varying contextual elements, such as task familiarity and the mode of stimulus presentation (Doyle et al., 1995). In summary, the study found that participants performed better on unstructured discourse tasks compared to structured tasks. This difference can be attributed to various factors such as cognitive demands, language use, setting, familiarity, and personal relevance of the discourse task.

Interestingly, this study found no significant differences in global coherence between younger and older individuals across different discourse types. This finding lines up with the Indian study by Maria et al. (2021), which revealed no substantial effects of age on discourse coherence, signifying that aging may not inherently diminish discourse coherence in neurotypical individuals. Nevertheless, these findings stand in disparity with other studies (Marini et al., 2005; Wright et al., 2014), which supported age-related declines in discourse coherence. A study by Wright et al. (2014) classified the age group as young adults (20–39 years) and older adults (70–87 years). In another study, Marini et al. (2005) divided the participants' age group into five groups: very young adults (20–24 years), young adults (25–39 years), middle-aged adults (40–59 years), young elderly (60–74 years), and old elderly (75–84 years). This divergence was attributable to various contributing factors in different studies. Firstly, the age brackets classified as "younger" and "older" in these studies differ. Henceforth, this discrepancy reflects demographic differences rather than distinct outcomes. Secondly, differences could occur from the varying methodologies employed in these studies, such as research design, discourse types used, and rating protocols for coherence, which could play a part in these conflicting results. Finally, other studies investigated global coherence using Western languages, and Tamil, in a way, is unique from Western languages. The Tamil language has complex and rich linguistic structures (Sarveswaran & Butt, 2020), and studies indicate that microlinguistic structure contributions influence global coherence (Hazamy & Obermeyer, 2020). This language variation among studies also contributes to the different findings. The above methodological differences may contribute to discrepancies among studies.

This study's findings reveal no significant difference in global coherence between genders, comparable to conclusions drawn by Wright et al. (2013). These consistent findings suggest that global coherence in discourse may not be influenced by gender, thus highlighting the robustness of this aspect of communication across various demographic groups. Future research should prioritize the evaluation of the linguistic, cognitive, and

neural correlates of global coherence in discourse, particularly in clinical populations such as those with right hemisphere damage, aphasia, traumatic brain injury, and Alzheimer's disease.

Furthermore, methodological factors such as participants' visual literacy may affect performance in discourse tasks that involve picture descriptions. Individuals with experience in fields that necessitate extensive visual analysis or communication skills, for instance, illustrators, painters, graphic designers, art teachers, critics, advertisers, journalists, and visual literacy researchers, may possess enhanced visual literacy skills for tasks related to picture description or visual interpretation compared to those in professions with less emphasis on visual skills (Burmark, 2002). This proficiency could influence the ability to maintain coherence in picture description tasks. It should be noted that none of the participants in this study had such professional experience demanding extensive visual analysis. However, future research designs could account for participants' professional backgrounds, potentially controlling for visual literacy or incorporating its assessment into the study's methodology.

The outcome of this study has a crucial role in the advancement of global coherence measurement methodologies. The challenges of the scarcity of up-to-date tools emphasize the need for ongoing scholarly engagement in developing reliable and culturally nuanced metrics. Measuring global coherence in various discourse tasks has been proven to be a valid and reliable method (Wright et al., 2013). The current study incorporates pertinent factors of analyzing global coherence into its study design and adds to the body of knowledge about Tamil-speaking populations and addresses recent studies' calls for methodological improvement.

Conclusion

The present study reveals critical insights into the impact of discourse task structure on global coherence. The findings indicate that unstructured discourse tasks exhibit greater global coherence, signifying their inherent advantage due to cognitive demand and contextual factors. Additionally, the study found no significant impact of age or gender on global coherence, suggesting that certain aspects of discourse coherence may be consistently present across diverse demographic groups. The elicitation method and the type of discourse analyzed emerge as pivotal factors when assessing global coherence measures. These findings have important implications for future linguistic research, particularly in the methodological design of discourse tasks for analyzing coherence in Tamil-speaking populations during both structured and unstructured tasks. Future research should investigate global coherence across larger and more diverse demographic samples to confirm these findings. It is also essential to incorporate assessments of visual literacy into the research design to examine its influence on discourse analysis. Investigating the cognitive, linguistic, and neural underpinnings of global coherence, especially in clinical populations, will further help to understand the mechanism involved in coherent discourse production.

Abbreviations

C-units   Communication units
SD   Standard deviation

References

Andreetta, S., & Marini, A. (2014). Narrative assessment in patients with communicative disorders. *Travaux neuchâtelois de linguistique, 60*, 69–84. https://doi.org/10.26034/tranel.2014.3033

Arbuckle, T. Y., & Gold, D. P. (1993). Axging, inhibition, and verbosity. *Journal of Gerontology, 48*(5), P225–P232. https://doi.org/10.1093/geronj/48.5.P225

Azad, O. (2023). Investigating the relationship between local and global coherence and cognitive processes in Persian-speaking elderly population. *Practice in Clinical Psychology, 11*(1), 57–68. http://jpcp.uswr.ac.ir/article-1-849-en.html.

Babaei, Z., Ghayoumi-Anaraki, Z., & Mahmoodi-Bakhtiari, B. (2019). Discourse in aging: Narrative and persuasive. *Dementia & Neuropsychologia, 13*, 444–449. https://doi.org/10.1590/1980-57642018dn13-040012

Burke, E., Gunstad, J., & Hamrick, P. (2023). Comparing global and local semantic coherence of spontaneous speech in persons with Alzheimer's disease and healthy controls. *Applied Corpus Linguistics*, 100064. https://doi.org/10.1016/j.acorp.2023.100064

Burmark, L. (2002). *Visual Literacy: Learn to See, See to Learn*. Association for Supervision and Curriculum Development, 1703 N. Beauregard St., Alexandria, VA 22311–1714 (ASCD stock no. 101226: member price $18.95, nonmember price $22.95).

Capilouto, G. J., Wright, H. H., & Wagovich, S. A. (2005). CIU and main event analyses of the structured discourse of older and younger adults. *Journal of Communication Disorders, 38*, 431–444. https://doi.org/10.1016/j.jcomdis.2005.03.005

Coelho, C., & Flewellyn, L. (2003). Longitudinal assessment of coherence in an adult with fluent aphasia: A follow-up study. *Aphasiology, 17*(2), 173–182. https://doi.org/10.1080/729255216

Dijkstra, K., Bourgeois, M. S., Allen, R. S., & Burgio, L. D. (2004). Conversational coherence: Discourse analysis of older adults with and without dementia. *Journal of Neurolinguistics, 17*(4), 263–283. https://doi.org/10.1016/S0911-6044(03)00048-4

Doyle, P. J., Goda, A. J., & Spencer, K. A. (1995). The communicative informativeness and efficiency of connected discourse by adults with aphasia under structured and conversational sampling conditions. *American Journal of Speech-Language Pathology, 4*(4), 130–134. https://doi.org/10.1044/1058-0360.0404.130

Duchan, J. (2013). Approaches to the study of discourse in the social sciences. In *Discourse analysis and applications* (pp. 1–14). Psychology Press.

Duong, A., & Ska, B. (2001). Production of narratives: Picture sequence facilitates organizational but not conceptual processing in less educated subjects. *Brain and Language, 45*(121), 124. https://doi.org/10.1016/S0278-2626(01)80047-6

Eisenbeiss, S. (2010). Production methods in language acquisition research. *Experimental methods in language acquisition research*, 11–34.

Ellis, C., Henderson, A., Wright, H. H., & Rogalski, Y. (2016). Global coherence during discourse production in adults: A review of the literature. *International Journal of Language & Communication Disorders, 51*(4), 359–367. https://doi.org/10.1111/1460-6984.12213

Fergadiotis, G., & Wright, H. H. (2011). Lexical diversity for adults with and without aphasia across discourse elicitation tasks. *Aphasiology, 25*(11), 1414–1430. https://doi.org/10.1080/02687038.2011.603898

Glosser, G., & Deser, T. (1992). A comparison of changes in macrolinguistic and microlinguistic aspects of discourse production in normal aging. *Journal of Gerontology, 47*(4), P266–P272. https://doi.org/10.1093/geronj/47.4.P266

Goldberg, D. P., & Williams, P. (1988). *A user's guide to the General Health Questionnaire*.

Hazamy, A. A., & Obermeyer, J. (2020). Evaluating informative content and global coherence in fluent and non-fluent aphasia. *International Journal of Language & Communication Disorders, 55*(1), 110–120. https://doi.org/10.1111/1460-6984.12507

Hughes, D. L., McGillivray, L., & Schmidek, M. (1997). *Guide to narrative language: Procedures for assessment*.

Kim, S., D'Haro, L. F., Banchs, R. E., Williams, J. D., & Henderson, M. (2017). The fourth dialog state tracking challenge. *Dialogues with Social Robots: Enablements, Analyses, and Evaluation*, 435–449.

Labov, W. (1972). Language in the inner city: Studies in the Black English vernacular. University of Pennsylvania Press.

Loban, W. (1976). Language development: Kindergarten through Grade Twelve. NCTE Committee on Research Report No. 18.

MacDonald, M. C. (2013). How language production shapes language form and comprehension. *Frontiers in Psychology, 4*, 226. https://doi.org/10.3389/fpsyg.2013.00226

Maddy, K. M. (2017). *The relationship between selective attention and global coherence in narrative discourse following right hemisphere stroke.*

Maria, J., Baskar, K. D., Thiruvalluvan, V., & Kannan, A. (2021). Conversational discourse analysis in Tamil speaking individuals – A comparison across age range. *International Journal of Research and Analytical Reviews, 8*(3), 654–676.

Marian, V., Blumenfeld, H. K., & Kaushanskaya, M. (2007). *The Language Experience and Proficiency Questionnaire (LEAP-Q): Assessing language profiles in bilinguals and multilinguals*. . https://doi.org/10.1044/1092-4388(2007/067)

Marini, A., Boewe, A., Caltagirone, C., & Carlomagno, S. (2005). Age-related differences in the production of textual descriptions. *Journal of Psycholinguistic Research, 34*, 439–463. https://doi.org/10.1007/s10936-005-6203-z

Marini, A., Galetto, V., Zampieri, E., Vorano, L., Zettin, M., & Carlomagno, S. (2011). Narrative language in traumatic brain injury. *Neuropsychologia, 49*(10), 2904–2910. https://doi.org/10.1016/j.neuropsychologia.2011.06.017

Nakahama, Y., Tyler, A., & Van Lier, L. (2001). Negotiation of meaning in conversational and information gap activities: A comparative discourse analysis. *TESOL Quarterly, 35*(3), 377–405. https://doi.org/10.2307/3588028

Nasreddine, Z. S., Phillips, N. A., Bédirian, V., Charbonneau, S., Whitehead, V., Collin, I., ... & Chertkow, H. (2005). The Montreal Cognitive Assessment, MoCA: A brief screening tool for mild cognitive impairment. *Journal of the American Geriatrics Society*, *53*(4), 695–699. https://doi.org/10.1111/j.1532-5415.2005.53221.x.

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, Language, and Hearing Research, 36*(2), 338–350. https://doi.org/10.1044/jshr.3602.338

North, A., J., Ulatowska, H. K., Macaluso-Haynes, S., & Bell, H. (1986). Discourse performance in older adults. *International Journal of Aging and Human Development*, 23(4), 267–283. https://doi.org/10.2190/BPF0-2BWD-BGNQ-HWCW.

Olness, G. S., Matteson, S. E., & Stewart, C. T. (2010). "Let me tell you the point": How speakers with aphasia assign prominence to information in narratives. *Aphasiology, 24*(6–8), 697–708. https://doi.org/10.1080/02687030903438524

Poláková, L., Mírovský, J., Zikánová, Š, & Hajičová, E. (2021). Discourse relations and connectives in higher text structure. *Dialogue & Discourse, 12*(2), 1–37. https://doi.org/10.5210/dad.2021.201

Rogalski, Y., Altmann, L. J., Plummer-D'Amato, P., Behrman, A. L., & Marsiske, M. (2010). Discourse coherence and cognition after stroke: A dual task study. *Journal of Communication Disorders, 43*(3), 212–224. https://doi.org/10.1016/j.jcomdis.2010.02.001

Sarveswaran, K., & Butt, M. (2020). Computational challenges with Tamil complex predicates. In *The 2019 Conference on Lexical Functional Grammar: LFG'19* (pp. 272–292).

Sue, S. (2007). Test distance vision using a Snellen chart. *Community Eye Health, 20*(63), 52.

Swaab, T. Y., Boudewyn, M. A., Long, D. L., Luck, S. J., Kring, A. M., Ragland, J. D., ... & Carter, C. S. (2013). Spared and impaired spoken discourse processing in schizophrenia: Effects of local and global language context. *Journal of Neuroscience*, *33*(39), 15578–15587. https://doi.org/10.1523/JNEUROSCI.0965-13.2013.

Tanenhaus, M. K., & Brown-Schmidt, S. (2008). Language processing in the natural world. *Philosophical Transactions of the Royal Society b: Biological Sciences, 363*(1493), 1105–1122. https://doi.org/10.1098/rstb.2007.2162

Van Leer, E., & Turkstra, L. (1999). The effect of elicitation task on discourse coherence and cohesion in adolescents with brain injury. *Journal of Communication Disorders, 32*(5), 327–349. https://doi.org/10.1016/S0021-9924(99)00008-8

Wright, H. H., & Capilouto, G. J. (2009). Manipulating task instructions to change narrative discourse performance. *Aphasiology, 23*(10), 1295–1308. https://doi.org/10.1080/02687030902826844

Wright, H. H., Capilouto, G. J., & Koutsoftas, A. (2013). Evaluating measures of global coherence ability in stories in adults. *International Journal of Language & Communication Disorders, 48*(3), 249–256. https://doi.org/10.1111/1460-6984.12000

Wright, H. H., Koutsoftas, A. D., Capilouto, G. J., & Fergadiotis, G. (2014). Global coherence in younger and older adults: Influence of cognitive processes and discourse type. *Aging, Neuropsychology, and Cognition, 21*(2), 174–196. https://doi.org/10.1080/13825585.2013.794894

Publisher's Note