

# Cohesion in Discourse of Kurdish Elderly with Alzheimer's Disease

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## Abstract

**Objective:** The use of cohesive devices makes discourse comprehend. However, in the discourse of Senile Dementia of the Alzheimer's Type (SDAT) patients, the lack of the use of cohesive devices hinders effective communication. The present study aims to investigate cohesion in the discourse of SDAT patients. Understanding how these people manage their interactions may lead to suitable approaches for them.

**Method:** The methodology of this quantitative research was ex post facto type. The present study has been performed in one of the nursing home in Kermanshah in 2019. The statistic population of this study included 20 participants (10 with SDAT and 10 normal elderly participants (NE)) who were homogeneous in terms of age (63-75 years old), gender, illiteracy, and Kurdish language dialect (Kalhori). To determine the severity of dementia, the Clinical Dementia Rating scale (CDR) was performed. Then, the collected data through interviews were transcribed and coded. The data were analyzed based on Halliday and Hasan's theory (1976) and independent t-test was used to obtain the statistic results.

**Results:** The findings indicate significant differences between groups using grammatical cohesive devices, such as reference ( $p=0.006$ ), conjunction ( $p=0.004$ ), ellipsis ( $p=0.007$ ), substitution ( $p=0.426$ ), and lexical cohesive devices such as the same word ( $p=0.006$ ), synonym ( $p=0.012$ ), superordinate ( $p=0.001$ ), general word ( $p=0.002$ ), and collocation ( $p=0.387$ ).

**Conclusion:** The results show that grammatical and lexical cohesive devices are used less in the discourse of SDAT Kurdish speakers. However, in the discourse of both SDAT and NE groups, grammatical cohesive devices have more frequency than lexical cohesive devices.

**Keywords:** Clinical Linguistics, Discourse Impairing, Alzheimer's Disease, Lexical Cohesion, Grammatical Cohesion.

## Introduction

The speed of learning words and concepts in the early years of life is so rapid and precise that it never seems they are removed from the mind or it is difficult to remind them. However, there are some unwanted diseases that affect recalling or reminding the words that a person has used throughout his or her life. One of these diseases is Alzheimer, which has caused a great deal of concern, and despite the

extensive resources, many questions have been remained unanswered.

Experimental studies of the discourse of people with Alzheimer have shown that proper use of language in the discourse of these people weakens and communicative skills gradually decline during the course of the disease. Various studies on the Alzheimer' patients' discourse have shown that during this disease, the discourse-building features, such as coherence and cohesion that provide the conditions for discourse to continue, and also discourse-impairing features, such as disruptive topic shift, repetition, revision, indefinite words, empty phrases, and inappropriate referential pronouns that hinder the continuation of discourse

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would be changed. Therefore, the authors intend to examine cohesion in the discourse of Kurdish-speaking Senile Dementia of Alzheimer's Type (SDAT) to show how cohesive devices are used in the discourse of these participants. Also, we looked at the linguistic studies of the other researchers in this field to determine the scope of the related studies and to find out the points that are considered in this field.

Moatamedy and Tangestani (2019) have studied the prediction of cognitive failures in the senile people based on two factors of personality and lifestyle. And, the results of this study showed that these features can significantly predict emotions and cognitive failures.

De Lira, Minett, Bertolucci, and Ortiz (2018) evaluated macro linguistic aspects in the oral discourse of patients with Alzheimer whose results showed the performance of SDAT in cohesive devices and all its subtypes was reduced, and cohesive devices were the best variables to show the difference between SDAT and NE groups.

Sherratt and Brayan (2018) investigated the effects of ageing and cognitive skills in oral narrative whose results showed with ageing, cohesive errors and cognitive skills are sequentially increased and decreased.

Rovshan (2016) has compared the discourse of SDAT patients with NE participants and show that they use significantly different verbal items consisting of false concepts, endless utterances, false conjunctions, and true conjunctions. The results of her study indicated that the discourse of SDAT participants was impaired in terms of structure and content. She has stated increasing endless utterances, false concepts, and false conjunctions, with the decline of true conjunctions, which have resulted in clinical discourse-impairing in Alzheimer's patients.

Kamari (2016) examined monolingual Persian-speaking children's mastery of conjunction and pronominalization as two cohesive devices. The

findings of their study indicated that temporal conjunctions and nominal strategies are used to create cohesion by three-year-old children in their stories. Complexity and the variety of connections increase significantly in seven-year-old Children's narratives. Seven-year-old children use pronouns to maintain referents and tried to provide an unambiguous reference to the characters of their stories.

Golbaz (2008) investigated the discourse feature of Persian speakers with Alzheimer's to show that there was a significant difference between the SDAT and NE participants in the use of cohesive devices in the discourse of Alzheimer patients. Discourse impairment, including the lack of cohesion and coherence, reduced diversity in the use of cohesive devices, and also disruptive topic shift was the result of reduced access to cognitive resources as consequences of memory deficit.

Ahangar, Jafarzadeh Fadaki and Sehhati (2016) studied lexical relations devices in speech of SDAT and NE participants and the results of the analysis indicated that there is no significant difference in applying these devices in the discourse of SDAT and NE in their collocation and lexical relations. But there was a significant difference between applying part-whole and hyponymy in the discourse of SDAT and NE. The results of the study reveal that this kind of difference indicates the effects of Alzheimer disease on employing the lexical relation device of speech for SDAT participants.

Shahabi, Golfam and Malekzadeh (2009) studied the use of cohesive devices by NE and SDAT. The results revealed a significantly higher use of grammatical cohesive devices and lexical cohesive devices by SDAT compared to NE participants.

Lai (2014) studied discourse features of Chinese-speaking SDAT to show there are fewer discourse building features but more discourse-impairing features in the conversations of the SDAT compared to the NE. Also the discourse-impairing

features correlate significantly with the degrees of dementia.

Dijkstra, Bourgeois, Allen and Burgio, (2004) compared the discourse features of nursing home residents between SDAT and NE. The results of their study revealed a higher frequency of discourse building features, for NE compared to SDAT compared to NE. Conversely, discourse-impairing features were found more often in conversations of SDAT than NE. Discourse features in interview style conversations in SDAT reflect declines in their memory.

Grossman, Mickanin, Onishi, Robinson, and D'Esposito (1997) studied lexical acquisition in probable Alzheimer disease (pAD) and indicated that the significant differences were seen between pAD participants and NE participants in the acquisition of the new semantic meaning of verb and its argument structure.

However, there were no significant differences between pAD and NE participants in the acquisition of the new grammatical form class.

Glosser and Deser (1990) examined dissociations between impairments in macrolinguistic and microlinguistic abilities in brain-damaged participants to determine whether these abilities are psychologically and neurologically different. They showed that participants with fluent aphasia have the greatest impairment on micro linguistic abilities, but for NE, the greatest impairment was related to macro linguistic abilities.

Sarli and Ishany (2011) explained that Halliday and Hasan's theory can be used by any other languages, and cohesion is a linguistic device including lexical, grammatical, semantic, and phonetic aspects that link sentences together in a linguistic context.

So, the present study has focused on the theory of cohesion as one discourse-building feature mentioned by Halliday and Hasan (1976) in the book entitled *Cohesion in English* to note that the nature of cohesion is inherently meaningful. Moreover,

according to this theory, a text is cohesive when the interpretation of several elements in the discourse is interdependent (Halliday & Hasan, 1976: 4).

## **Study I Method**

### **Participants and procedure**

The methodological nature of this quantitative study is ex post facto type, and this research has been performed in one of the nursing home in Kermanshah in 2018. The population of this study included 20 participants (10 with SDAT and 10 NE participants) who were 5 males and 5 females in each group. The participants were first matched based on age from 70 to 75, gender, illiteracy, and Kurdish language (Kalhori dialect). SDAT participants were diagnosed by physicians, specialists, and psychologists of the nursing home having dementia of Alzheimer's type, which in investigating their medical records they were examined in different laboratory tests including GPT, GOT, BUN, CREATINE, CBC, B12, folic acid, TSH, Free T4, VDRL, CT (computer tomography), and MRI (magnetic resonance imaging). So diagnosing dementia and its type and other mental or physical diseases that can affect the memory function, have been done by physicians, specialists, and psychologists of the nursing home.

There are some standard tests two of which are Clinical Dementia Rating Scale (CDR) and Mini Mental State Examination (MMSE) to determine the rate of dementia severity. CDR has been used in this research since this test is the most common test to diagnose dementia of the Alzheimer's type. CDR is a neuropsychological test in which there are six domains to be constructed: (a) memory; (b) orientation; (c) judgment; (d) problem solving; (e) community affairs, home, hobbies; and (f) personal care. It has a five-point scale 0, 0.5, 1, 2, 3, respectively to show no cognitive impairment, very mild, mild, moderate, and severe dementia. The participants with a CDR score of less than two

and more than 0.5 ( $0.5 \leq \text{score} < 2$ ) were selected. All of the NE participants' CDR scores were 0 meaning no cognitive decline. Also, the sample of Persian version for CDR has been presented in appendix E followed by appendix D which is the English version of CDR.

Some inclusion Criteria to participate in this study are:

1. Not having stroke or underlying diseases.
2. Not having physical or mental problem except Alzheimer.
3. Being dementia of the Alzheimer's type patient.
4. Kurdish speaker of Kalhori dialect.
5. Not using drugs that affect the study results.

The participants answered the questions about their daily routines, families, and how to celebrate the Eid Nowruz<sup>1</sup> for 10 minutes. If the answer to each question took more than 20 seconds, the next question would be asked. Then, the conversations were recorded and transcribed. The transcripts were coded based on Dijkstra et al. (2004). The data were categorized and analyzed based on Halliday and Hasan's theory (1976). Independent t-test has been used to obtain the statistic results. To evaluate the results, the findings of both SDAT and NE groups were compared. In the appendixes of the present study, the model of discourse-level analysis for elderly residents and participants in discourse, transcription, and coding of the early and final stages of dementia, which have been derived from Dijkstra et al. (2004), were presented. The demographic information of both SDAT and NE groups is shown in Table 1.

## Study II Method

### Ethical statement

To follow the principles of ethics, the researchers of the present study received the permissions from Welfare Organization and Medical University of Kermanshah after they studied the questionnaire.

**Table 1.** Demographic information of the SDAT and NE groups

Group	SDAT (N=10)	NE (N=10)
Male	5	5
Female	5	5
Mean age	67.60 (3.627)	67.60 (4.005)
Age range	64~75	63~75
Mean CDR	1.10 (0.28)	00.00 (0.00)

N: Number of participants

Note: Standard deviations are in parentheses.

Due to the special conditions and situations of these participants, the conversations happened in a quiet space at the nursing home in Kermanshah in March 2019 with the presence of the officials and the psychologist of the nursing home who were attending during the interviews. Also, the participants were given the right to choose if they wish to talk. They should have inclusive criteria, including age (63-75), gender (male and female), illiteracy, and Kurdish language (Kalhori dialect) speaker.

### Investigating the cohesive devices in the discourse of SDAT participants

Cohesion has always been the focus of linguists as an element in understanding discourse. Halliday and Hasan (1976) have noted that the nature of cohesion is meaningful. On the other hand, Ripich, Carpenter and Zioli (2000) believe that cohesion is formed when the interpretation of several elements in a discourse is interdependent. Also, Ripich, Zioli and Lee (1998) consider cohesion in discourse as the result of linguistic elements that constitute grammatical and semantic relations in the components of discourse. De Santi, Koenig, Obler and Goldberger (1994) state that in linguistic studies and discourse studies, cohesion is related to the characteristics of surface structure in intra- and inter-sentence relations, and that speech has different characteristics of cohesion and coherence.

According to Halliday and Hasan (1976), cohesion is made up of various linguistic devices,

1- Iranian New Year

including grammatical, lexical, and semantic, that link sentences to each other. They believe that reference occurs when an element refers to another element, which can be personal or demonstrative. The element that connects the meaning of previous and past sentences is called conjunction that can be causal, temporal, or additive. Substitution is a linguistic element that can be substituted to another linguistic element of the same class which can be nominal, verbal, or clausal. The other device that makes the text contextualized is ellipsis that refers to deleting a sentence or clause in a way that missing part can be comprehensible for the listener that can be nominal, verbal, or clausal.

Lexical cohesion is achieved by the selection of related lexicons which can be reiteration and collocation; the former included the same word, synonym, superordinate and general word. The same word is the repetition of the same word in the continuation of the discourse. Synonymy means several lexicons with the same meaning in the discourse. Lexicons that are included in the context of a hierarchical series are called superordinate. Lexicons that generally imply a concept are called general words. In the lexical cohesion, collocation occurs when the words in the discourse are in a special semantic relationship with each other. In the appendix A of this study, some Kurdish utterances are presented to show how the cohesive devices are represented in the discourse of SDAT participants. As has been already mentioned, cohesive devices consist of grammatical cohesive devices and lexical cohesive devices, which are presented in Table 2.

### Findings

The findings showed that there was a significant difference between the use of the grammatical and lexical cohesive devices in both SDAT and NE groups. NE group produced a total of 2,321 utterances and SDAT group produced a total of 772 utterances. Reports indicated that the number of unique words produced by the NE group was

**Table 2.** Grammatical cohesive devices and lexical cohesive devices

Cohesive Device	Type	Category
Reference	Grammatical	Personal Demonstrative
Conjunction	Grammatical	Casual Temporal Additive
Ellipsis	Grammatical	Nominal Verbal Clausal
Substitution	Grammatical	Nominal Verbal Clausal
Same word	Lexical	
Synonym	Lexical	
Superordinate	Lexical	
General word	Lexical	
Collocation	Lexical	

4254 and by SDAT group was 1724. The findings showed that the use of reference as a grammatical cohesive device significantly differs between SDAT group and NE group ( $P= 0.006$ ). According to the statistic results, the average percentage value of this device in SDAT group is  $0.89\pm 0.73$  while for NE group is  $1.58\pm 0.36$ . The use of conjunction as a grammatical cohesive device significantly differs between SDAT group and NE group ( $P= 0.004$ ). The average percentage value of this cohesive device in SDAT group is  $0.66\pm 0.73$  while for NE group is  $1.66\pm 0.34$ . The use of ellipsis as another grammatical cohesive device significantly differs between SDAT group and NE group ( $P= 0.007$ ). The average percentage value of this device in SDAT group is  $0.57\pm 0.67$ , while for NE group is  $1.19\pm 0.24$ . The use of substitution, as another device, does not significantly differ between SDAT group and NE group ( $P= 0.426$ ). The average percentage value of this device in SDAT group is  $0.74\pm 0.65$ , while for NE group is  $0.92\pm 0.14$ . The findings on lexical cohesive devices showed that the use of the same word as a lexical cohesive device significantly differs between SDAT group and NE group ( $P= 0.006$ ). The average percentage



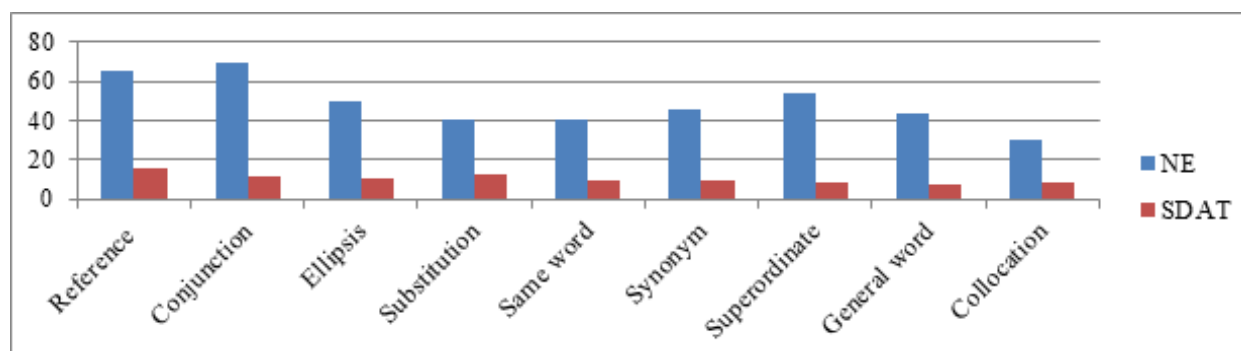
value of this lexical device in SDAT group is  $0.53\pm 0.55$ , while for NE group is  $1.01\pm 0.23$ . The use of Synonym as a lexical cohesive device significantly differs between SDAT group and NE group ( $P=0.012$ ). The average percentage value of this device in SDAT group is  $0.48\pm 0.55$ , while for NE group is  $1.08\pm 0.07$ . The use of superordinate as another lexical cohesive device significantly differs between SDAT group and NE group ( $P=0.001$ ). The average percentage value of this device in SDAT group is  $0.44\pm 0.56$ , while for NE group is  $1.25\pm 0.18$ . The use of general word as a lexical

cohesive device significantly differs between SDAT group and NE group ( $P=0.002$ ). The average percentage value of this lexical device in SDAT group is  $0.47\pm 0.34$ , while for NE group is  $1.00\pm 0.23$ . The use of collocation as a lexical cohesive device does not significantly differ between SDAT group and NE group ( $P=0.387$ ). The average percentage value of this device in SDAT group is  $0.47\pm 0.38$ , while for NE group is  $0.65\pm 0.49$ .

The Data of using cohesive devices in the discourse of SDAT and NE groups are presented in Table 3.

**Table 3.** Data of using cohesive devices in the discourse of SDAT and NE groups

Device	Type	Group	Number	Frequency	Mean %	SD	P-value
Reference	grammatical	SDAT	10	16	0.89	0.73	0.006
		NE	10	65	1.58	0.36	
Conjunction	grammatical	SDAT	10	11	0.89	0.73	0.004
		NE	10	69	1.66	0.34	
Ellipsis	grammatical	SDAT	10	10	0.57	0.67	0.007
		NE	10	50	1.19	0.24	
Substitution	grammatical	SDAT	10	12	0.74	0.65	0.426
		NE	10	40	0.92	0.14	
Same word	lexical	SDAT	10	9	0.52	0.38	0.006
		NE	10	40	1.01	0.23	
Synonym	lexical	SDAT	10	9	0.48	0.55	0.012
		NE	10	46	1.08	0.07	
Superordinate	lexical	SDAT	10	8	1.25	0.18	0.001
		NE	10	54	0.44	0.56	
General word	lexical	SDAT	10	7	0.47	0.34	0.002
		NE	10	43	1.00	0.23	
Collocation	lexical	SDAT	10	8	0.47	0.38	0.387
		NE	10	30	0.65	0.49	



**Diagram 1.** Frequency of cohesive devices for NE & SDAT groups

## Discussion and Conclusion

The present study showed that cohesion, as one of the discourse-building features, makes a discourse comprehensible. This research showed that cohesion has some devices that SDAT participants do not use properly and precisely. In this study, the cohesive devices in Kurdish (Kalhori dialect) based on Halliday and Hasan's theory (1976) were investigated and the results showed that although in the discourse of SDAT grammatical and lexical cohesive devices are used less, the use of grammatical cohesive devices is much more common than lexical cohesion in the discourse of both SDAT and NE groups. Moreover, in some cohesive devices, such as ellipsis and collocation, no significant difference was reported between two groups. So, the main reason for decreasing the use of grammatical and lexical cohesive devices is related to the weakness of memory in SDAT participants. Grammatical cohesive devices are less ignored because of their limitation in number so that they can easily recall these cohesive devices. Also, There were some limitations in this study such as the participants suffering from Alzheimer's and the time allocated (10 minutes) was so confined to cover different topics to get a comprehensive results. Notice that the present study has just covered cohesion as one of the discourse-building features. There are some other features that can be studied in the future studies. The obtained results confirm the results of other studies that have been already done on different languages by the researchers mentioned in this study. As Sarli and Ishany (2011) have mentioned, the theory proposed by Halliday and Hasan (1976) can be applied for any other languages like Kurdish which the authors of the present study have investigated and showed.

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