Abstract

Alzheimer’s disease (AD) consists of disorders of the memory and language changes which is mostly in syntactical functions and pragmatic-semantic functions. Via conversational analysis, it is easy to evaluate AD patients’ pragmatic skills. In this respect, the aim of this study is to analyse the pragmatic knowledge of AD patients by using a picture description test. In the evaluation, only the maxim of relation in Grice’s cooperative principle was considered. Speech samples were solicited from patients with AD (n=20) and age-matched healthy people (n=20). Two extra raters made blind ratings on the evaluation of the maxim of relation. Results demonstrate that the amount of speech of AD patients was less compared to the control group. The violation of relation maxim was rather higher in AD group and hereby it was certain that pragmatic language impairment was the reason of it.

Key words: Alzheimer’s disease, cooperative principle, conversational maxims.

Introduction

Alzheimer’s Disease (AD), which is the commonest form of dementia, is caused by numerous factors such as age, genetic factors, other diseases, lifestyle, environment, head injuries and even level of education. AD leads to a progressive decline in the ability to remember, to learn, to think and to reason. Patients with
AD have difficulty in finding and using the right words, and in recognising people, places and objects (Longley and Warner, 2020). AD is marked by a continual loss of neurons and their connections with other neurons that are crucial to memory and other mental functions (Growdon, 2009). Patients with AD have insidious, progressive impairment of episodic memory, with the emengence of aphasia, apraxia and executive deficits as disease progresses (Cummings, 2020).

Language problems are considered one of the most characteristic symptoms of AD (Gonnerman et al., 2014). Naming and word finding difficulties are the most common language problems in AD. Problems about pragmatic knowledge are also commonly observed in AD. In many studies, it is revealed that these patients often produce grammatically acceptable sentences, however; their speech is characterized by the term “empty speech” (March, Wales & Pattison, 2003). Studies about speech show that the language of these patients is often empty of meaning and irrelevant (Bayles, 1985; Bayles & Kasniak, 1987). Empty speech is defined as the speech consisting of words or phrases that either detract from or do not contribute to a coherent description (Nicholas et al., 1985).

Language problems in AD were studied in many researches and according to these researches there are major language dysfunctions in several aspects of language production (Filiou et al., 2020; Can & Kuruoğlu, 2021). In the early stage, the problems begin with the difficulty of finding words. Then, these problems reach out-of-context speech in the later stages. Due to these pragmatic disorders, patients suffer from communication problems (March, Wales & Pattison, 2003).

It is clear that there is an interest in the pragmatics of dementia discourse, particularly AD in literature. Early researchers were focused on larger conversation about language and the brain. Beginning in the 1980s, researchers started to examine discourse, cohesion and conversational skills of AD patients. In later researches, psycholinguistics and social/sociological perspectives started to be the center of language studies in AD. Especially the studies related with the pauses, discourse markers, topic management, informativeness, communicative interventions and social behaviours were commonly carried out (Guendouzi & Davis, 2014).

In order to maximise the effectiveness of conversations in AD, the Gricean principle of co-operation and conversational maxims are good instruments. “Grice’s Cooperative Principle” states that conversational participants observe four sets of conversational maxims which are “Quality” (try to make your contribution one that is true), “Quantity” (make your contribution as informative as is require), “Relation” (be relevant) and “Manner/Mode” (be clear). The power of these
maxims is about revealing if the speaker is following the conversational maxims, or intentionally violating them (Grice, 1975; Green, 1989).

Considering discourse genres, picture description tasks are constrained ones due to relying less on episodic memory and more on semantic knowledge and retrieval, within the cognitive demands of a communication context. With the evidence across the continuum of cognitive decline, picture description tasks are evaluative tools for both cognitive changes and everyday functional communication (Mueller et al., 2018).

Knowing that there are less studies focusing on conversational maxims of AD patients comparing to the other pragmatic functions, it was aimed to reveal the pragmatic knowledge of patients with AD by observing the maxim of relation from Grice’s cooperative principle via a picture description test.

### Methods and Techniques of the Research

To ensure that the information given is relevant to the topic, listeners typically try to relate the topic with the speakers’ utterances. The violation of this principle, makes out-of-context conversations. In order to analyse this non-coherent conversations of AD patients, a story-picture sequencing test was used. There are some views related to the use of story picture sequencing to reveal the language performance of AD patients. According to them, picture sequencing allows AD patients to describe the events in the picture, both temporally and logically. Thus, language data are obtained by using their narrative skills (Duong & Ska, 2001; Lira et al., 2011).

The story-picture sequencing test used in our study was prepared for the ability of patients to connect different pictures (6 pictures) and create a story. It was drawn by Abdulkadir Gurol, who was working in visual design department in Ministry of National Education, in Turkey. Before applying this test on AD patients, a pilot study with normal subjects was conducted and it was revealed that the test was an applicable test.

Before the evaluation, a neurologist and a psychologist did a clinical interview, made a physical and neurological examination by using Mini-Mental State Examination (MMSE; Folstein et al., 1975) and Clinical Dementia Rating (CDR). Then, the interview started by using the story-picture sequencing test. Each conversation was transcribed based on the DuBois’ Discourse Transcription Symbols (1993) by the researcher immediately after it was recorded. The recordings and transcripts were reviewed and edited by the researcher a second and third time. The maxim of relation was evaluated according to four criteria in terms of whether what was spoken was relevant to the topic. 3 points were given for fully
relevant information, 2 points for related information, 1 point for partially related information, and 0 points for unrelated information. Each patient’s response for each of the six pictures was evaluated and scored according to these criteria.

Totally, 20 AD patients were included in this study and the mean age of them was 74.9 and all of them were diagnosed as mild or moderate AD. A group of 20 individuals who do not have neurological disabilities were included as control group (CG). Written informed consent was obtained from all participants, or a legally authorised person prior to participation. The data obtained from the linguistic analysis were interpreted by t-test.

## Results

According to the results about the sentence length of AD patients in story-picture sequencing test, AD patients used shorter sentences compared to the CG.

### Table 1

<table>
<thead>
<tr>
<th>Test</th>
<th>N</th>
<th>Group</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Story picture sequencing test</td>
<td>20</td>
<td>CG</td>
<td>5.875</td>
<td>1.875</td>
<td>0.355</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>AD</td>
<td>4.111</td>
<td>1.207</td>
<td>0.203</td>
<td></td>
</tr>
</tbody>
</table>

According to the results in table 1 there was a significant difference within the sentence length of AD patients and the CG (p=0.000<0.05). After this analysis, the maxim of relation was examined in related to the cooperation principle.

### Table 2

<table>
<thead>
<tr>
<th>Test</th>
<th>N</th>
<th>Group</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Story picture sequencing test</td>
<td>20</td>
<td>CG</td>
<td>1.20</td>
<td>0.40</td>
<td>0.31</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>AD</td>
<td>0.050</td>
<td>0.224</td>
<td>0.050</td>
<td></td>
</tr>
</tbody>
</table>

Maxim of relation was violated in all of the patients (answers of irrelevant content). The points were varied; however, compared to the CG, they were completely low. CG associated 6 pictures with each other and provided coherence in accordance with the requirements of the cooperative principle. However, patients with AD violated the principle by not being able to correlate the pictures.
Conclusion

In literature, there are lots of studies testing the language of AD patients. The studies vary considering the pragmatic knowledge. In most of these studies, picture descriptions were used (Chapman et al., 1995; Tomoeda et al., 1996; Ripich et al., 2000, Bschor et al., 2001; Fraser et al., 2015; König et al., 2015).

The studies related with the deficit in semantic and pragmatic knowledge of patients with AD revealed that the communicative elements of language remain intact or were impaired (Ripich et al., 1991; Nattinger & DeCarrico, 1992). For example in one of these studies, context-dependent production of AD patients was evaluated via pictures and found out that AD patients could not establish the relationship between nouns and deixis correctly (March, Wales & Pattison, 2006). Another study proved that AD patients had problems in the connection of expressions with a picture description. They could not give the desired amount of information in a content-rich picture description. So, it is concluded that AD patients are quite inadequate in describing pictures (Shimada et al., 1998). In another study, mild and moderate AD patients were asked to describe a picture and create a story about it. Because mild AD patients does not have major pragmatic problems, they had good performance in discourse tests, but in later stages of the disease the pragmatic field of AD patients were affected badly (Duong, Tardif & Ska, 2003).

Finally, researchers who have analyzed subject-focused discourse have concluded that people with Alzheimer’s retain a great deal of linguistic knowledge but their ability to use that knowledge to communicate is impaired (Makoni, 1997; Mueller, 2018; Matsumoto, 2020).

References


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