

# Language and Mental Disorders

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Undergraduate thesis / Završni rad

2017

Degree Grantor / Ustanova koja je dodijelila akademski / stručni stupanj: **University of Zadar / Sveučilište u Zadru**

Permanent link / Trajna poveznica: <https://um.nsk.hr/um:nbn:hr:162:731650>

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Download date / Datum preuzimanja: **2024-09-21**



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Odjel za anglistiku

Preddiplomski sveučilišni studij engleskog jezika i književnosti (dvopredmetni)



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Language and Mental Disorders

Završni rad

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Zadar, 2017.



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## 1. INTRODUCTION

The topic of this final paper is Language and Mental Disorders and the reason why I chose this topic is because I have recently become interested in how our brains function and now I wanted to gain an insight into impaired brain functioning by making a thorough analysis. Language is a human system of communication that we use on an everyday basis in order to express our needs and desires, share our ideas and feelings, and to communicate with each other. Apart from other animals, humans are able to talk about the past and the future and even express lies or invented things. Without communication people would not be able to share their experiences or transfer their knowledge to other people, as well as to improve their capacity of knowledge. We could not let other people know that we care about them, that we are in pain or that we need help. Since all of these things are carried out through communication we can say that the ability to communicate should be recognized as a primary human sense. Now that we have imagined a situation in which we would not be able to express ourselves, we can merely assume how it is like to be language-impaired person. People with language impairment have difficulties expressing most common and simple commands, such as their primary needs. Language impairment may occur at different levels, from patients with mild language impairment to those who are completely lost words. People with severe language disorder cannot be understood and cannot understand others. Language disorder is a condition which refers to the inability to express oneself or understand others, and quite often it may be a combination of both. All forms of language, including spoken, written and sign language, can be affected by language disorder. The aim of this paper is to present the most common language disorders, their causes and the difficulties experienced by the patients who suffer from the same. Firstly, the structure of the brain and its normal

function will be examined, continuing to speech errors with which normal speakers encounter on an everyday basis. Moreover, the different levels of language usage and language-processing system will be explained. After that, the most common disorders will be demonstrated, such as: Aphasia, Agrammatism, Autism Spectrum Disorder, Alzheimer's Disease, and Specific Language Impairment. I will also provide some tips that could be used in a conversation with language-impaired person.

## 2. LANGUAGE AND THE BRAIN

### 2.1. Neurolinguistics and psycholinguistics

Neurolinguistics, also called neurological linguistics, is a relatively recent term which refers to “the study of how language is represented in the brain” (Menn, “Neurolinguistics”). It tries to explore “how and where our brains store our knowledge of the language that we speak, understand, read, and write, what happens in our brains as we acquire that knowledge and what happens as we use it in everyday lives” (Menn, “Neurolinguistics”). The field of neurolinguistics aims “to understand and explicate the neurological bases of language and speech, and to characterize the mechanisms and processes involved in language use” (Nordquist, “What are Neurolinguistics?”). Neurolinguistics is an interdisciplinary study “with an emphasis on the processing of spoken language when certain areas of the brain are damaged” (Nordquist, “What are Neurolinguistics?”). The study includes “language and speech impairments in the adult aphasias and in children, as well as reading disabilities and the lateralization of function as it relates to language and speech processing” (Nordquist, “What are Neurolinguistics?”). Neurolinguists are concerned with what makes our communication system so unique, where in our brains the words that we have learned are stored, how we retrieve a word so fast when we need it, and why we are sometimes unable to

reach a certain word. Moreover, they also try to find out how a bilingual person can switch between two languages and how the two manage not to interfere with each other, in cases of stroke or brain injury, which usually result in losing the ability to talk, how well a person can learn to talk again (Menn). On the other hand, psycholinguistics “is the study of the mental aspects of language and speech that is primarily concerned with the ways in which language is represented and processed in the brain” (Nordquist, “Psycholinguistics”). Psycholinguists are concerned with the kind of knowledge of language we need in order to use language, as well as with cognitive processes included in the ordinary use of language, such as talking with others, reading newspaper, writing an essay or understanding what is being said. Furthermore, they analyse “how word meaning, sentence meaning and discourse meaning are computed and represented in the mind, how complex words and sentences are composed in speech and how they are broken down into their constituents in the acts of listening and reading” (Nordquist, “Psycholinguistics”). Therefore, it can be concluded that neurolinguistics and psycholinguistics are intertwined since psycholinguistics studies “the language processing steps that are required for speaking and understanding words and sentences, learning languages and language processing in disorders of speech, language and reading”. (Menn, “Neurolinguistics”) To get back to the neurolinguistics, it started to appear in the nineteenth century when one event provided clues for the location of the language in the brain. In short, a metal rod went through the front part of a man's brain and even though it was thought that he would not recover from that injury, his language abilities were unaffected which shows us that language is not situated in the front part of the brain. (Yule 157) This event initiated many discoveries related to the specific parts in the brain concerning language functions. According to Yule, “what has been discovered through the examination of the brains of people who have suffered from language disabilities is that the important parts are located in the areas above the left ear”. (157) In other words, the location of language abilities of normal users is



determined by “finding areas with specific damage in the brains of people who had identifiable language disabilities” (Yule 157).

## 2.2. The structure of the brain

The two most important areas concerning language abilities are Broca's area and Wernicke's area. Broca's area, also described as the “anterior speech cortex”, is the part named after Paul Broca, who found “that damage to this specific part of the brain was related to extreme difficulty in producing speech” (Yule 158). Another important area is Wernicke's area, also described as “posterior speech cortex”, the part named after Carl Wernicke, who found “that damage to this part of the brain was found among patients who had speech comprehension difficulties” (Yule 159). Both of them are located in the left hemisphere, but while the first one is concerned with production of speech, the later one is concerned with understanding of speech. Another two parts concerning language that should be introduced are the motor cortex and the arcuate fasciculus. The motor cortex is an area close to Broca's area which “controls the articulatory muscles of the face, jaw, tongue and larynx” (Yule 159). On the other hand, the arcuate fasciculus serves “to form a crucial connection between Wernicke's and Broca's areas” (Yule 159). Recently, the premotor cortex has been mentioned as being a part of language processing as it “plays a role in the planning but also in semantic processes and categorization”. (Stemmer, Whitaker 40) As all of the four components have been identified, it can be said that specific aspects of language ability have established locations in the brain. Since those locations are quite determined, we can speak of the localization view which implies that a definite pattern should be followed during “the brain activity involved in hearing a word, understanding it, then and saying it” (Yule 159). The simple version of language processing begins “with the word being heard and comprehended

via Wernicke's area, then signal is transferred via the arcuate fasciculus to Broca's area where preparations are made to produce it, a signal is then sent to part of the motor cortex to physically articulate the word" (Yule 159). Having been unable to get direct physical evidence of linguistic processes, we have to rely on what can be discovered through indirect methods, which involve attempts to find out how the system is working based on clues gathered when the system has malfunctions. (Yule 160)

### 3. TONGUE TIPS AND SLIPS

We have all faced with difficulties in getting brain and speech production to work in accordance. Those types of difficulties may provide us some "clues to the way our linguistic knowledge may be organized within the brain". (Yule 160)

#### 3.1. Tip of the tongue phenomenon

One of the most known and most common phenomena is the tip of the tongue phenomenon which occurs when a word seems to be eluding a person and even though person knows the word, it just will not come to the surface. (Yule 160) What is interesting is that usually speakers know "an accurate phonological outline of the word, can get the initial sound correct and mostly know the number of syllables in the word". (Yule 166) The fact, that this phenomenon appears mostly with uncommon words, shows us that our "word-storage" system is partially organized, meaning that when retrieving uncommon words we may encounter difficulties more often than when searching for a more common, "everyday" word.

(“Slips of tongue”) In cases when we use an incorrect word in place of one that is similar in pronunciation we are talking about malapropisms, which when produced may create a humorous sentence. (Yule 160) Archie Bunker, a comic character who used many malapropisms, said that “Patience is a virgin” replacing ‘virtue’ with word ‘virgin’.

### 3.2. Slip of the tongue phenomenon

A slip of the tongue, also called *lapsus linguae* or spoonerism, “occurs when brain and tongue deny to work in accordance”. (“Slips of tongue”) These minor malfunctions provide us with more information about the underlying mechanisms than perfectly working systems, thus by using them we can investigate the nature of the normal processes. (Aitchison 18) There are three levels of tongue slips that can be identified: “sound errors, morpheme errors and word errors”. (“Slips of Tongue”) Sound errors and morpheme errors fall into the category of assemblage errors, which will be later further explained, while word errors fall into the category of selection errors. (“Slips of Tongue”) In short, “sound errors occur when there is an interchange of sounds between words, morpheme errors occur when there is an interchange of morphemes between words and word errors occur when there is an interchange of complete words”. (“Slips of tongue”) Furthermore, slips of the tongue can be divided into two categories: assemblage errors and selection errors. Assemblage errors refer to the errors where the right items are chosen but there is an interchange of the initial sounds or morphemes as in saying ‘shake a tower’ instead of ‘take a shower’. (Aitchison 19) This type of error is important for providing information about the preparation and production of speech. There is one more type of error of this kind and is called anticipation which occurs when the initial consonant of the first word is replaced by the initial consonant of the latter word as in saying ‘leading list’ instead of ‘reading list’. While the previous examples demonstrate errors

occurring at the beginning of the word, errors may also appear at the end of the word, but these are not that common. (Yule 161) On the other hand, selection errors, which are more essential when investigating a mental lexicon, refer to those errors when a wrong item is selected from the mental lexicon. (Aitchison 19) A word that is mistakenly selected is usually closely related to the intended word, as in saying 'crossword' instead of 'jigsaw'. Selection errors might have been caused by meaning or sound similarities, in some cases even by a combination of both and they can occur when a single word replaces an intended word but also in cases when two words are combined into one creating a 'blend'. (Aitchison 19) As an example of meaning similarity it can be said 'crossword' instead of 'jigsaw' or 'terrible' as a combination of 'terrible' and 'horrible'. Replacing 'cylinders' for 'syllables' or 'lustrious' for both 'lustful' and 'illustrious' are examples of sound similarities. In season 4 of Friends TV show, Chandler says: "I don't know, but Donald Trump wants his blue blazer black" instead of "I don't know, but Donald Trump wants his blue blazer back" ("The One With Phoebe's Uterus"). This would be an example where both meaning and sound similarities occur since two adjectives describing a colour appear and both have similar sound. Saying 'effectant exercise' for an exercise that is both important and effective may be an example of blend where both meaning and sound similarities occur.

### 3.3. Two factors causing the phenomenon of the slip of the tongue

According to Sigmund Freud, slips of the tongue, especially selection errors, "often reveal suppressed thoughts which have involuntarily pushed their way to the surface". (Aitchison 19) So, the Freudian slip would be used to explain strange and embarrassing behaviour, as in a situation when a woman says "Nice to beat you" when meeting a girlfriend of her ex-husband. Slips may represent our repressed desires but very often while talking we

notice something that distract us from what we wanted to say. (Pincott) For example, when wanting to order a cup of coffee, you notice that your friend has a new shoes and thus you end up saying that you want to order a cup of shoes. In such cases slips “expose something that has captured our attention unaware” (Pincott). Therefore, suppressed thought and a stressor or distraction are two factors that increase the risk of making a slip. However, Serendre Shutter (2004) argued that speech articulation “is a process happening entirely below the level of consciousness, so we’re not aware of doing anything except when we hear ourselves saying something funny, and it’s all happening at such lightning speed that we’re not aware of any time these steps are taking”. (“Slips of tongue”)

### 3.4. The importance of speech errors

From the point of psycholinguistics, what slips of the tongue reveal us is that we start speaking before we have whole sentence planned in our head and that we begin with a rough outline of the sentence and then during uttering a sentence we add up lexical items. (“Slips of tongue”) “Speech errors also tell us a great deal about the structure and organization of the mental dictionary – the storage house of all the words a speaker of a language knows”. (“Slips of the Tongue: Windows to the Mind”) When it comes to the substitution, words related in meaning can be substituted and sometimes substitution can be made when the intended and spoken words “are similar in their sounds such as *persecuted* for *prosecuted*” (“Slips of the Tongue: Windows to the Mind”). Taking these facts into consideration, it can be concluded that our mental dictionary is divided into semantic classes and sound classes. Related to that, Gary Dell, a cognitive scientist believed that “concepts, words and sounds are interconnected in three networks in the brain – the semantic, lexical and phonological – and speech arises from their interaction“. (Pincott) However, sometimes these networks interfere with each

other which results in a slip of the tongue. Dell believes that slips of the tongue are important because they show us that our language-production system is working and is a proof of the skilfulness of the human mind. (Pincott)

#### 4. THE USAGE OF LANGUAGE

Human language is a system of symbols that enhances our ability “to represent aspects of the world, to think, and to communicate with each other” (Caplan 1). The language can be used at three different levels. The first level is the automatic level which means that a person “possesses automatic speech such as counting or reflexive language that might not be used to convey a message”. (Rao 50) The second level is imitation which means that a person only repeats what is being heard. The last and the highest level is the propositional language which achieves the functional nature of communication. The main goal of communication is to propositionalize, that is, to express a need or want and send a message. (Rao 50) As an example, a person can recite the alphabet (automatic) or repeat words after someone (imitation) but neither of these abilities will help a person to fulfil its needs. Moreover, conducted research have contributed to our understanding of language, of its use and acquisition and showed that it has a complex structure. However, “researchers have recently made considerable progress in understanding language disorders by approaching them in terms of the models of language structure and language processing developed by linguists and psycholinguists”. (Caplan 1) Some of these studies have consequently shed light on the nature of normal language structure and language processing.

According to Caplan, “functional communication involving the language code occurs when people undertake language-related tasks to accomplish specific goals to inform others,

to ask for information, to get things done”. (3) The use of language code allows us to make reference to items and events, to share our thoughts and ideas with others, to update our knowledge, to think and so on. Caplan stated that “when neurological disease affects the forms and meanings that make up the language code, or disrupts the processors devoted to their activation, the ability to perform language-related tasks and to use language to accomplish goals is compromised”. (4) “As the intentions and motivations of the language use become more complex, functional communication is more and more affected by disturbances of the language code and its processors.” (Caplan 5) This means that even though language impaired patients may function well in some settings, “their language impairments can cause significant functional limitations”. (Caplan 5) For example, school teachers with mild disturbances in accessing the forms of spoken words have difficulties to function in classroom setting because they feel under pressure since they have to retrieve certain words in certain time. Patients are able to adapt to their language impairments and sometimes they manage to maintain some aspects of functional communication. Moreover, people who have intact language processing mechanisms sometimes fail to communicate effectively as well as normal persons do. (Caplan 5) However, most patients with neurological disease have limited functional communicative abilities.

#### 4.1. Language-processing system

There are four “important operating characteristics of the components of the language-processing system”. (Caplan 9) According to Caplan, the first of them is “that each processor accepts only particular types of representations as input and produces only specific types of representation as output”. (9) This means that, for example, “the processor that activates syntactic structures from auditory input may use as input many features derived from speech

signal”, such as the meaning of words, but these acoustic properties cannot provide information about speaker being a man or woman. (Caplan 9) Secondly, “most processors are obligatorily activated when their inputs are presented to them”. (Caplan 9) For example, if a person happens to hear a word apartment, then that person must hear it and understand it, therefore that sound cannot be heard as a noise. The reason why a person must hear and understand spoken word is because our auditory system immediately distinguishes speech from nonspeech sounds. Thirdly, language processors normally operate unconsciously. (Caplan 15) This means that when we, for instance, engage in a conversation with someone or read a book, what happens is that “we usually have the subjective impression that we are extracting another person’s meaning and producing linguistic forms appropriate to our intentions without paying attention to the details of the sounds of words, sentence structure, etc.”. (Caplan 15) The last characteristic is that “components of the system operate remarkably quickly and accurately” (Caplan 15). Among other studies, Marslen-Wilson and Welsh conducted a study which showed “that spoken words are usually recognized less than 125 milliseconds after their onset, that is, while they are still being uttered”. (qtd in Caplan 15). Moreover, even though our mental dictionary contains around 20,000 items, a person is able to retrieve about three words per second.

## 5. LANGUAGE DISORDERS

According to ASHA (American Speech Language and Hearing Association), “when a person has trouble understanding others (receptive language) or sharing thoughts, ideas or feelings completely (expressive language) then that person has a language disorder”. (“Speech and Language Disorders and Diseases”) Brain can be affected by many diseases which may



cause problems in speaking and understanding, writing and reading. Aphasia, which affects speaking abilities, agraphia, which affects writing abilities, and alexia, which affects reading abilities, are the most common diseases and very often occur with Alzheimer's disease and strokes.

## 5.1. Communication disorder

ASHA states that a communication disorder is “an impairment in the ability to receive, send, process and comprehend concepts of verbal, nonverbal and graphic symbol systems”. (“Definitions of Communication Disorders and Variations”) It can occur in the process of hearing, language, and or speech. “Speech impairment is abnormal speech that is unintelligible, unpleasant or interferes with communication”. (“Speech and Language Disorders”) Some of the forms of speech impairments are articulation, voice and fluency. Firstly, articulation refers to “the abnormal production of speech sounds”, while voice refers to “the abnormal spoken language production” which is characterized by unusual pitch or loudness and lastly, fluency refers to “hesitations or repetitions of sounds or words that interrupt a person's flow of speech” (“Speech and Language Disorders”). Speech impairment may be caused by brain damage, autism, stuttering, etc. (“Speech and Language Disorders”) “A language impairment is the difficulty or inability to master the various systems of rules in language, which then interferes with communication”. (“Speech and Language Disorders”) People with language impairments have difficulties expressing their needs and wishes, have difficulties conveying messages or conversing with others, etc. Language impairment may be caused by brain injury, autism, being punished for speaking, not having appropriate role models, etc.

## 5.2. The most common cause - stroke

A stroke can be defined as a brain injury, therefore communication problems may arise from injured language areas (“Communication problems after stroke”). Stroke can affect how one speaks, understands speech, reads and writes. Communication problems may appear in cases when stroke affects muscles in the face tongue or throat. Place in the brain where the stroke happened and damaged area reveal us the range of someone's communication problems. (“Communication problems after stroke”) Aphasia, dysarthria and dyspraxia are conditions which can happen after the stroke. “Aphasia is the name for the most common language disorder caused by stroke. Aphasia can affect how you speak, your ability to understand what is being said” (“Communication problems after stroke”). Although people believe that aphasia also affects intelligence, it does not. Aphasic patients do not seem confused nor do they exhibit inappropriate behaviour. Sometimes aphasia may affect only one form of communication, but cases where it affects several aspects of communication at the same time are more common. Dysarthria is a disorder of articulation of single sounds and happens when the muscles needed for speaking are weakened due to the stroke. As a result, people's voice may sound different and patients may have difficulty speaking clearly. (“Communication problems after stroke”) Their voice may sound strained, quiet or slow and it may be hard to understand it for others. People who speak in short bursts rather than in complete sentences have their breath control affected. Dyspraxia refers to the condition that affects movement and coordination which occurs in cases when a person “cannot move muscles in the correct order and sequence to make the sounds needed for clear speech” (“Communication problems after stroke”). Individual muscles needed for producing clear speech may be working well, but cannot be used when a person wants. People with dyspraxia cannot pronounce words clearly, especially when they are asked to say them. When talking about communication problems, a person may have difficulties expressing own ideas, joining

in a conversation, being unable to find the words quickly in order to keep up with the topic, using wrong words or mispronouncing them, not being able to understand long, complex sentences, etc.

## 6. APHASIA

ASHA defines aphasia as “a communication disorder that results from damage to the parts of the brain that contain language”. (“Aphasia”) Usually caused by a stroke, it is “an impairment of language, affecting the production or comprehension of speech” (“Aphasia Definitions”). Aphasia is considered rather as a disorder of language than of speech. It is important to distinguish primary and secondary aphasic impairments. While the primary aphasic impairment is concerned with those patients who have disturbances of language-processing mechanisms, the latter is concerned with disturbances which can result from disorders of memory, perception, attention, etc. (Caplan 16) Primary aphasic impairment deals with people who usually have the word on their mind and when they are about to pronounce it another one comes and takes its place. “Word-finding difficulties are the commonest aphasic symptom, and are present in almost all types of aphasia”. (Aitchison 24) Many patients suffering from aphasia fail to understand spoken words. Research have showed that patients have difficulties pointing to objects in room in response to the names of these object or to perform simple commands. (Caplan 19) The fact that patients are unable to point to object when its name has been said or to provide answers about the meaning of that word suggests that those patients cannot understand spoken words.

Mr Philip Gorgan, a 72-year-old retired butcher, may be used as an example. When he was asked to name the objects, his responses were incorrect. He would say chair for ‘table’ or

knee for 'elbow'. Not only that he had problems with naming objects, but he also said words such as 'tarripoi' or 'trebbin' thus creating a neologism. (Aitchison 24) His sentences were incomprehensible and full of jargon and gibberish, for instance, he would say: "...all of the barbers here whenever they stop you it's going around and around, if you know what I mean..."

Another example is the case of David Ford. David had 39 years when he suffered a stroke. When asked about his work, he answered: "I'm a sig... no... man... uh, well... again." His speech was non fluent and hesitant. When talking to people with such impairment, one should be very patient because of their slow speech and not clearly articulated sounds. (Bear, Connors, Paradiso 621-622)

Aitchison argues that the reason why the aphasics is studied is because it is believed that "certain symptom patterns would not be possible if the normal intact cognitive system were not organized in a particular way". (22) Another reason is that "the problems of aphasic patients are simply an exaggeration of the difficulties which normal speakers may experience" (Aitchison 22). In recent studies there have been found similarities between these everyday speech difficulties, known as slips of the tongue, and errors of aphasics. Furthermore, Caplan stated that "the psycholinguistic approach to aphasia consists of trying to identify the disturbances in the components of the language processing system that are present in each patient and to describe the nature of a disturbance that affects a component of a system". (16) The aim of this approach is achieved by using a detailed analysis of the linguistic elements and structures that are affected in a task and the patterns of patient's responses. (Caplan 16) The following example of this type of approach describes a set of people who could match sentences like (1) to pictures, but are unable to do so with sentences like (2): (1) The grape the girl is eating is white; (2) the woman the man is chasing is fat. Caramazza and Zurif claimed that "the difference between these two types of sentences is that a patient needs to assign

syntactic structure to understand second type of sentence, but not to understand the first one". (Caplan 17) One possible explanation would be that a patient can easily understand the first sentence by knowing that grapes are inanimate and can be eaten and that girls are animate and can eat. However, when considering second sentence there is no such knowledge, as for the first type of sentence, about the meaning of the words in sentence (2) which can imply who is doing the chasing and who is fat. Patients also have difficulties with comprehending passive sentences such as: "The woman is chased by a man".

Caplan states that disturbances affecting object concepts appear as impairments usually in word comprehension or naming tasks. (76) Even though most brain-damaged patients have difficulties in solving either of these tasks, not all of them have semantic deficits. This means that being unable to correctly extract the meaning of the word can be a result of an impairment at some stage of processing or of a disturbance affecting the retrieval or production of the form of a word. (Caplan 77) There are some evidence that go in favour of this statement as the fact that after several attempts to produce a certain word it becomes more and more likely to retrieve that word or the fact that it will be easier for the patient to produce a certain word if we mention the first sound of that word. (Caplan 77)

## 6.1. Problems when dealing with aphasic

Many serious problems may occur in dealing with aphasics. The most evident one according to Aitchison is "that damaged brains may not always be representative of normal ones". (23) Strange effects may occur as a result of the brain injury but very often patients may develop their own strange strategies as a way of handling their speech problems. Another one is that the same output may have different causes, whose differences may be revealed by careful investigation. (Aitchison 23) It is important to distinguish patients who lost the word

completely from those who are unable to locate it temporarily. After failing to name the object and having been told the name of the object, patient who lost the word completely and the one who was unable to locate it have reacted differently. While the patient who lost it completely said: “that is not the word I would use”, the other one said: “Oh, that’s right.” The third problem is variability, which refers to the cases when a person uses different words in different situations for an intended word. (Aitchison 23)

## 6.2. How to talk with aphasic person

It is important to know that “inability to speak is not reflection of intelligence” (“Talk the talk: 5 Things You Need to Know when Speaking with a Person with Aphasia”). This means that not knowing the answer and not being able to give one are two different things. Also, people with aphasia usually have different, non-standard approaches when achieving certain result, meaning that they cannot be tested the same way as others. They use easier ways to perform a troublesome task. Next, the listener should listen patiently to the people with aphasia even when they are having troubles finding the right words. In order for those people to develop their speech, it is important to allow them to make mistakes and face difficulties, which means that listeners should not finish their sentences even though they usually have the best intentions when doing that. When talking to an aphasic person, distractions and noise should be kept to a minimum. Some of the suggestions are to use adult language, but also simple sentences and if needed break instructions into small steps. If spoken communication does not seem as a best choice, try pointing at the objects or use hand gestures or pictures. And most importantly, try to keep the person involved in the conversation. Even though most people with aphasia avoid crowded places, they seem to be comfortable in a small groups since they can participate in a conversation when they want but

they can also listen to others talking. This type of conversation where more than two people participate suits them better, because they feel more pressure during one-on-one conversation. (“Talk the talk: 5 Things You Need to Know when Speaking with a Person with Aphasia”)

### 6.3. Aphasic syndromes

Broca and Wernicke proposed that aphasia may be categorized into a range of syndromes “based on differences in auditory comprehension and oral-expressive language behaviours”. (Kent 249) The two broad categories of aphasias are: fluent and non-fluent. Fluent aphasias are characterized by “fluent speech and relatively normal articulation but difficulties in auditory comprehension”. (Stemmer, Whitaker 4) On the contrary, “non-fluent aphasias are characterized by relatively preserved verbal comprehension, but significant articulation and spoken production problems” (Stemmer, Whitaker 4). According to Benson, “contemporary classification system, which is based on patient's auditory comprehension, oral-expressive fluency, spoken repetition and naming abilities, consists of seven syndromes: global, Broca's, transcortical motor, Wernicke's, transcortical sensory, conduction, and anomic”. (qtd in Kent 248) These syndromes have been determined by a formal examination or by conducting a standardized test. Out of these seven syndromes, only Broca's aphasia, Wernicke's aphasia and global aphasia will be further examined.

Broca's (expressive) aphasia, named after Paul Broca, is a nonfluent syndrome. The damage in the Broca's area is the most common cause of Broca's aphasia regardless of the fact that there are patients whose Broca's area is damaged but do not have Broca's aphasia and those who have Broca's aphasia but their Broca's area is preserved. (Kent 249) Broca's aphasia may be caused by injury to speech and language brain areas which are often result of stroke. Patients with Broca's aphasia speak hesitantly and produce agrammatic sentences containing

only content words, while omitting small grammatical words and morphemes (Kent 249). Moreover, their auditory comprehension is quite preserved for short sentences, while having an impaired comprehension of complex sentences. Despite of relatively preserved auditory comprehension, their reading abilities are impaired as well. Hesitant repetition of words and sentences and disrupted naming abilities are also present among these patients. (“Language and Speech Disorders: Aphasia and Aphasic Syndromes”) People with expressive aphasia have problems with expressing themselves while are able to understand others. Some of the problems they may deal with are not being able to speak at all, communicating by making sounds but not being able to form actual words, not being able to form long, complex sentences consisting of more than five words, uttering sentences without crucial words, speaking with frequent pauses, not being able to find correct words, saying wrong word while having the right one on their mind, being able to describe object but not saying its name, speaking at a normal rate, but things that are said have limited meaning, etc. (“Language and Speech Disorders: Aphasia and Aphasic Syndromes”)

On the contrary, Wernicke's (receptive) aphasia, named after Carl Wernicke, is a fluent syndrome. Although usually a lesion in Wernicke's are causes Wernicke's aphasia, there are cases where lesions in other areas may cause Wernicke's aphasia and also cases where patients are suffering from Wernicke's aphasia but whose Wernicke's area has been unaffected. (Kent 250) “Linguistically, patients with Wernicke's aphasia speak with normal fluency and prosody without articulatory distortions”. (Kent 252) Their expressive speech is fluent and sentences are syntactically well constructed, but their paraphrasic speech lacks meaning and contains neologisms and jargon productions. (“Language and Speech Disorders: Aphasia and Aphasic Syndromes”) Impaired auditory comprehension is one of the most noticeable signs in Wernicke's aphasia. (Kent 250) In order for a person to comprehend a word, the visual or auditory form of that word has to be connected to a concept. (“Language



and Speech Disorders: Aphasia and Aphasic Syndromes”) Brain-damaged patients usually have trouble with abstract objects. However, there are also some patients whose comprehension for abstract words is preserved while familiar abstract words are being poorly understood. Thus, impaired language comprehension appears due to the damaged brain areas that are important for processing the meaning of words and spoken language. Patients with Wernicke's aphasia understand little of what is being said, even simple sentences, and their verbal repetition is impaired, as well as the naming ability, often giving a bizarre substitution for the correct name. People with receptive aphasia have problems with understanding what is being said. Some of the problems they may encounter are not understanding much what people say and feeling as if others are talking in a foreign language, not understanding long, complex sentences, not understanding others in a crowded, loud places, not being able to understand text in newspapers, etc. (Kirshner)

Peach defines global aphasia as “an acquired language disorder characterized by severe loss of comprehension with concomitant deficits in expressive abilities”. (qtd in Kent 243) It is considered to be the most serious of all of the syndromes, since it is “severely impaired in all language modalities which results in an almost total inability to communicate orally”. (Rao 56) Even though some patients have relatively preserved areas of comprehension, such as recognition of specific word categories or famous personal names, many of them are impaired in their expressive abilities. “Patients are unable to repeat words and no naming ability is present” (Kent 249).

## 7. AUTISM SPECTRUM DISORDER

Recently, autism spectrum disorder (ASD) has become more and more present among children. The estimate of occurrence varies, with much higher recent estimates than in the past. The expansion of ASD resulted in having plenty of questions concerning this disorder. Moreover, the emphasis has been also put on the treatment of ASD and how it should be treated in the rehabilitative disciplines. (Damico, Müller, Ball 153) According to DSM-IV, The Diagnostic and Statistical Manual of Mental Disorders which offers standard criteria for the classification of mental disorders, “the autism spectrum disorders usually include five common developmental childhood disorders: autistic disorder, Rett’s disorder, childhood disintegrative disorder, pervasive developmental disorder-NOS, and Asperger’s disorder”. (qtd in Damico, Müller, Ball 155) People who suffer from autistic disorder, which is also called ‘classic’ autism, have language delays and difficulties to socialize and communicate. Then, Rett syndrome, which usually occurs in girls, is a “rare genetic neurological and developmental disorder that affects the way the brain develops, causing a progressive inability to use muscles for eye and body movements and speech”. (“Rett Syndrome”) Next, childhood disintegrative disorder, also called Heller’s syndrome, is “a rare condition characterized by late onset of developmental delays in language, social function and motor skills” (“Childhood disintegrative disorder”). One example is a 10-year-old girl who had communication problem and was behaving violently. There were no complications after her birth, she mastered appropriate motor and language skills until 5 years of age and she also attended school. However, at the age of 4 she “developed a severe attack of upper respiratory tract infection for which she suffered with fever and cough for 6 months and had pleural effusion for which the fluid is drained”. (“Childhood disintegrative disorder”) After some time she stopped going to school and was not able to utter sentences or call her parents by name. Moreover, she was

spending a lot of time alone and would hit or bite anyone who would try to approach her. She was not eating properly and would stay awake whole night crying in her bed. The IQ test showed that she has an IQ of 37.5. She started taking pills and after 6 months there was a great improvement in communication as well as in social interaction. Furthermore, pervasive developmental disorder refers to “a group of conditions that involve delays in the development of many basic skills, most notably the ability to socialize with others, to communicate, and to use imagination” (“Pervasive Development Disorders”). Lastly, Asperger’s syndrome is “a neurobiological disorder on the higher-functioning end of the autism spectrum”. (“What is Asperger Syndrome?”) People who suffer from Asperger’s syndrome have impaired communication, limited interests, repetitive behaviour patterns, and are very anxious. An example is a 35-year-old man who was considered a loner since his childhood. Even though he has been reading books about social behaviour he never managed to develop any deep relationship. He would literally understand speech which would lead to misunderstandings, as in case when he only as an adult realized that his nickname ‘couch potato’ did not mean that he was a piece of furniture. He enjoyed developing programmes and he would always perform certain actions in the same order. Everything was fine as long as he was in his private sphere. (“Asperger’s syndrome in Adulthood”) Even though these five disorders are different in manifestation of these areas, “each of the five disorders do exhibit some level of difficulties in each one” (Damico, Müller, Ball 155). The three areas that are affected by ASD are: social interaction, communication and aversive behaviours. The area of social interaction and area of aversive behaviours will be skipped since the emphasis should be kept on the communication area. Communication difficulties with ASD children usually focus on those children who are “developmentally delayed or that their verbal productions are unexpectedly different” (Damico, Müller, Ball 156). It is clearly hard to identify communication difficulties in preverbal children because of the limited precursors to

language. However, Brazelton (1991) suggested colic as “the product of excessive stimulation during the previous day: that is, the infant’s premature central nervous system is unable to fully process the stimulation of the previous day. Then, colic occurs that night to release the cognitive tension from the stimulation” (qtd in Damico, Müller, Ball 156). When talking about the most extreme ASD forms, such as autistic disorder, early pre-verbal systems of communication are unable to develop at 12-15 months due to the lack of indication of pre-verbal intent. (Damico, Müller, Ball 157) There are some issues that appear related to the verbal communication in ASD. To begin with the children’s usage of echolalia – a phenomenon characterized by repeating heard noises and phrases by people – which is an attempt to communicate or learn language. The fact that children employ echolalia proves that they achieved some level of grammar while still having communication difficulties. (Damico, Müller, Ball 157) For example, a person may be able only to repeat a question, without being able to answer it. Next, “when preservation occurs, it raises the question about an individual’s cognitive abilities to know what to say when topics and contexts change” (Damico, Müller, Ball 157). Third, children who engage in echolalia have difficulties with “pragmatic skills such as greetings, topic initiation, topic sharing, topic development” (Damico, Müller, Ball 157). Fourthly, those children also fail to understand the perspectives of other people. Lastly, ASD children also face the difficulties with “disclosing one’s own feelings to others, perceiving the feelings of others, and sharing experiences or objects with others” (Damico, Müller, Ball 157).

It has been pointed out by Sugarman (1984) that “young babies first establish primary intersubjectivity followed by secondary intersubjectivity”. (qtd in Damico, Müller, Ball 167) Primary intersubjectivity appears when an infant becomes aware of himself and the surrounding and starts seeking out for the interaction with others, especially with mother. (Damico, Müller, Ball 167) While infants spend much time watching at their mother’s face,

usually for some kind of approval or some sign of understanding, children with ASD rarely engage in those activities. The lack of smiling and babbling are “early signs of ASD” (Damico, Müller, Ball 167). The lack of smiling is usually a proof that children with ASD do not process available information. Moreover, children affected with ASD do not engage in reciprocal vocal play unlike the other children who usually produce a sound and then wait for the other person to respond also by producing a sound. (Damico, Müller, Ball 167)

## 8. SPECIFIC LANGUAGE IMPAIRMENT

The acquisition of language is a very important turning point in childhood. Language “plays an important role in problem solving, thinking, and building and maintaining relationships” (Damico, Müller, Ball 210). While most of the children acquire language almost effortlessly, there are also children for whom the language is not so easily acquired. Hence, the children with difficulties are referred “as having a language disorder, language impairment, language delay, or specific language impairment (SLI)” (Damico, Müller, Ball 210). Leonard stated that “SLI refers to a condition in which children experience significant language learning difficulties in the absence of substantial cognitive, hearing, oral-motor, emotional, or environmental deficits”. (qtd in Damico, Müller, Ball 210 ). The children suffering from SLI usually have difficulties in learning grammatical morphology, the usage of the morphemes that mark tense and agreement being one of the most complicated tasks. (Bedore & Leonard qtd in Damico, Müller, Ball 210) Moreover, the children with SLI “do not move through the optional infinitive stage as quickly as typically developing children” (Damico, Müller, Ball 221). One study confirmed this fact showing that “English-speaking

children with SLI use morphemes that are unrelated to tense (e.g., regular plural *-s*; *-ing*) with much higher accuracy than morphemes that are related to tense” (Damico, Müller, Ball 221). However, children with language disorders are easily identified. In order for children to suffer from a certain language disorder, “their receptive language age has to be at least 6 months below their chronological age or non-verbal mental age and expressive language age has to be at least 12 months below chronological age or non-verbal mental age”. (Damico, Müller, Ball 213) Those children may be classified on the basis of “their cognitive abilities, language abilities, and co-occurring deficits” (Damico, Müller, Ball 214). Sadly, for many children, the language impairment may be a lasting condition that remains in adolescence and adulthood, which results in many people who had SLI being unemployed and dependent on their family and friends.

## 9. ALZHEIMER’S DISEASE

According to encyclopaedia of communication disorders, Alzheimer’s disease (AD) is “a neurodegenerative condition that results in insidiously progressive cognitive decline”. (Kent 240) People suffering from Alzheimer’s disease have difficulties with memory, visual perceptual-spatial processing as well as having language processing impairments including difficulties in comprehending and expressing sounds, words and sentences used in everyday communication. Kent stated that “the semantic deficit limits the comprehension and expression of concepts represented by single word and sentences”. (240) Speaking of expression, one of the prominent features of AD is deficit in finding a certain word, which is evident in spontaneous speech and in object naming. (Kent 240) People who have difficulties

in naming the objects are usually able to describe them and tell what they are used for but cannot name them, and sometimes they can name the object but it is hard for them to identify the parts of that object. For example, when having difficulties saying the word 'refrigerator' they may describe it as household gadget usually placed in the kitchen, which is used for storing food and drinks and keeping them cool. Or in cases when a person can name the object, for example 'bicycle' but cannot name its parts such as saddle, wheel, pedal, bell, brake, basket, etc. Furthermore, people who have difficulties in naming, as a consequence of semantic impairment usually make mistakes such as choosing a wrong word or a wrong sound, as in saying 'computer' instead of 'mobile phone', and sometimes they even create a new nonsense word without any meaning, which is called neologism. (Kent 240) As the disease progresses, not only that they make more of these mistakes while speaking, but they are also facing with difficulties in understanding. This means that, at the very beginning of the disease they have difficulties in understanding more complex sentences containing two or three subordinate sentences or difficult grammar, while at the later stage of the disease they are unable to understand short sentences or even a single word, which consequently results in withdrawal from interactions with others. (Kent 240) Hence, they do not engage in a conversation with other people as being unable to give any response or uttering meaningless sentences. Furthermore, when speaking of comprehension, many AD's patients perform poorly on simple category judgement tasks. (Kent 240) For instance, many patients fail to answer to the question 'Is this an animal?' when shown a picture of a giraffe. Not being able to answer to such questions confirms their inability to understand words and pictures. One of the reasons why AD patients fail to answer to such questions may be because of the lack of knowledge of 'target' word and its associated concept. (Kent 240) Another reason may be due to "the impairment in the categorization process that is crucial to understanding concepts". (Kent 240) Moreover, their impaired comprehension may be related to the difficulty in

understanding complex sentences. (Kent 240) Even though some AD patients have preserved word and sentence comprehension, they still fail to retrieve words from their mental lexicon. In cases of being unable to retrieve a wanted word, changes such substitution or omission appear. In order to ease a communication for people with Alzheimer' disease the conversation should be held in a quiet and peaceful place, where there are no distractors so that paying attention and understanding become easier. Moreover, it is best to have a face-to-face communication with those patients, and if that is impossible then the group should be as small as possible in order for them to be able to keep it up with the topic. Furthermore, using ordinary and concrete words, short sentences with simple grammar, not using metaphors nor describing too much, speaking briefly, directly and being patient are all ways to improve a communication with a person with Alzheimer's disease. (“Communication Disorders Aphasia, Agraphia, and Alexia”)

## 10. AGRAMMATISM

“Agrammatism is a disorder that leads to difficulties with sentences”. (Kent 231) “These difficulties can relate both to the correct comprehension and the correct production of sentences”. (Kent 231) The assumption that word comprehension and production may be left out proves that those difficulties occur at the sentence level. (Kent 232) This disorder is present among patients affected by different disorders, such as patients suffering from Wernicke's aphasia who have difficulties with both comprehension and production, and patients with Parkinson's disease, Alzheimer's disease and children with language disorders who have difficulties with comprehension only. Kent proposes two ways of determining symptoms of agrammatic comprehension; the first one is “to present a sentence to the subject



and ask the subject to pick from a number of pictures the one depicting the proper interpretation of the sentence, while another procedure is to ask subjects to act out the meaning of the sentence with the help of toy figures” (231). The symptoms determined are: “(1) Sentences in which the two thematic roles can be reversed are substantially harder to understand than their nonreversible counterparts” (Kent 231). It is easier to understand a sentence ‘The man is chasing a woman’ than the sentence ‘The man is eating a sandwich’.

“(2) Sentences with noncanonical ordering of thematic roles around the verb are harder to comprehend than ones with canonical ordering” (Kent 231). Berndt stated that “although aphasic patients often do show some impairment in the comprehension of reversible sentences with canonical word orders, they typically show a greater impairment for noncanonical word orders—as in passive sentences, cleft object and object-extracted relative clause sentences”.

(qtd in Hillis 304) In the English language the sentence structure should be as following SVO (subject-verb-object). The sentences that do not follow this pattern are much harder to understand as well as the passive sentences.

3) Sentences with more complex phrase structure are hard to understand regardless of having canonical word order. For example, it is easier for a patient to understand sentence such as “The mother is making a lunch” which has a simple active construction than a sentence such as “She put her clothes on the washing machine” which has a locative construction. Finally, sentences with embedded clauses such as ‘The woman introduced by the show host is Jack’s ex-wife’ “are harder to comprehend than sentences with two conjoined sentences” such as ‘The woman was introduced by show host and she is Jack’s ex-wife’ (Kent 232). In order to determine symptoms of agrammatic production, the researchers have been analysing spontaneous speech and thus concluded that the four main symptoms are: “1) reduced variety of grammatical form, meaning that sentences lack subordination; 2) omission of function words and inflections; 3) omission of main verbs; 4) a slow rate of speech” (Kent 232). Regardless of the systematic differences between

spontaneous and elicited speech, researchers have still managed “to elicit production of grammatical morphology and word order in agrammatic patients” (Kent 231). As a result of their observation, they concluded that during the elicited speech, the patients tend to substitute function words more frequently while at the same time the omission of the function word is less frequent. (Kent 231) Moreover, four symptoms have been recognized during elicited speech: “1) impairment of grammatical word order; 2) impairment is less frequent in main clauses than in subordinate clauses; 3) inflection for tense is more complicated than inflection for agreement; 4) difficulties appear when producing sentences with non-canonical ordering of thematic roles” (Kent 231).

## 11. CONCLUSION

Taking all mentioned facts into consideration, it can be concluded that everyone deals with some kind of language and speech errors. As the language functions involved in speaking have specific locations in the brain, a definite pattern should be followed in the language processing. Therefore, when the pattern is not followed the speech errors occur. While the people who do not suffer from any language disorder rarely experience speech errors, such as the tip of the tongue or slip of the tongue, for people, who do suffer from some language disorder, this is a way of life. They encounter such errors on a daily basis and that makes their communication and life much harder. This paper provides an extensive analysis of common speech errors, such as slips of the tongue and tips of the tongue, as well as common language disorders, such as aphasia, Alzheimer's disease, Autism Spectrum Disorder. The importance of the speech errors has been highlighted as they demonstrate the structure and organization of our mental dictionary, which may be divided into sound classes and semantic classes. Furthermore, a number of examples shows what difficulties occur in language-impaired person's life and how they cope with them. What is more, the examples show that in some cases language disorder can affect only ability to communicate, whereas sometimes it can also affect intellectual ability or ability to socialize. Aphasia, as a result of a stroke, is the most common language disorder. It may vary from mild, including those who have difficulties in comprehending complex sentences, to severe, involving those who are unable to participate in a conversation at all. The major division is between fluent and non-fluent categories. The former refers to normal articulation but poor auditory comprehension and the later to normal verbal comprehension but poor articulation and spoken production. Furthermore, another common language disorder, present mostly in children, autism spectrum disorder also includes several different categories. It is important to emphasize that since the

criteria for determining developmental disorders are changing, some of these subcategories may have been or may become a separate category. Apart from affecting the ability to communicate, it is also associated with developmental delays. Hence, autistic people may have learning disabilities, poor social or motor skills. In cases of Alzheimer's disease, along with the difficulties in comprehension and expression, patients have also problems with memory and visual perceptual-spatial processing. Finally, the examples and tips, given in the paper, might be helpful when engaging in a conversation with language-impaired person and serve as a reminder to be patient and empathic.

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### 13. LANGUAGE AND MENTAL DISORDERS: Summary and key words

This final paper deals with Language and Mental Disorders. It contains the definition of neurolinguistics and psycholinguistics, explains the process of normal brain functioning and describes most important parts of the brain involved in the language processing. Furthermore, two most common phenomena have been explained and divided into categories. Apart from language disorders, some of the speech disorders have also been listed. Before

introducing aphasia, its most common cause has been defined. In the chapter about aphasia, its syndromes were introduced, as well as some tips which could be helpful when talking to aphasic person. Autism spectrum disorder and its subcategories have been defined and provided with examples. Lastly, specific language impairment which occurs in childhood and Alzheimer's disease which mostly occurs in adulthood have been briefly explained.

Key words: language disorder, neurolinguistics, psycholinguistics, tip of the tongue phenomenon, tongue slips, stroke, aphasia, autism spectrum disorder, Alzheimer's disease

## 14. JEZIČNI I MENTALNI POREMEĆAJI: Sažetak i ključne riječi

Ovaj završni radi bavi se jezičnim i mentalnim poremećajima. Sadržava definiciju neurolingvistike i psiholingvistike, objašnjava proces normalnog funkcioniranja mozga i opisuje najvažnije dijelove mozga koji su uključeni u jezičnu obradu. Nadalje, dva najčešća fenomena su objašnjena i podijeljena u kategorije. Osim jezičnih poremećaja, navedeni su i neki govorni poremećaji. Prije predstavljanja afazije, definiran je njezin najčešći uzrok. U poglavlju o afaziji, njezini simptomi su predstavljeni kao i poneki savjeti koji mogu biti korisni u razgovorima s osobama koje boluju od afazije. Autizam i njegove potkategorije su definirane i potkrijepljene primjerima. Naposljetku, specifičan jezični poremećaj koji se javlja u djetinjstvu i Alzheimerova bolest koja se uglavnom javlja u zrelosti su ukratko objašnjeni.

Ključne riječi: jezični poremećaj, neurolingvistika, psiholingvistika, fenomen "na vrhu jezika", fenomen "omaknuo se jezik", moždani udar, afazija, autizam, Alzheimerova bolest

