

# Analysis of Experience with Sensory Aphasia in The Uzbek Language

Lobar Kambarova

Phd candidate of Tashkent State University Uzbek language and literature named after Alisher Navoi, Uzbekistan

**Received:** 28 February 2025; **Accepted:** 29 March 2025; **Published:** 30 April 2025

**Abstract:** Sensory aphasia is an area that has not yet been researched in the Uzbek language. This article analyzes the results of an experiment conducted on two participants with sensory aphasia whose native language is Uzbek. In accordance with A. Luria's classification, impairments in object naming and repetition skills were observed. Due to the absence of significant differences in acoustic-phonological differentiation, the necessity for conducting further experiments is highlighted.

**Keywords:** Sensory aphasia, speech disorder, acoustic-phonological discrimination, naming, A. Luria.

**Introduction:** Aphasia is an important object of study in neurolinguistics, and sensory aphasia is one of its main types. Unlike Broca's aphasia, sensory aphasia arises as a result of damage to the area of the brain responsible for phonological analysis, disrupting the phonemic level of speech production [1].

In scientific literature, the preservation of fluent speech, impaired repetition within a single word, and the inability to name objects are cited as characteristics of sensory aphasia [2].

However, recent research has also identified the disruption of semantic "access" in sensory aphasia as an additional problem [3].

I. Azimova is conducting research on Broca's aphasia (agrammatic aphasia) and its features in the Uzbek language [4]. This work, dedicated to the study of sensory aphasia, is one of the first studies in this field in the Uzbek language.

Although sensory aphasia has been documented as resulting from damage to the superior temporal gyrus of the left hemisphere, recent neuroimaging results have shown that the middle and superior temporal gyri

are affected to the same extent in sensory aphasia (Ogar et al., 2011) [5]. There is strong evidence that the Wernicke's area, where sensory aphasia occurs, is associated with several neural regions, which in turn are linked to various linguistic functions.

H. Robson proposed three hypotheses to clarify the nature of comprehension impairment in sensory aphasia: (1) impairment of acoustic and/or phonological analysis; (2) semantic disturbance; or (3) combined phonological-semantic disturbance (referred to here as the dual hypothesis). According to the conclusions of the conducted research, sensory aphasia is characterized by a three-way impairment of acoustic analysis, phonological representations, and controlled use of semantic representations.

## Experimental method

### Participants

Two patients with aphasia resulting from stroke participated in the experiment. Both participants are male, with Uzbek as their native language. The following table provides information about them.

№	Participants in the experiment	Sex	Time since stroke	Age at the time of the experiment	Dominant hand	Occupation	Education
1.	NO	Male	4 months ago	59	Right	Builder	Higher
2.	NI	Male	1 year ago	74	Left	Engineer	Secondary specialized

### Experimental materials

The "Bilingual Aphasia Examination" and "Kentucky Aphasia Test" were used in the experiment. The test consists of the following sections: execution of complex commands, naming (34 images); oral auditory discrimination (32 images), repetition, reading, assessment of automated speech, producing semantic opposites, reading comprehension of words, reading comprehension of sentences and writing.

### Experimental process

Black and white images were used for naming pictures, oral auditory discrimination, and reading comprehension of words/sentences. The patient's speech was recorded on a voice recorder. Before each stage of the experiment, the tasks were explained to the subjects.

In the picture naming task, 34 images were shown to the participants. They were asked to name the image shown.

In the oral auditory discrimination test, participants were tasked with pointing to an image representing a spoken word.

In the repetition stage, subjects were asked to repeat first one-syllable words without specific lexical meaning (4 in CVC form), then two-syllable words with lexical meaning (4), and finally sentences (2).

To assess reading skills, 4 lexemes were given and subjects were asked to read them aloud.

During the automated speech test, the subjects named the days of the week and animal names.

To test semantic opposition, participants were given a word and asked to provide its opposite meaning.

To assess reading comprehension of words and then sentences, subjects were asked to read a word/sentence written on paper and point to the corresponding image.

The assessment of writing skills consisted of two stages. In the initial stage, subjects were asked to copy a word written on paper. The next stage was a dictation task, where subjects were asked to write down a spoken word.

The purpose of organizing the experimental process in this manner was to identify specific features of sensory aphasia in the Uzbek language and gain a general understanding of the type of disorder. In this study, only the experimentally determined results from the picture naming and matching stages were analyzed.

### Evaluation

The subjects' responses were analyzed based on the number of correct answers given for each task and the errors made. Answers given with the experimenter's assistance or incorrect answers were considered errors.

### Experimental results

In the naming task, 34 pictures were shown to the participants. During the experiment, clinically appropriate materials were used, taking into account the psychological and physiological state of the subjects. Samples from the Kentucky Aphasia Test, compiled for this purpose, were used. These pictures consisted mainly of words belonging to the noun category. The subjects were asked to name the image shown. The results are presented in the table below.

Table 1. Results of patients with sensory aphasia on the

**Table 1. Results of patients with sensory aphasia on the picture naming task.**

Participants diagnosed with aphasia	Total	%
NO	2/34	5.8

NI	4/34	11
----	------	----

As can be seen from the table, the indicator associated with naming in patients with sensory aphasia showed a low result. NO first noticed a balloon image in the sequence on the picture sheet. During the experiment, he named all the pictures shown to him as balloons. With the help of a tester, he was able to express the lexemes of flower and circle. However, this was not considered a correct answer. The square shape was labeled as an angle. From the given pictures, the images representing the lexemes of bear and hat were correctly named.

At this stage of the experiment with NI, images representing lexemes such as bear, box, person, and tire were correctly named. Responses were given to the image of the ball as "object," and to the image of the circle as "nothing."

A. Luria cites the impairment of naming skills as an important characteristic of sensory aphasia: "The patient finds it very difficult to find the names of necessary things, while at the same time, frequently occurring, spontaneously appearing names (table, book, telephone, coat, knife, etc.) can sometimes be easily found, attempts to find the names of unfamiliar and less established objects put the patient in a very difficult position" [1]. In this case, he notes the search for words through context, the occurrence of literal paraphasias, the slight appearance of auxiliary words

(phonetically similar or semantically related), and that the patient recognizes these words as inadequate but cannot replace them with the correct words.

It was observed that the results of the naming experiments correspond to A. Luria's classification.

The above situation indicates that naming skills are also impaired in sensory aphasia in the Uzbek language.

Verbal auditory discrimination is also known as acoustic-phonological discrimination. The direct study of acoustic-phonological processes has a long history in aphasiology.

Such studies mainly involve evaluating participants using phonological differentiation tests (determining whether two phoneme sequences are the same or different) and phonological identification tests (matching heard phonemes to a given set of variants) [5].

At this stage, the subjects were asked to indicate pictures that matched the words spoken by the experimenter. The BAE (Bilingual Aphasia Examination) and Kentucky Aphasia tests were used in this stage of the experiment. Participants were presented with 32 lexemes, and their verbal auditory discrimination skills were tested. The results of the experiments are presented in the table below.

Participants with aphasia	Word and picture match	Sentence and picture match	%
NO	18/18	2/7	100/28
NI	16/18	0/7	88/0

## DISCUSSION

The indicators show that the participants achieved high results in word and image matching. However, they encountered difficulties in matching sentences to pictures. This can be explained as follows. In studies on sensory aphasia, to check whether acoustic-phonological differentiation was preserved, participants were typically asked to determine the phonological similarity of two verbal words or non-words (i.e., whether both words or non-words sound the same or different to them). Non-identical pairs often differed by a single phonemic feature (minimal

pairs: for example, /pat/ and /bat/ or /lop/ and /nop/). In scientific research, non-words are sometimes preferred. In H. Robson's research, non-words were also used for acoustic-phonological differentiation in sensory aphasia. This was done based on the degree of confusion of phonemes in the English language [5].

A. Luria also found that patients with sensory aphasia cannot distinguish phonemes that differ by one feature. "Patients with this disorder cannot correctly distinguish between the syllables da-ta and ta-da, ba-pa and pa-ba, pronouncing them the same way as da-da or ba-ba. They say there's a difference in both parts of the pair, but they can't pinpoint it " [1].

The lexemes corresponding to the images we selected for the acoustic-phonological differentiation condition did not have similar phonemes (car-bar-jar-star/train-crane-wheat-shell).

The first conclusion is that to determine whether acoustic-phonological disturbances are characteristic of sensory aphasia in the Uzbek language, tests should be developed and repeated for the correspondence of words and images distinguished by a single phoneme. The second conclusion, based on the results of an experiment conducted by H. Robson (2011), is that conducting an experiment with short non-word syllables can more clearly demonstrate acoustic-phonological disorders in sensory aphasia.

Participants showed poor performance in matching sentences with images. Among the sentences, there was also an item that required logical thinking to answer: "A truck is not pulling a car." The patient was supposed to choose an image of a car pulling a truck. The patient did not pay attention to the negative form of the sentence and selected the answer option showing a truck pulling a car. Even when the sentence was simplified and presented in a positive form as "A big car is pulling a small car," the patient still failed to comprehend the meaning and gave an incorrect answer. The results indicate that understanding complex syntactic structures is severely impaired in sensory aphasia. The impairment of complex syntactic structures can be attributed to a lack of understanding of the meanings of their constituent lexemes. A. Luria notes that even if patients do not know the lexical composition of speech, they retain the ability to perceive its intonation-melodic aspects and guess its meaning. As a result, patients who do not correctly understand the meanings of certain words continue to grasp the general structure of sentences spoken to them, and by circumventing difficulties associated with their inability to comprehend the meanings of specific lexical units, they begin to make assumptions about the overall meaning [1].

## CONCLUSION

In conclusion, naming and acoustic-phonological disturbances in sensory aphasia have been studied based on English and Russian language materials. In the Uzbek language, patients with sensory aphasia also exhibited naming disorders. Acoustic-phonological disorder requires further research and the development of specialized materials for the Uzbek language.

## REFERENCES

Лурия А. Письмо и речь. Нейролингвистические исследования. – Москва: Akademia, 2002. – Стр.190.

Кулеш С. Нарушения речи при локальных поражениях мозга. – Белорусь, 2018. Медицинские новости. – №3. – С. 5.

Rodriguez O. Lexical access in Broca's and Wernicke's aphasia. Universidad del Pais Vasco. Euskal Herriko Unibersitatea, 2021-2022. 34 P.

Азимова И. Ўзбек тилидаги аграмматик афазияда айрим феъл замонларининг ифодаланиши. Ўзбек тили ва адабиёти журнали, 2016. – №6. 95-100. Азимова И. Ўзбек тилидаги аграмматик спонтан нутқда гапларнинг қўлланиши. Ўзбек тили ва адабиёти, 2019. – №5. 94-98.

Robson H. Investigating the comprehension impairment in Wernicke's aphasia. – Manchester, 2011. – P.24.