

# TEMPORAL LOBE SYNDROME



**Course: Neuropsychology CC-6 (M.A PSYCHOLOGY SEM II); Unit 4**

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# TEMPORAL LOBE SYNDROME

- **SYMPTOMS OF TEMPORAL LOBE LESIONS**

**Principal symptoms** associated with disease of the temporal lobes.

1. Disturbance of Auditory sensation and perception.
2. Disturbance of Selective attention of auditory and visual input.
3. Disorders of visual perception
4. Impaired organization and categorization of verbal material.
5. Disturbance of language comprehension.
6. Impaired long term memory.
7. Altered personality and affective behavior, and
8. Altered sexual behavior.

# **Disturbance of Auditory sensation and perception.**

**People have a limited capacity to process the wealth of information in the environment and hence must select which inputs to process. This selectivity is generally not conscious, for the nervous system automatically scans inputs and selectively perceive the environment. Because it is impossible to process the two competing inputs concurrently, the auditory system adopts one of two strategies: either one conversation is ignored, or attention shifts back and forth from one conversation to the other. In either case there is a selection of input. Selective perception in the visual system operates similarly.**

**For example- because it is not possible to watch all events of a gymnastics meet simultaneously, attention either is focused entirely on one event or is shifted from one event to another.**

Schulhoff And Goodglass have demonstrated that

**Left temporal lobe lesions results** in an overall drop in the number of words reported and

**Right temporal lesions results** in an overall drop in the number of tonal sequence recognized.

One explanation for the effect is that the nervous system has difficulty focusing selectively on the input into one ear and attempts to process all the input concurrently, as a result performance drops significantly.

**In case of visual inputs-**

**Right temporal lesions** produce bilateral deficits, whereas

**Left temporal lesions** produce unilateral ones.

This difference implies that the **right temporal lobe may have a greater role than the left** in selective attention to visual input.

# Disorders of Auditory Perception

## Speech Perception

**Left temporal lobe lesion-** symptoms of sensory aphasia or receptive aphasia-cannot distinguish between words heard.(two words or more).

Unable to take dictation of words or sentence but can copy the words or sentences.

**Acoustic Agnosia-** Walsh,1994

**Lesion in right hemisphere regions results** in inability to distinguish between nonverbal sounds-ex- cannot or not able to distinguish sound of cat and birds.

Lackner and teuber 1973- Acc. to him- Patients with temporal lobe lesion if presented with 2 sounds of click with greater time gap, he reports one click.

If presented two stimulus, they are not able to report which stimulus is presented first.

## Music Perception

Musical sounds may differ from one another in three aspects: loudness, quality and pitch.

**Right temporal lobe lesions** impair the perception of timbre. Cannot distinguish between violin and harmonious music, although loudness of both be same.

**Left temporal lobe lesion** results in failure in distinguishing pitch in music.(Pitch refers to the position of a sound in a musical scale)

•Aphasia is a combination of a speech and language disorder caused by damage to the brain.

•Agnosia is inability to interpret sensations and hence to recognize things, typically as a result of brain damage.

# Disorders of visual perception

Although individuals with temporal lobe lesions do not normally have larger defects in the visual fields, they do have deficits in visual perception.

**Milner** found that patients with **right temporal lobe** lesion were impaired in the interpretation of cartoon drawings in the McGill Picture Anomaly Test. Ex- in one item illustrating a monkey in a cage there is an oil painting on the wall of the cage- an obvious anomaly. But patients with right temporal lesions, although able to accurately describe the contexts of the picture, were impaired at recognizing the anomalous characteristics of this and other pictures.

Also patients with right temporal lobe damage are impaired at the recognition and recall of faces or photographs of faces.

# Impaired organization and categorization of verbal material

Organization of sensory input appears to be a function of the temporal lobes.

**Studies by Jaccarino- Hiatt and by Wilkins and Moscovitch** have shown that patients with **left temporal lobe lesion** are impaired in their ability to do this type of organization, even with single words or pictures of familiar objects. Thus, patients have difficulty in placing words or pictures into discrete categories, even when they are requested to, and they also have difficulty in using categories. **Milner** has found that when such patients are given a category name(e.g., animal) and asked to recall exemplars of the category(e.g., dog, cat, rat), they have difficulty, even though they are fluent in other types of tests.

Patients with posterior temporal lesions may show **dysphasic symptoms** in which they can recognize the broader categorization but have difficulty with the more specific one.

# Poor contextual use of Information

The meaning of identical information can vary depending upon the context. For example, a word such as fall can refer to a season or to a tumble, depending upon the context. Similarly, context may be a major cue for facial recognition. This ability to use context as a key to the recognition of stimuli probably depends upon normal temporal lobe function.

**Kolb and Taylor** showed that temporal lobe patients found it difficult to correctly choose the facial expression appropriate for a faceless cartoon character when the only clue was the context.(surprise party, funeral, argument, etc.)

# Disturbance of Language comprehension

**Lesions of the left temporal association cortex** have been associated with **disturbed recognition of words**, the extreme form being “word deafness”, an inability to recognize words as such despite intact hearing of pure tones.

Jaccarino-Hiatt study show disturbance in producing word associations, such as in “table-chair” or “night-day”. Furthermore, **people with right temporal lobe lesion are excessively talkative**, suggesting a loss of inhibition of talking.

# Memory (Poor long term memory)

Bilateral removal of the temporal lobe resulted in **anterograde amnesia**- amnesia for all events after the bilateral removal of the medial temporal lobes (surgery). (removal of hippocampus and amygdala)

**Lesion of the left temporal lobe result** in impaired recall of verbal material such as short stories, word lists, whether presented visually or orally.

**Lesion of the right temporal lobe result** in impaired recall of nonverbal material such as geometric drawings, faces, tunes and similar material.

# Changes in affect and Personality

Temporal lobe has been **associated with disturbance of affect.**

**Penfield and others** reported that stimulation of temporal cortex **produces feelings of fear.**

**Pincus and Tucker** described several symptoms of personality, **egocentricity(preoccupation with one's own internal world), perseveration on discussion of personal problems, paranoia, preoccupation with religion, and proneness to aggressive outbursts.** This constellation of behavior produces what is described as a temporal lobe personality, although very few people combine all these traits.

# Changes in Sexual behavior or activity

Bilateral destruction of the entire temporal lobe results in a dramatic increase in sexual behavior that is indiscriminately directed both heterosexually and homosexually as well as towards inanimate objects.

**Blumer and Walker** found 70% of their patient sample to have experienced a change in sexual activity, most commonly a decrease in sexual interest.

Among these patients it was not unusual for sexual arousal to occur as rarely as once a year.

# REFERENCES

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**Google images.**

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