# Working Memory Deficits in Individuals with Aphasia

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## Abstract

Aphasia is a family of acquired neurogenic language disorders that affect all language modalities. Presence of symptoms and degree of severity manifest differently for each individual presenting with Aphasia. There is a general agreement that adults with aphasia present with a working memory deficit that contributes to their language processing impairments. Direct, Indirect, and/or Client-Centered treatment approaches should be individually tailored to the client and specific intervention target goals. The purpose of this presentation is to inform speech-language pathologists of working memory deficits presenting in individuals with Aphasia and the important clinical implications for treatment in regards to these deficits.

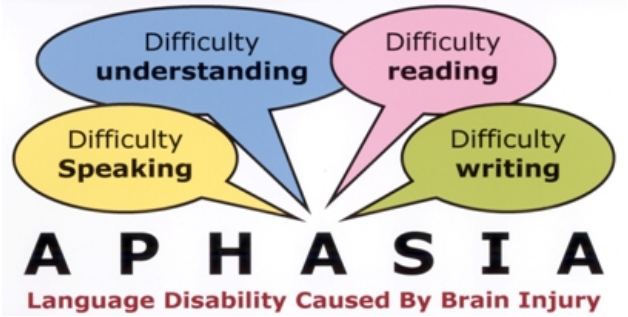

## Short-Term and Working Memory

**Short-term Memory:** Involves holding information for a brief period of time

**Working Memory:** Involves temporary storage and active manipulation of information for complex cognitive processes, including language comprehension.

**Baddeley and Hitch's WM Multi-component Model:**

- Central Executive System
- Phonological Loop
- Visuospatial Sketchpad




## Aphasia

**Definition:** According to ASHA, Aphasia is an acquired neurogenic language disorder resulting from an injury to the brain that affects all language modalities. Aphasia is not a single disorder, but instead is a family of disorders that involve varying degrees of impairment in four primary areas:

- Spoken language expression,
- Spoken language comprehension,
- Written expression, and
- Reading comprehension.

**Memory Deficits:** There are memory deficits in both verbal and visuospatial modalities among individuals with Aphasia. Additionally, individuals with Aphasia have limited capacity and impaired attentional-control processes as well as impaired inhibitory mechanisms (Hasher and Zacks, 1988).

**Specific Language Deficits:** Working memory deficits have been shown to present in the following areas of language:

- Verbal expression impairments
- Auditory comprehension impairments
- Reading comprehension impairments
- Written language impairments

## Treatment

### The Role of the Speech-Language Pathologist

According to ASHA, an SLP screens, assesses, diagnoses, and treats persons with Aphasia. An SLP provides clinical and educational services, prevention and advocacy, administration and research. (ASHA, 2015).

### Collaboration

Speech-Language Pathologists should provide education and training to rehabilitation specialists, other professionals, and caregivers regarding the patient's communication impairment, as well as, implement communication strategies to optimize the patient's engagement.

### Intervention Approaches

**Direct Treatment approaches** aim to retrain or restore temporary memory storage, processes that support temporary storage or manipulation of information, or both. These interventions specifically target Short-term Memory Capacity and Central Executive Component of Working Memory.

**Indirect Treatment approaches** focus on compensatory training or treatments for other domains that are expected to bolster STM and WM circuitously.

**Client-centered Treatment approaches** focus on meaningful communication-based activities as well as non-communication activities.

**Group Treatment approaches** focus on gaining support from other individuals through universality and empathy, increasing likeliness for participation in communicative opportunities, and providing emotional support. The SLP will facilitate direct and indirect treatment approaches based on the individual needs of the group.

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