

Individuals with TBI: Language Processing and Pragmatic Considerations

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Abstract

Individuals with Traumatic Brain Injury (TBI) often present with some degree of compromised language processing (LP). This may impact the rate and accuracy individuals with TBI process language which can lead to pragmatic concerns. This presentation will focus on how each end of LP may impact components of pragmatic language, including but not limited to topic maintenance, turn-taking abilities, relevancy of response, and listening skills. Pragmatic deficits (PD) may impact the ability to create and sustain human connection or participate in vocational settings resulting in negative impacts on quality of life. Although behaviors of accelerated LP may overlap with executive functioning (EF) deficits, embodying a conversation-based treatment approach may be more functional, applicable, and generalizable. Assessment of the relationship between compromised LP and PD may help to create specific, functional goals to address in speech-language therapy within TBI populations to improve treatment outcomes.

Learner Outcomes: At the culmination of this session, participants will be able to:

- Identify relationship between delayed language processing and slowed response time on conversation-based language use.
- Identify relationship between accelerated language processing and heightened response time on conversation-based language use.
- Utilize findings to create specific, functional language goals for TBI populations with compromised language processing.

Introduction

Traumatic Brain Injury (TBI): injury to brain resulting from external force or physical trauma (Roseberry-McKibbin et al., 2019).

Language Processing (LP): process of accessing and retrieving linguistic information (Middlebrooks et al., 2016).

Executive Functioning (EF): cognitive domain including organization, planning, and initiation of cognitive and volitional activities (Roseberry-McKibbin et al., 2019).

Pragmatic Deficits (PD): language use impairments regarding norm-based rules governing social interactions dependent upon communicative contexts (Koch et al., 2019).

Why is it important?

- An estimated 80-100% of TBI individuals experience language deficits following injury (Lê et al., 2022).
- PD may lead to social isolation, damaged relationships, and failed social migration; thus, treatment targeting these deficits may be more functional and improve quality of life (Douglas et al., 2017).
- Conversation-based language therapy may be more applicable and assess cognitive-linguistic deficits (CLD) in a different way to improve communication beyond sole treatment of cognitive domains, which does not appear to improve PD (Lê et al., 2022).

Cognitive-Linguistic Modalities

- Attention, working memory, and EF underly LP (Henderson et al., 2014).
- CLD may result in language impairments determined by varying factors (Stenberg et al., 2015).
- Impairment in cognitive and linguistic interface. (Ilie et al., 2017).
- Severity of PD in conversation-based language determined by level and type of LP deficits (Henderson et al., 2014).

TBI Lesion and Pragmatic Generalities

Accelerated Language Processing (ALP)

- Commonly associated with diffusional axonal damage and lesions in fronto-temporal-parietal areas (Henderson et al., 2014).
- Discourse processing neural networks damaged, impairing narrative production tasks (Henderson et al., 2014).
- Discourse pathologies due to rapid, impulsive retrieval of language domains and disorganization, including:
 - Semantic vagueness (i.e., lacking descriptors).
 - Poor speech elicitation related to the communicative context, lack of message planning (e.g., impulsive, inappropriate turns).
 - Poor or lacking introduction of referents unfamiliar to listener (e.g., random topics, derailment) (Henderson et al., 2014).

Delayed Language Processing (DLP)

- Primarily associated with bilateral lesions to temporal lobes (Lê et al., 2022).
- Diminished attention and slow reaction time (Bolt et al., 2018).
- Significantly slowed or absent ability to decode paralinguistic, extralinguistic (e.g., facial expressions), and prosodic cues (Ilie et al., 2017).
- Word-retrieval deficits (Ramos-Usage et al., 2019).
- Impairments in verbal working memory and comprehension leading to inability to follow conversations (Ramos-Usaga et al., 2019).
- Slower processing of sounds (Lê et al., 2022).
- Lacking or absent ability to understand macrostructure, global coherence, satire, and abstract language (Lê et al., 2022).

Treatment Considerations

- PD assessment should occur 3 weeks post-injury to construct individualized intervention for best recovery outcomes (Ramos-Usaga et al., 2019).
- Cognitive-communication (CC) intervention programs to improve discourse, communication skills, and social context recognition utilizing client-centered approach and functional activities (Lê et al., 2022).
- Treatment should target cognition, communication, and psychosocial functioning to increase communication competence (Lê et al., 2022).
- Must also include feedback, metalinguistic skill training, bottom-up target implementation, structured scaffolding, errorless learning and nonverbal training (Lê et al., 2022).
- Additional music training intervention may help improve prosodic processing deficits (Ilie et al., 2017).

Conclusion

Implications

- Scaffolding, feedback, and errorless learning with real communication partners in functional settings may improve both ALP and DLP pragmatic domains.
- TBI patients with significant DLP may benefit from music training to improve impaired prosody affecting paralinguistic decoding and emotional inferencing.
- Metalinguistic training may improve global cohesion, macrostructure, and abstract language in TBI patients with impaired ALP and DLP.
- Important to recognize occurrence of overlap between ALP and DLP in TBI populations and to construct goals that accommodate each accordingly with individual needs.

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Pragmatic Components Affected Following Altered Language Processing Speed

