

# **Research Matters:**

## **Social Cognition and Working Memory in Adolescents and Young Adults with Traumatic Brain Injury**

### **WHAT IS SOCIAL COGNITION?**

- One's ability to recognize and understand a communication partner's thoughts and feelings.
- This includes the correct interpretation of their verbal, gestural, and facial cues.
- The interaction is followed by a socially appropriate response in the current context.

### **HOW DOES SOCIAL COGNITION AND WORKING MEMORY WORK TOGETHER?**

- As a person matures, they learn to utilize their social cognition, evolving to combine these skills with working memory.
- This further develops their social repertoire of initiating and responding in various situations.
- Understanding the roles both social cognition and working memory have in social interactions may help us to learn the complexities of social interpretations in more difficult memory situations such as facial identity and affect.

### **HOW MIGHT SOCIAL COGNITION AND WORKING MEMORY BE IMPACTED BY A TBI?**

- Past research tells us that both social cognition and working memory continue to develop well into adulthood.
- During this developmental timeframe, adolescents and young adults are also at greater risk for TBIs due to falls and motor vehicle accidents.
- Higher rates of TBIs combined with a developing brain, puts teens and young adults at a greater risk for developmental disruptions in social cognition tasks involving working memory.

## ABOUT THIS STUDY

**Why?** To gain a better understanding of the interaction between working memory and social cognition in adolescents and young adults with TBIs

**Who?** Researchers included 8 participants (ages 14-22) with complicated mild TBIs (mTBI) and 8 typically developing (TD) participants matched for sex and age.

**How?** Participants were asked to remember facial (what a person looks like) and emotional (affect) recognition compared to the faces shown previously (either 0, 1, or 2 times prior).

### Predictions

1. Face recognition scores would be higher than emotion recognition because they require lower working memory demand.
2. TD participants would score higher on all tasks when compared to participants with TBIs because their injury likely impaired working memory and social cognition
3. The differences between the 2 groups (TD and mTBI) would increase for both facial recognition and emotion recognition.
4. Both groups' scores for misremembering would increase due to mental load. That is, the more information shown, the more difficult it would be for the participants to remember.

## FINDINGS

- TD participants did better than those with mTBI for remembering between 1 and 2 times back.
- For 0- to 1-times back, there were no significant differences between groups. This means both TD and mTBI participants responded with similar number of correct answers in both facial and emotional recognition.

- Overall, the differences between the two groups did increase with time and incorrect scores also increased for 1- and 2-back remembering. But the differences between the 2 groups was not significant. This suggests that even though there was difference between the groups working memory, it was not impacted enough by the mTBI to say that it is the cause.

## IMPLICATIONS FOR PRACTICE

- Consider timing of injury:
  - TBIs in adolescents and young adults may result in greater impairments in working memory based on timing in their development.
- Consider social impairments due to injury:
  - Participants with TBI showed greater impairment in facial identification than their TD peers regardless of mental load (i.e., timing in the study).
  - Emotions such as anger and sadness may be more difficult to recognize than happiness.
- Consider social isolation due to injury:
  - Because TBIs result in time at home away from school and work, difficulty in emotional recognition may be exacerbated by social isolation post TBI.
  - Isolation may impact development of social skills in teens with TBI, thus resulting in limited social understanding and lesser social cognition skills.
  - Problems with reading other people as well as limitations in working memory may lead to further social isolation and hinder the progression of social development.

## REFERENCE

Byom, L., Whaln, M. S., & Turkstra, L. (2021). Working memory for emotions in adolescents and young adults with traumatic brain injury. *Brain Impairment*, 1-15.