# Why **Childhood Head Injuries** Matter: Understanding **Alcohol Risks** in **Young Adulthood**

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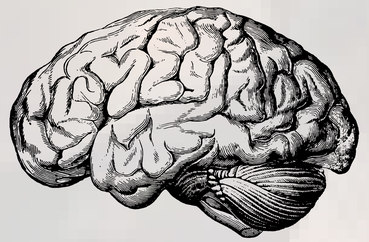


## Introduction

- Traumatic brain injuries (TBIs) are the leading cause of **death** and **disability** globally and many studies demonstrate strong associations between **TBIs** and **at-risk behaviours** (Brain Injury Canada, 2023; Kennedy et al., 2017).
- **Impulsivity** has emerged as being **strongly associated** with **early life TBI** (Fullerton et al., 2019).
- TBIs are often associated with a high prevalence of **comorbidity** with **substance use disorders** (McHugo et al., 2017).
- Recent research supports **substance use problems** following **early life TBI**, although the mechanisms underlying this relationship are unclear (Cannella et al., 2019).
- It is hypothesized that injuries during this time can interrupt **neurodevelopment** related to **impulsivity** which can lead to **substance use disorders** (Cannella et al., 2019).

## Objective

- There is a **lack of research** examining the relationship between **TBIs** acquired during **childhood and/or adolescence** and **substance use problems in later life.**
- This gap is important to examine because research suggests that brain injuries acquired during early life are more likely to result in **cognitive impairments** due to a reduced ability to recover (Giza & Prins, 2006).

- The objective of the current study is two-fold:

  1) To examine whether TBIs acquired during childhood have a significant impact on substance and alcohol use problems

  2) To examine whether this relationship is mediated by impulsive behaviour

## Methods & Measures

**Prescreen** → **Participants aged 19-29 (*N* = 435)** → **Self-report questionnaires** → **Data Analysis (SPSS)**

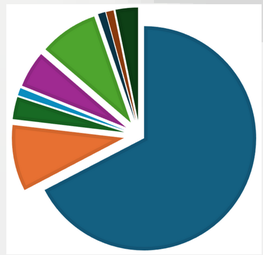
- **OSU-TBI-ID** — **Questionnaire used to assess TBIs.**
- **B-YAACQ** — **Assessed consequences related to drinking with a 24-item measure.**
- **AUDIT** — **Assessed alcohol consumption, drinking behaviors, and alcohol-related problems.**
- **DAST-10** — **Assessed drug use, not including alcohol or tobacco use, in the past 12 months.**

## Results

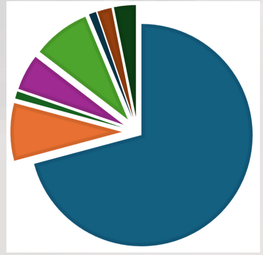
**The average age of participants was 24.74 years old (*SD = 2.80*) and 52.8% of reported their biological sex as female.**

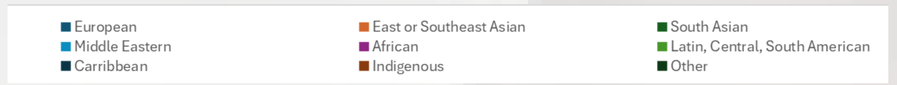
**The ethnic background of participants is reported below.**

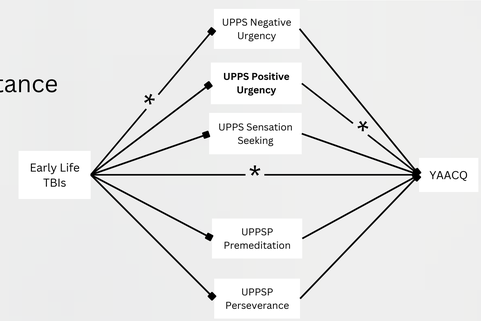
**Control (*N* = 272)**

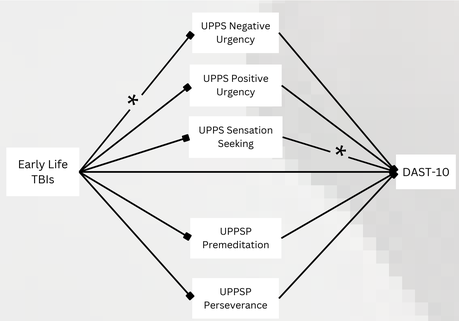


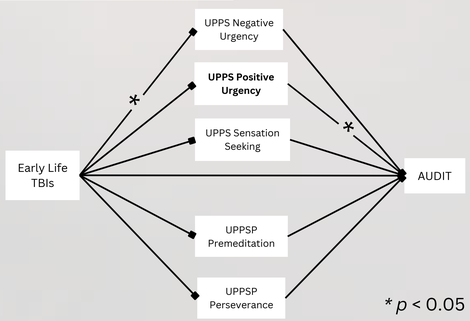
**TBI Participants (*N* = 163)**






* $p < 0.05$

## Discussion

- Significant **group differences** were present in those with a history of **early life TBIs** on measures that assessed **alcohol related consequences** (i.e., YAACQ and AUDIT), but not for **substance use problems** (DAST-10).
- **Number of TBIs** sustained in childhood or adolescence were found to be significantly associated with **negative urgency**.
- Interventions aimed at **enhancing emotion regulation skills** may be particularly beneficial for this population to **reduce impulsive tendencies** specifically in **negative affective states.**

## Future Directions

- Examine impact of **social determinants of health** to acquiring childhood TBIs and subsequent **substance use problems.**
- Assessing impulsivity using **behavioral measures** as opposed to **self-report**.
- **Clinical samples** could be used such as those with substance dependence or those that suffered **severe impacts** as a result of their TBI such as a **physical or sensory impairment.**

## References

1. Brain Injury Canada. (2023, March 21). Statistics. Retrieved from https://braininjurycanada.ca/en/statistics/
2. Kennedy, E., et al. (2017). Childhood traumatic brain injury and the associations with risk behavior in adolescence and young adulthood: a systematic review. *The Journal of head trauma rehabilitation*, *32*(6), 425.
3. Fullerton, A. F., et al. (2019). Early childhood head injury attenuates declines in impulsivity and aggression across adolescent development in twins. *Neuropsychology*, *33*(8), 1035.
4. Johnson, V. E., et al. (2013). Inflammation and white matter degeneration persist for years after a single traumatic brain injury. *Brain*, *136*(1), 28-42.
5. McHugo, G. J., et al. (2017). The prevalence of traumatic brain injury among people with co-occurring mental health and substance use disorders. *Journal of head trauma rehabilitation*, *32*(3), E65-E74.
6. Cannella, L. A., et al. (2019). Brain interrupted: early life traumatic brain injury and addiction vulnerability. *Experimental neurology*, *317*, 191-201.