

# Parents-child relationships as a moderator of executive functioning after early childhood mTBI

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## BACKGROUND

- Executive functions (EF) play a crucial role in early cognitive, behavioral and socio-emotional development.<sup>1</sup>
- EF can be influenced by social factors such as the family environment and relationships.<sup>2</sup>
- Traumatic brain injury (TBI) sustained during childhood is known to impact EF, which are in an intense period of maturation.<sup>3</sup>
- Few studies have investigated the quality of parent-child interactions and putative associations with EF after a mTBI in early childhood.<sup>2</sup>

## OBJECTIVE

- ✓ Investigate the moderating role of parent-child relationships on EF after early childhood mTBI

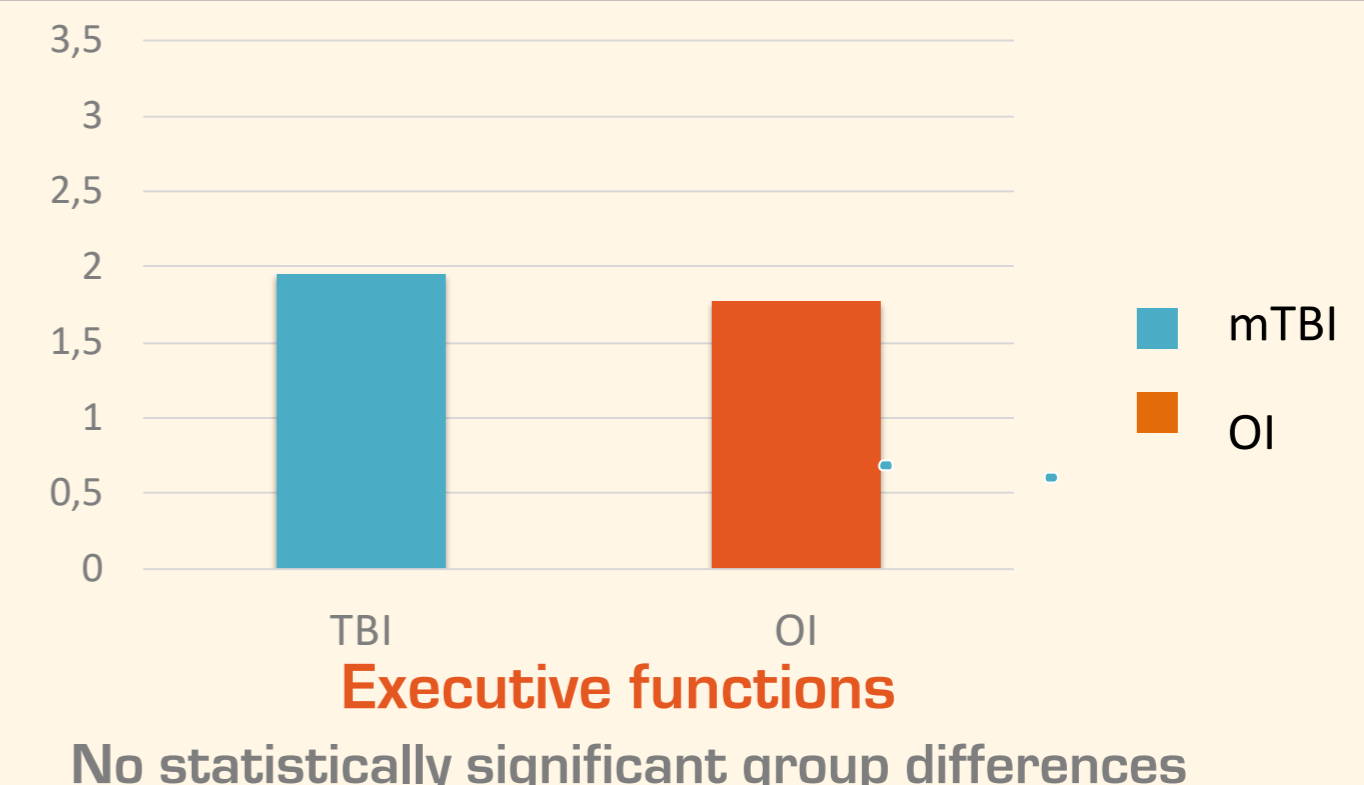
## METHODS

- ➔ Substudy of a larger longitudinal cohort study (**LION**)
- 48 mTBI
  - 34 orthopedic injury (OI)
- Quality of parent-child interactions 6 months post
  - EF tested 18 months post-injury
- Executive Functions**
  - Spin the Pots (*spatial working memory*)
  - Tower of Hanoi (*planning*)

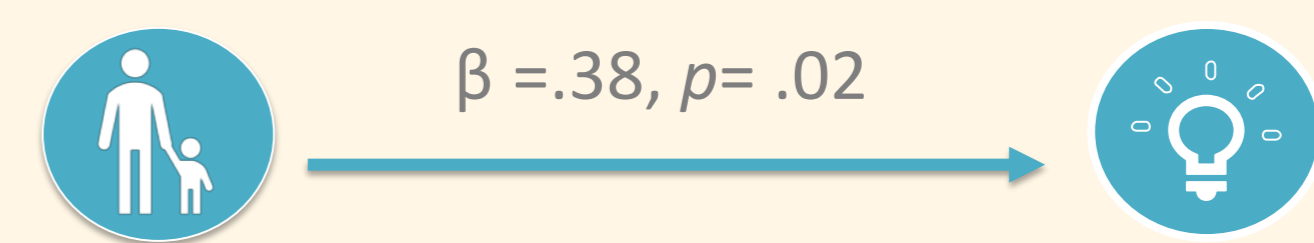
The results were averaged into a global EF score
- Quality of parent-child interactions**
  - Mutually Responsive Orientation scale (MRO)
    - Harmonious communication
    - Mutual cooperation
    - Emotional ambiance
- Regression analyses using a moderator model, controlling for child sex and age

## RESULTS

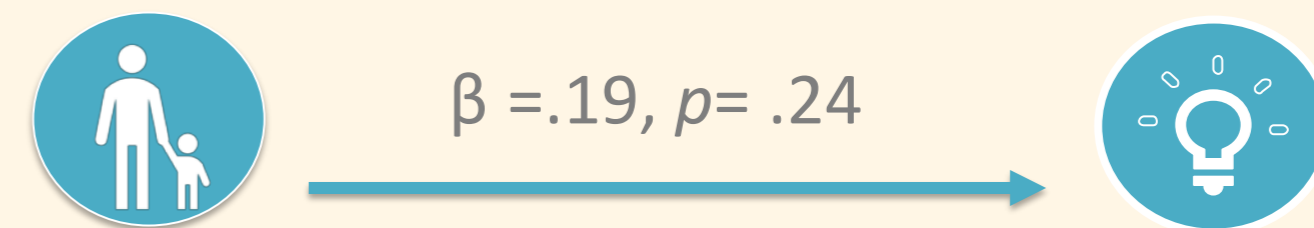
### Executive functions



- MRO uniquely and **positively predicts** EF in the mTBI group



- MRO **does not predict** EF in the OI group



	mTBI		OI	
	$\beta$	$p$	$\beta$	$p$
Hanoi Tower	.30	.0462	.09	.35
Spin the pots	.33	.0462	.09	.41

## DISCUSSION

- The quality of parent-child dyadic interactions was a significant moderator of child EF 18 months after mTBI.
- Better quality parent-child relationships may improve EF by :
  - providing children with opportunities to stimulate EF through enriched interactions<sup>4</sup>
  - promoting the internalization of regulatory strategies that are core features of EF<sup>5</sup>
- Strategies learned in the context of parent-child interactions are then generalized and used outside of the dyadic relationship, for instance during situations that require self-regulation<sup>6</sup>
- The findings highlight the importance of assessing the quality of parent-child interaction after mTBI.

LION



## REFERENCES

<sup>(1)</sup> Beauchamp & Anderson (2013). *Handbook of clinical neurology*, 112:913–920. <sup>(2)</sup> Bernier et al., (2012). *Developmental science*, 15(1), 12-24. <sup>(3)</sup> Anderson & Catroppa (2005). *Brain Injury*, 19(6), 459-470 <sup>(4)</sup> Lewis et al., (2009). *New directions for child and adolescent development*, (123), 69-85. <sup>(5)</sup> Bronfenbrenner & Crouter (1983). *Handbook of child psychology: formerly Carmichael's Manual of child psychology*/Paul H. Mussen, editor. <sup>(6)</sup> Calkins, Hungerford & Dedmon (2004). *Infant Mental Health Journal: Official Publication of The World Association for Infant Mental Health*, 25(3), 219-239.