

## Action Points and Recommendations

- Greater awareness and training of Police, Prison, Probation, Lawyers, Magistrates, Judges of how YP may have delayed maturity due to adversity and neurodisability
- Screening for adversity and neurodisability issues at key points in Criminal Justice pathway
- Explore use of Trauma Recovery and Neuro-developmentally informed approaches
- Agencies and systems need to work towards meaningful “Goals” in education, employment, wellbeing, pro-social activity as well as crime reduction”

Ensure sentencing, rehabilitation and resettlement takes account of such factors: how to manage memory, communication and attention problems by modifying how one asks a YP with TBI to follow instructions; manage impulsivity & socialising etc.

- Where to access advice and support if problems are more extensive; and who to refer to the individual on to if necessary
- Commissioners of social and health care & educational and employment agencies for offenders to ensure that packages of care & rehabilitation are developed and delivered that addresses the range of issues related to maturity and neurodisability factors

### Prevention through Public Health initiatives

- Identification of Neuro-developmental factors in children and young people that may lead to social exclusion (eg. from school/college/work)
- Provision of Neurorehabilitation linked to education and training
- Critical when the child and/or YP may be facing transition from structured to less structured environments



For most references see: Repairing Shattered Lives Report (e.g. \*Fazel, \*Timonen, \*Raine) [http://www.barrowcadbury.org.uk/wp-content/uploads/2012/11/Repairing-Shattered-Lives\\_Report.pdf](http://www.barrowcadbury.org.uk/wp-content/uploads/2012/11/Repairing-Shattered-Lives_Report.pdf)<https://www.childrenscommissioner.gov.uk/sites/default/files/publications/Nobody%20made%20the%20connection.pdf>  
Report for Scottish Parliament – Justice Committee - Scottish Network for TBI in Offending, T McMillan (due April 2016) NICE guidelines under development: <https://www.nice.org.uk/guidance/GID-CGWAVE0726/documents/mental-health-of-adults-in-contact-with-the-criminal-justice-system-final-scope2>  
The Disabilities Trust Foundation: Young People with Traumatic Brain Injury in custody: An evaluation of a Linkworker service: <http://www.thedtgroup.org/foundation/offenders-with-brain-injury/prison-linkworker-service.aspx> [http://www.bps.org.uk/system/files/Public%20files/cyp\\_with\\_neurodisabilities\\_in\\_the\\_cjs.pdf](http://www.bps.org.uk/system/files/Public%20files/cyp_with_neurodisabilities_in_the_cjs.pdf)  
<http://www.rcpch.ac.uk/CYPSS>  
Healthcare Standards for Children and Young People in Secure Settings (June 2013) Royal College of Paediatrics & Child Health McCrory E, De Brito SA, Viding E. (2010).  
Research review: The neurobiology and genetics of maltreatment and adversity. *J Child Psychol Psychiatry*, 51(10), 1079–95.  
Teicher, M.H., & Samson, J.A. (2016).  
Annual Research Review: Enduring neurobiological effects of childhood abuse and neglect. *Journal of Child Psychology and Psychiatry*, 57, 241–266.  
Barraso-Catanzaro, C., & Eslinger, P.J. (2016). Neurobiological bases of executive function and social-emotional development: Typical and atypical brain changes. *Family Relations*, 65, 108–119.  
Schiltz, K., Witzel, J.G., Bausch-Hölterhoff, J. & Bogerts, B. (2013). High prevalence of brain pathology in violent prisoners: a qualitative CT and MRI scan study. *European Archives of Psychiatry and Clinical Neuroscience*, 263(7), 607–616.  
Chitsabesan P, Lennox C, Williams H, Tariq O, Shaw J. Traumatic brain injury in juvenile offenders: findings from the comprehensive health assessment tool study and the development of a specialist linkworker service. *The Journal of head trauma rehabilitation*. 2015;30(2):106–115.

# Neurodevelopmental Maturity and Crime

## The Need to Account for Adversity and Brain Injury in the Criminal Justice System

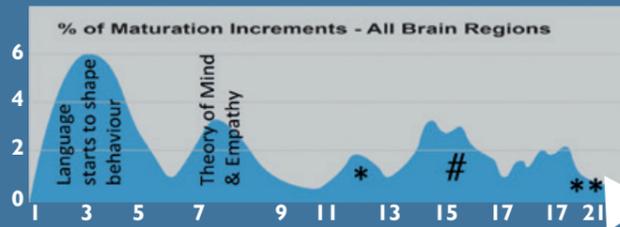
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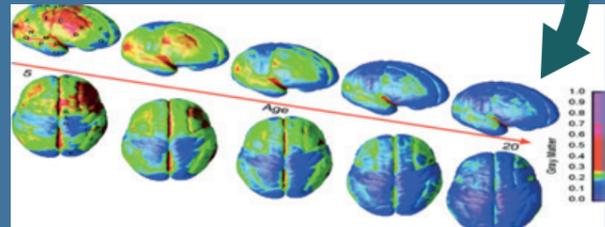


## Typical Neurodevelopment

- The brain has 100 Billion neurons from birth
- Develops by strengthening & pruning connections
- With vital periods for cognitive and emotional functions to be expressed over childhood and teenage years



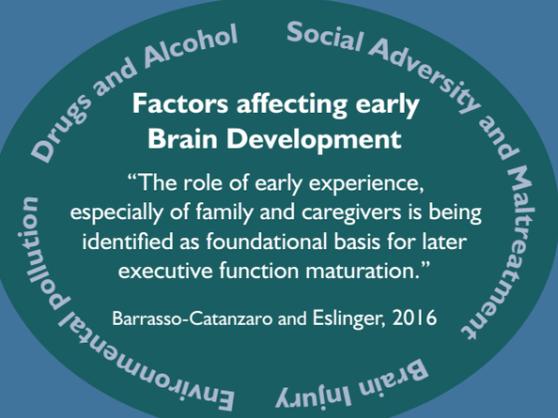
- Teenage brain has adult-like ability to reason, but falters when "in the heat of the moment" (\*).
- Poorer in **consideration of consequences of behaviour under emotional pressure and more risky (#)**
- Delaying gratification improves in young adulthood (\*\*)



© Gogtay, N., Giedd, J.N., Lusk, L., Hayashi, K.M., Greenstein, D., Vaituzis, A.C., Nugent III, T.F., Herman, D.H., Clasen, L.S., Toga, A.W., Rapoport, J.L., Thompson, P.M., 2004. Dynamic mapping of human cortical development during childhood through early adulthood. Proceedings of the National Academy of Sciences of the United States of America 101 (21).

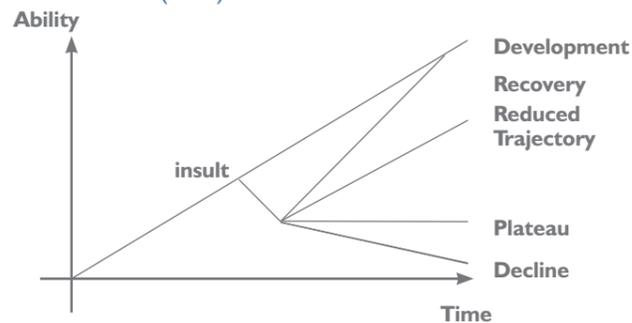
## Brain Differences associated with Adversity

- Adversity linked to smaller corpus callosum (the bridge between hemispheres) & less activity in pre-frontal (control) and limbic (drive area) systems (McCroy 2010)
- Greater reduction in corpus callosum in boys than girls
- Age of exposure plays a role, across childhood and adolescence (Teicher & Samson, 2016)
- May be due to "adaptive" response of hyper-vigilance for threat in "unpredictable" home environments



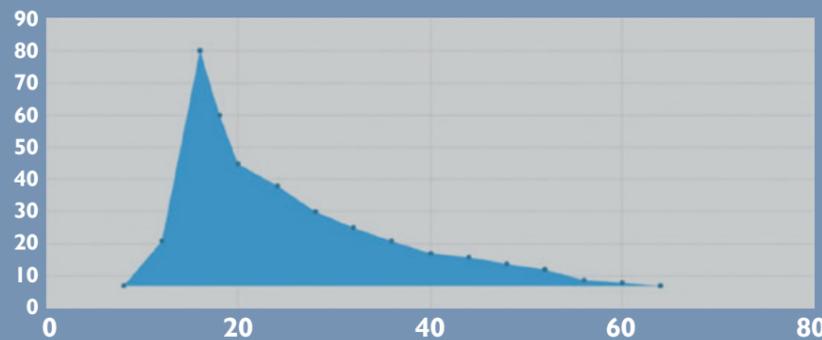
## Traumatic Brain Injury (TBI) alters developmental trajectory

- Caused by a blow to the head, such as in a fall, assault, road traffic accident etc.
- **FRONTAL** and **TEMPORAL** lobes usually injured
- Connections being sheared or compromised across the brain
- Problems with attention, memory, impulse control, social reasoning and Theory of Mind (ToM).



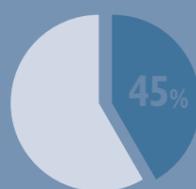
## Spike in Crime

About a quarter of inmates are between **15-24** years of age

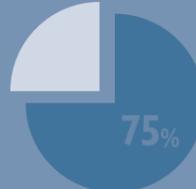


## Re-offending rates

The most prolific offenders (PO) tend to be early starters and go on to commit around **77%** of crime



1 year post release **45%**



2 years post release **75%**

## Key Facts: TBI and Crime

TBI is linked to **earlier, more violent and persistent offending.**

**4x** increased risk of developing mental health disorder with co-existing offending after TBI.

\*Timonen et al. 2002

**Knock out history** in teenage years is a risk factor for offending to carry over into adulthood.

\* Raine, 2005

Violent offenders have **more lesions** in frontal lobes

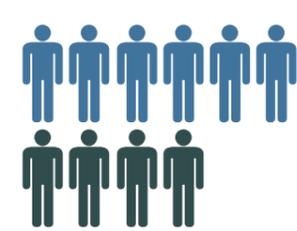
Schiltz et al. 2013

Young offenders with a history of TBI are at greater risk of **self-harming and committing suicide.**

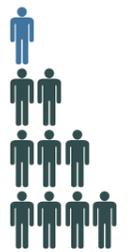
Chitsabesan, 2015

## Prevalence of TBI

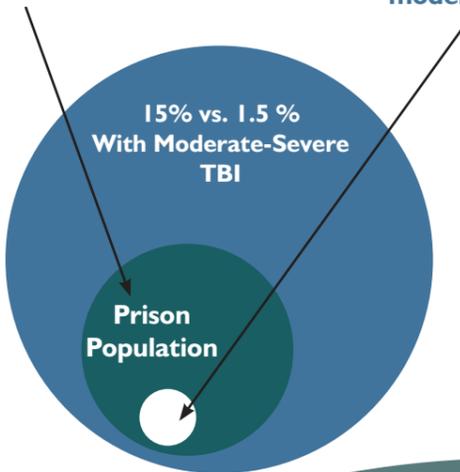
Research all around the world has shown that **TBI is very common in youth offenders in custody**



Around **60%** of prisoners report a history of head injury. **1-2 out of 10** have had moderate-severe TBI.



In population controls, prevalence ranges from **8-12%** **1-2 in 100** have had moderate-severe TBI



## The Economic Cost

££££



**"Re-offending costs the UK between nine and 13 billion pounds a year.**

The taxpayer has so far got a poor return for the money invested in rehabilitation...**need a new way of approaching the problem...**

(ex.Secretary of State for Jus4ce: Chris Grayling MP)

See forthcoming report from "Centre for mental Health" [www.centreformentalhealth.org.uk/](http://www.centreformentalhealth.org.uk/)

The long-term cost of a case of head injury is

**£155,000**

for a 15-year-old in the general population (£95,000 non-crime costs and £60,000 crime costs) and **£345,000** for a 15-year-old young offender (95,000 non-crime costs and £250,000 crime costs)