

TBI Across the Lifespan: The Challenge of Change

Ros Burrows, Ph.D.
Clinical Neuropsychologist

NRI
Program Director

MORE SURVIVORS

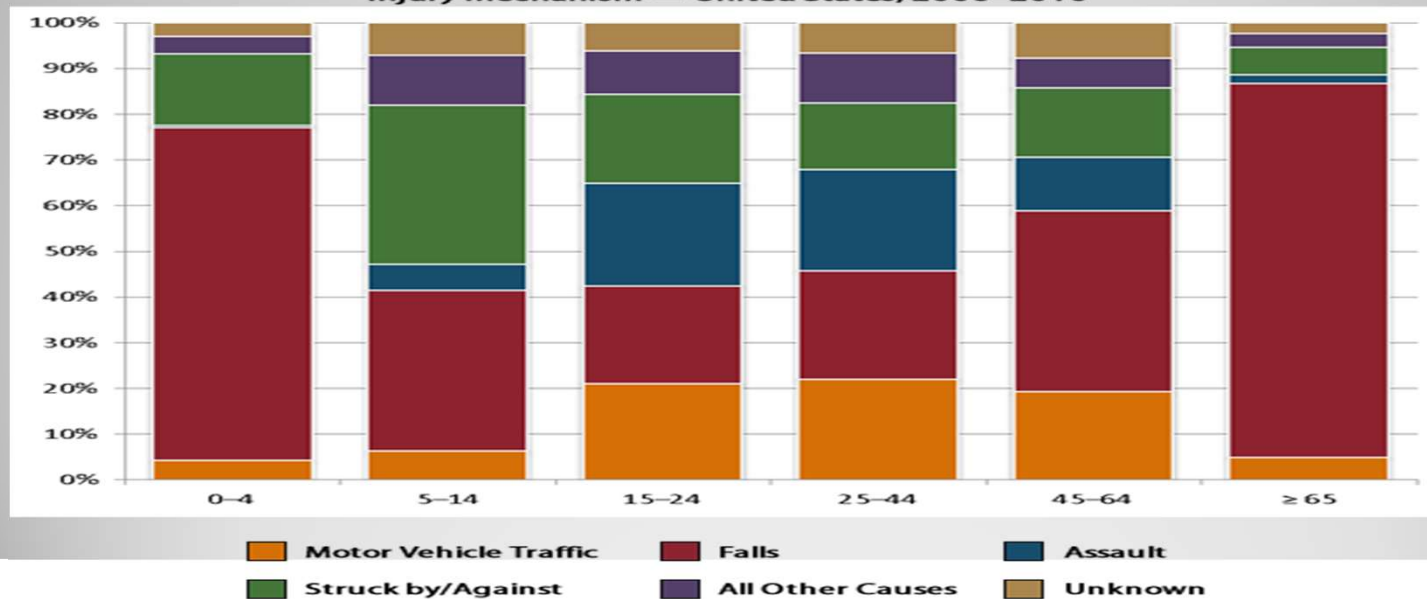
- **30 years ago, 50% of individuals with TBI died, the number today is 22%**
- **Improved medical technology and automotive safety features, e.g. seatbelts, child safety seats and airbags**
- **Average Lifespan shortened about 8 years; to about 70, correlated to physical impairments.**

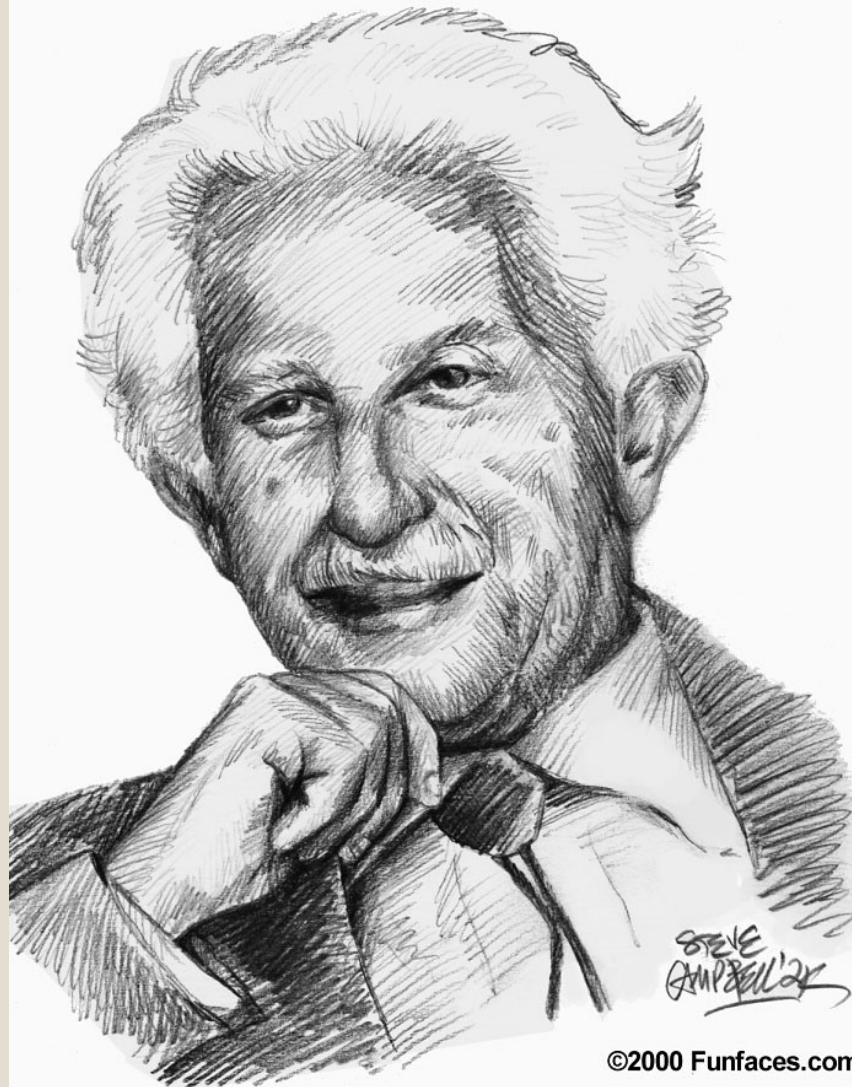
Distribution of TBI Severity: 2.5 million ER Visits

- Mild (Concussion) = 80%
(LOC < 30 min, PTA ,1 hour)
- Moderate = 10 - 13%
(LOC 30 min-24 hours, PTA 1-24 hours)
- Severe = 7 - 10%
(LOC >24 hours, PTA >24 hours)

	MVA	Falls	Assault	Struck	All Other	Unknown
0-4	14,655	250,413	1,513	53,761	13,222	10,225
5-14	18,110	101,790	16,612	101,112	31,355	20,763
15-24	76,602	77,951	81,822	71,031	34,486	22,722
25-44	75,122	80,867	75,527	49,505	36,933	22,855
45-64	46,923	95,824	28,206	36,925	15,843	18,804
≥ 65	10,359	174,544	4,068	12,815	6,285	5,216

Percent Distributions of TBI-related Emergency Department Visits by Age Group and Injury Mechanism — United States, 2006–2010





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Erikson's Stages of Psychosocial Development

Approximate Age	Psycho Social Crisis
Infant - 18 months	Trust vs. Mistrust
18 months - 3 years	Autonomy vs. Shame & Doubt
3 - 5 years	Initiative vs. Guilt
5 -13 years	Industry vs. Inferiority
13 -21 years	Identity vs. Role Confusion
21- 39 years	Intimacy vs. Isolation
40 - 65 years	Generativity vs. Stagnation
65 and older	Ego Integrity vs. Despair

(C) The Psychology Notes Headquarter - <http://www.PsychologyNotesHQ.com>

Pediatric TBI

Challenges of Childhood

- Trust v Mistrust

HOPE: Fundamental -- safety, predictability.

- Autonomy v Shame

WILL: Freedom to explore and welcoming of failure

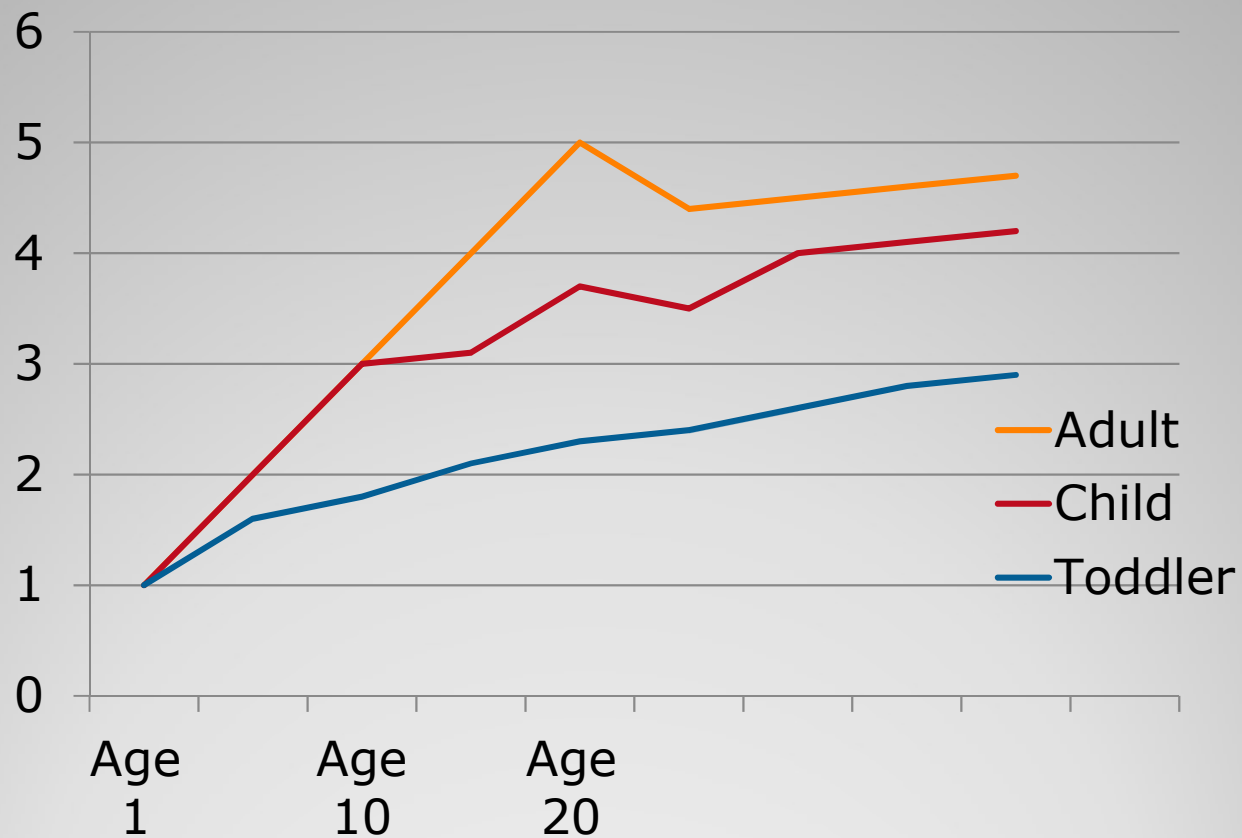
- Initiative v Guilt

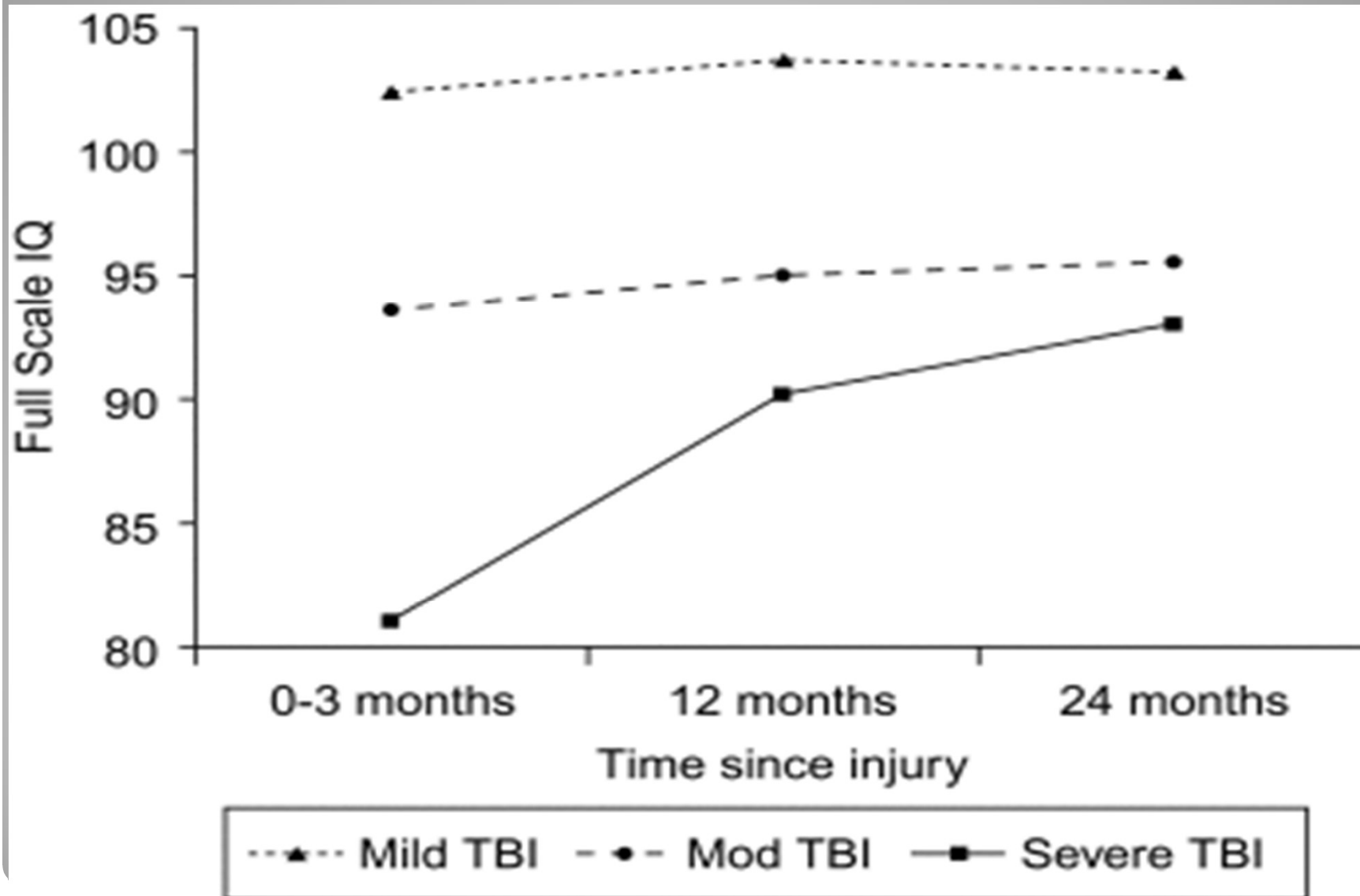
PURPOSE: Peers, independent decisions, sense of burden

- Industry v inferiority

COMPETENCE: Peer comparison of self-worth, recognition of disparities

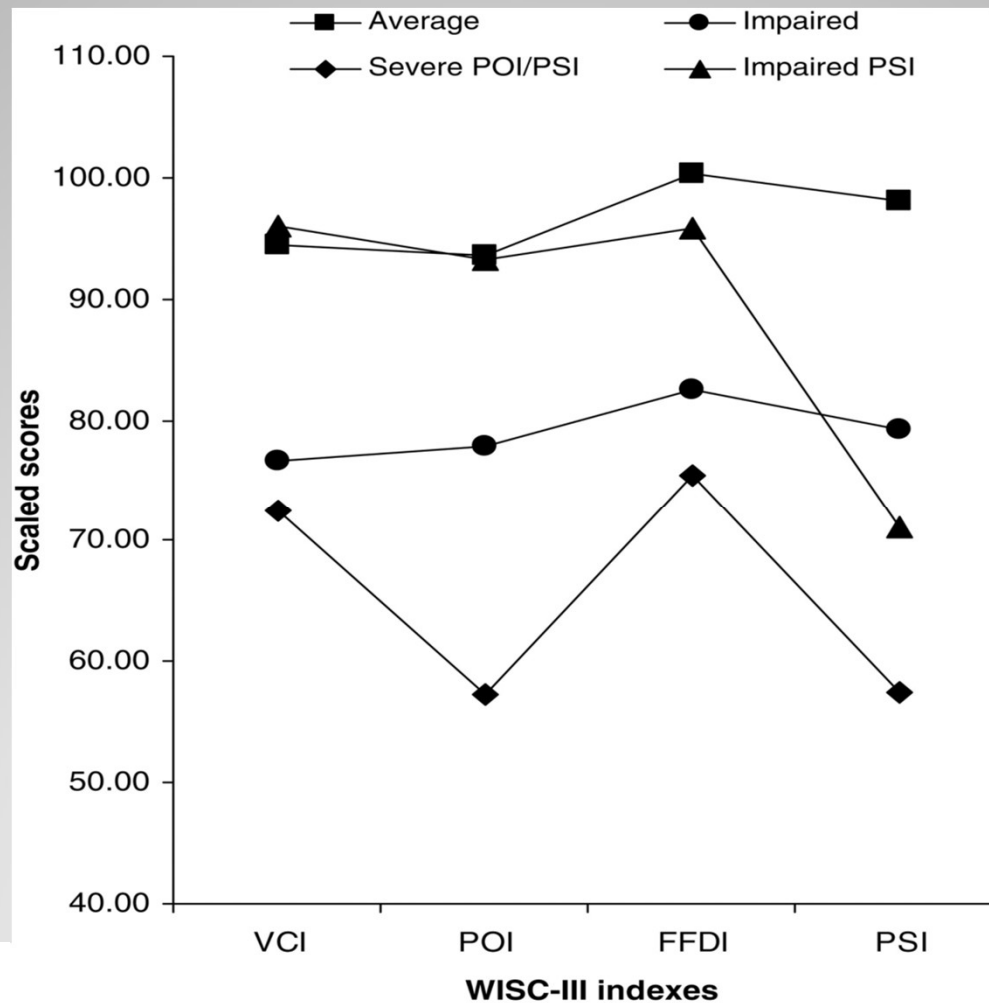
FACTORS AFFECTING OUTCOME IN PEDIATRIC TBI

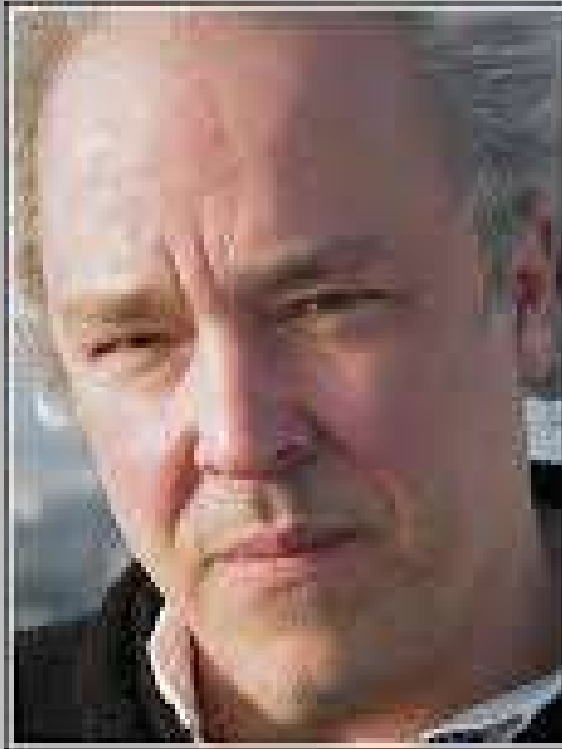




Lower IQ – More ADHD More ODD

123 children, Avg 11.6 (ages 6 – 17)



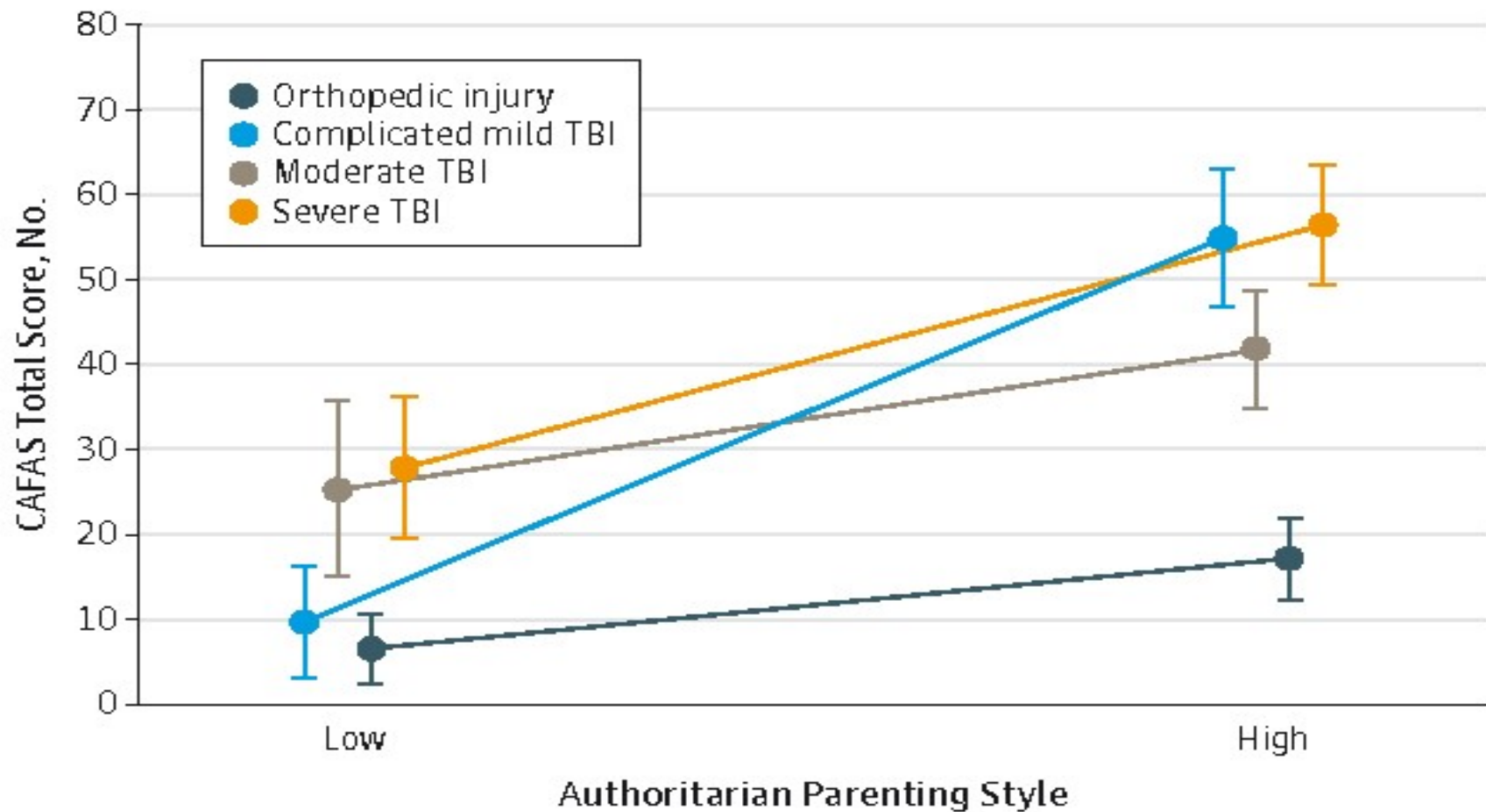


Today's Parenting Tip: Treat a difficult child the way you would your boss at work. Praise his achievements, ignore his tantrums and resist the urge to sit him down and explain to him how his brain is not yet fully developed.

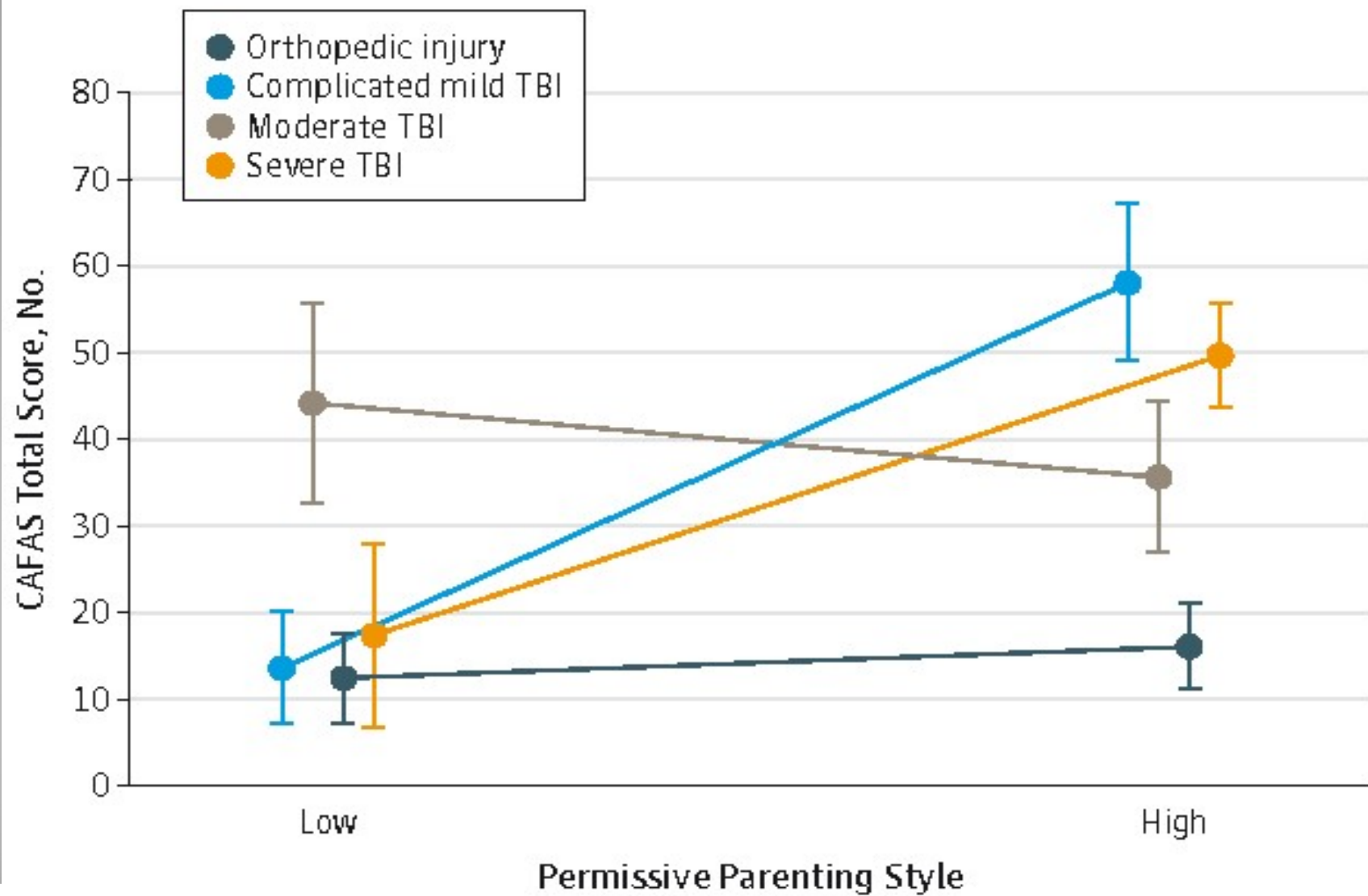
— Robert Breault —

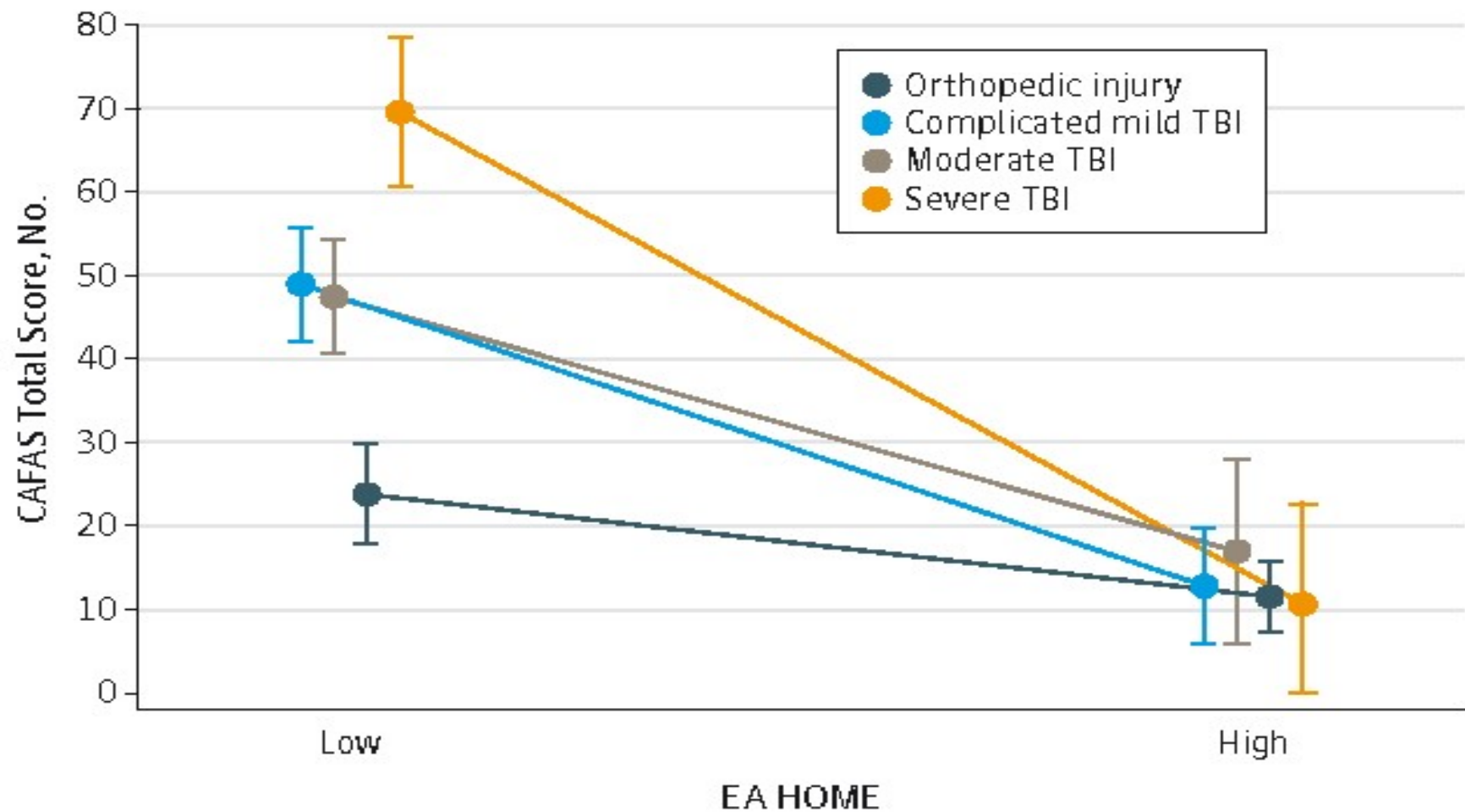
AZ QUOTES

Parenting After TBI



Significant group by authoritarian parenting interaction ($F_{3,113} = 3.14$; $P = .03$). Children with traumatic brain injury (TBI) revealed greater functional





Significant group by home environment interaction ($F_{3,114} = 3.28$; $P = .02$)

Challenges of Adolescence

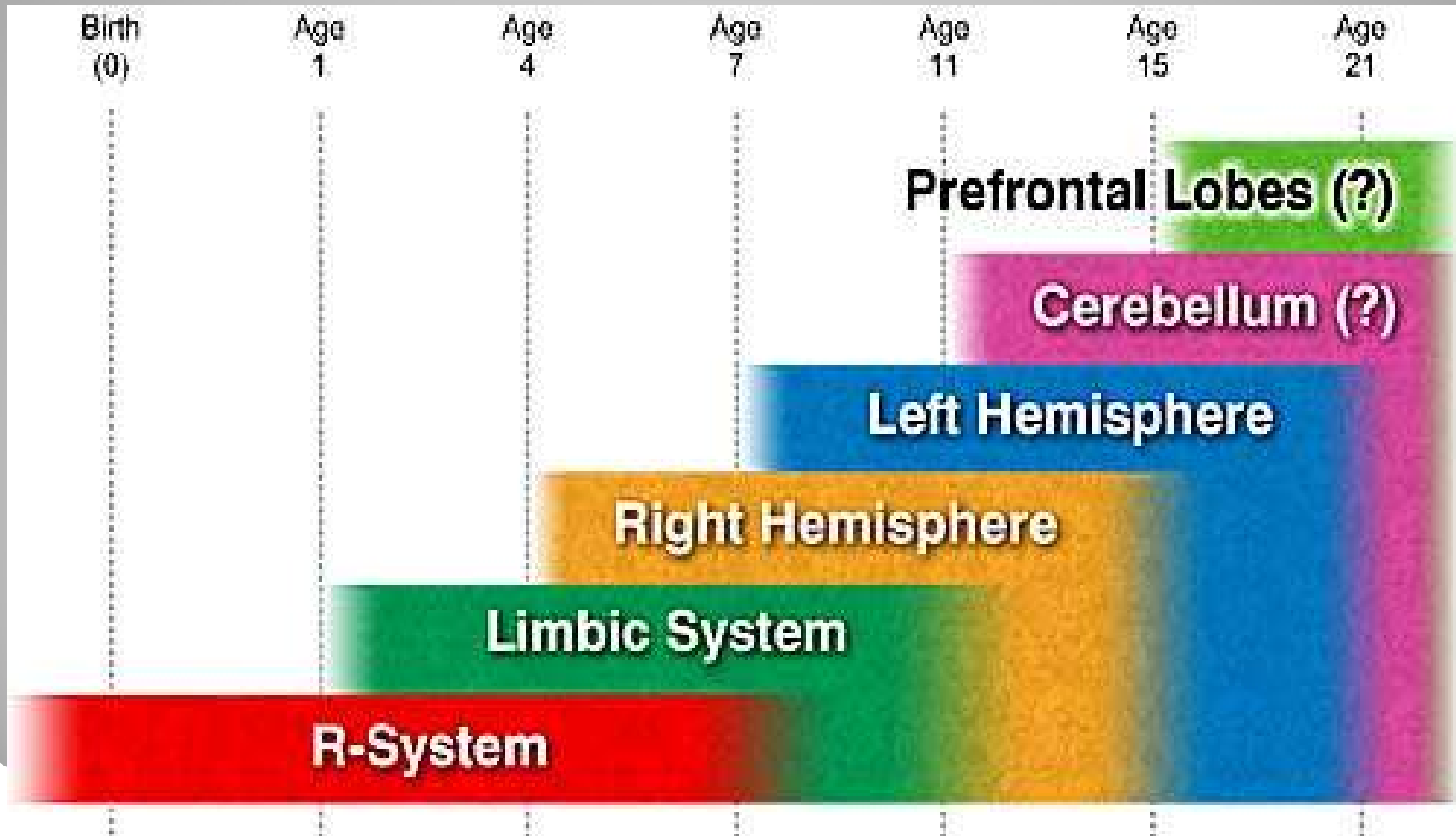
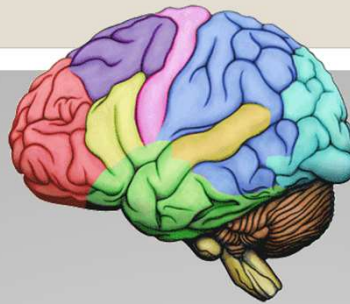
- Identity v Role
Confusion
(Identity Crisis)

Fidelity: Self-exploration.
Beliefs, values, morals.
Anticipation of job,
relationships, family.

- Intimacy v Isolation
(continued)

Love: Dating, exploring
capacity for intimacy.





Graphics from bing.com/imagesand www.nbia.ca

Initial recoveries may be followed by plateaus and apparent declines.

- Initial knowledge “reserves” no longer adequate
- Peers developing at a faster pace, pulling ahead
- Environmental Demands more complex
 - (Dating, work entry, expectations for responsibility)
- Social isolation, lack of dating success
- Experimentation with substances and alcohol
- Psychiatric Disorders, behavioral and emotional

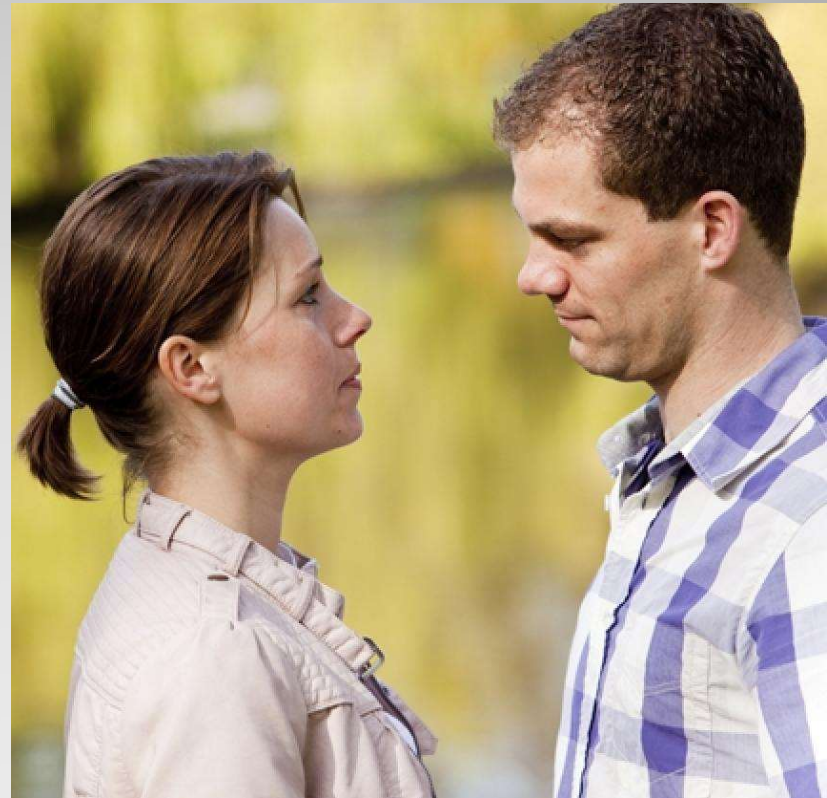
Section 504

- A student with a TBI could be eligible as a “child with a disability” as that term is defined by **ADA Rehabilitation Act of 1973** (Amended 1990; 2010) **Section 504**
- The determination of eligibility under Section 504 requires an evaluation of whether the student has a **physical or mental impairment** that substantially limits a major life activity, without regard to mitigating measures, such as a health care plan, medication
- The list of major life activities includes the operation of major bodily functions, including **neurological function** and brain function

Challenges of Adulthood

- Intimacy v Isolation

LOVE: Dating, marriage, family, parenting.
Safety, care and commitment.



Marriage & Divorce

(2008, N=977, multicenter)

50% ALL Marriages end in divorce

- 85% still married (only two year follow)
- More serious injury, more likely divorce
- Older more likely to stay married
- Length of Marriage mattered
- TBI males more likely divorced than women
- TBI related to violence more divorced
- Minorities w/ Severe TBI more likely married

Limitations: short follow-up

Sexuality

- Poorly studied, especially in women
- Difficulties of both sexual functioning and desire
- Hypersexuality relatively rare but distressing
- Loss of intimacy and connection separate
- Partners described as childlike and self-oriented.
- Medication effects, distractibility, pain, impulsivity, spasticity

Reproductive Health

- 68% of women 5-10 years post TBI reported their cycles were irregular after injury
- 46% experienced amenorrhea
- No significant differences in conception but more post partum difficulties
- Significantly more mental health issues
 - Colantonio et al., 2010

Parenting Skills: No differences Over Time

SELF-PERCEPTION

Less accepting, Less encouraging

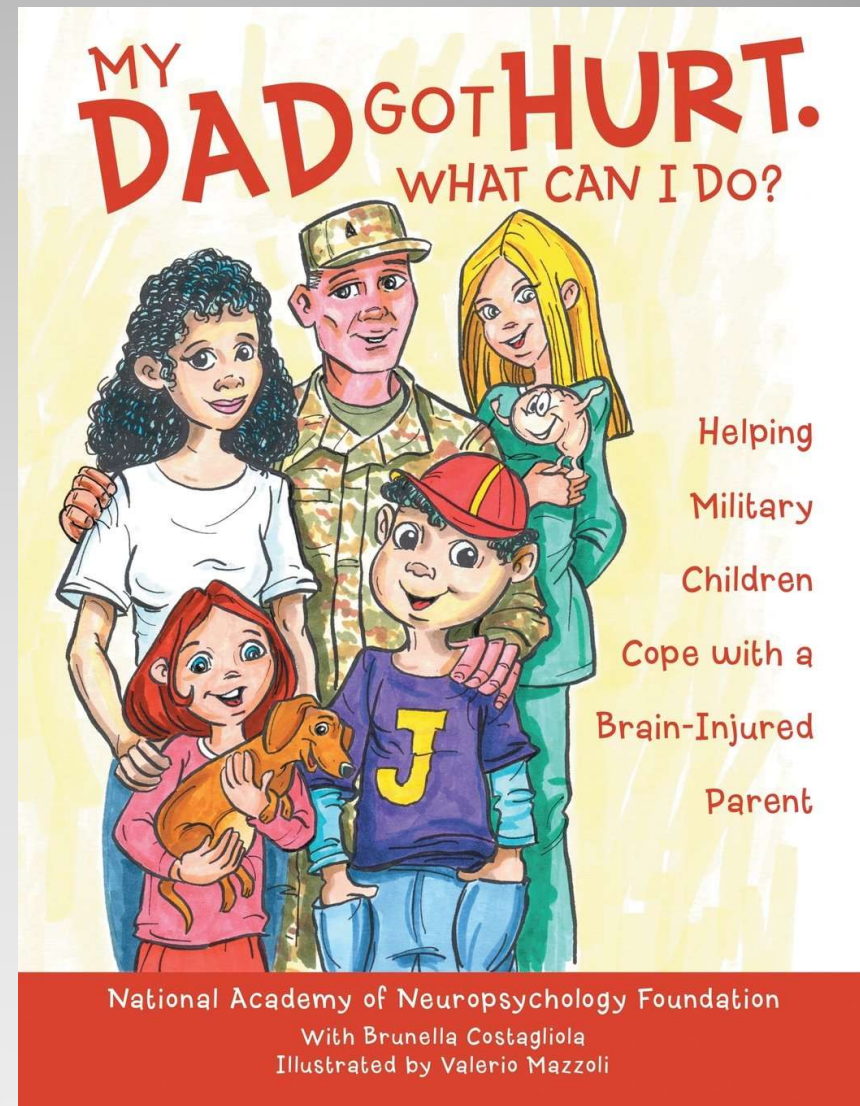
Less positive, Less disciplined

*Non-injured spouse as well

Both Parents more Depressed
(20% Clinical Depression)

Children more Depressed and
see parents as:

- Less involved
- Less caring
- Inconsistent



Challenges of Adulthood

Generativity v
Stagnation

CARE: Finding a sense
of purpose -- career,
life goals, provider

CONTRIBUTION

Failure leads to regret,
stagnation, remorse
for past decisions.



Oklahoma Vocational Rehabilitation Training

(curriculum for State VR)

- 35% to 71% of persons with TBI return to some level of employment
- The presence of neurobehavioral symptoms, memory deficits, and the severity of physical limitations are general predictors of work outcome
- Work outcome is otherwise difficult to predict as outcome depends on motivation to succeed and the ability to match job demands and employer understanding and compassion with residual skills.



Chronic Traumatic Encephalopathy

Dementia Pugilistica

First described in boxers by Martland in 1928

23 cases reported to him by a single
boxing promoter

5 cases 'personally examined'

1 case with clinical details

–*Martland HS: Punch drunk. JAMA 91:1103–
1107, 1928.*

Harrison S. Martland
(1883-1954)

First full time paid pathologist
Newark city Hospital, 1909-1927
Chief Medical examiner Essex
county



Harrison S. Martland, M.D., ca. 1940



Corsellis, Bruton, and Freeman-Browne described 3 stages of clinical deterioration;

- ✓ The first stage is characterized by affective disturbances and psychotic symptoms. Social instability, erratic behavior, memory loss,
- ✓ Initial symptoms of Parkinson disease appear during the second stage.
- ✓ The third stage consists of cognitive dysfunction, dementia and is accompanied by full-blown Parkinsonism, as well as speech and gait abnormalities.

NFL and CONCUSSIONS

- 61% of the former players sustained at least one concussion in their career
- 24% sustained 3 or more concussions
- Retired players with 3 or more concussions had 5 times reported significant memory problems compared to players with no concussion
- Researchers also observed an earlier onset of Alzheimer's disease in retirees than in general male population.

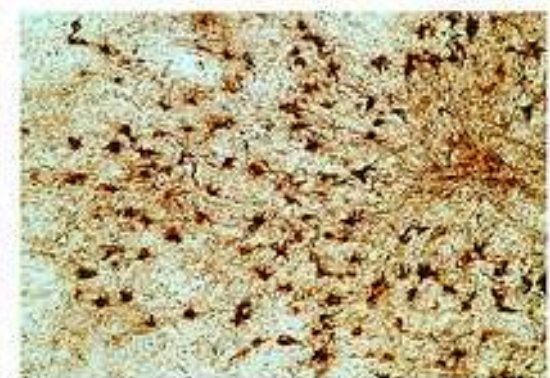
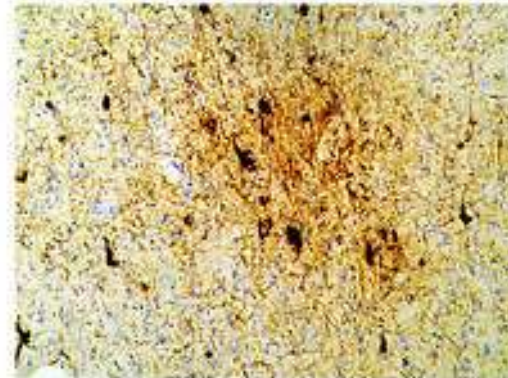
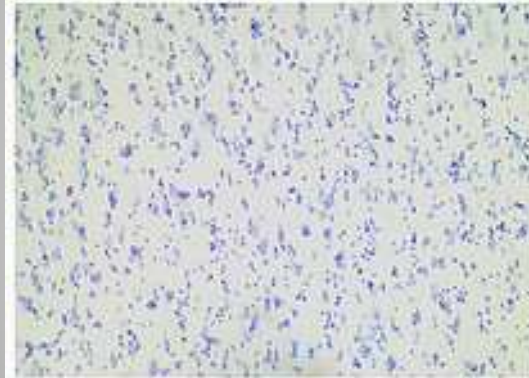
- ***“Mild Traumatic Brain Injury in U.S. Soldiers Returning from Iraq”***

- 1 in 6 returning troops have had at least one concussion
- 4.9% reported injuries with LOC
- 10.3% reported altered mental status, of those, 27.3% met criteria for PTSD
- TBI with LOC also associated with major depression

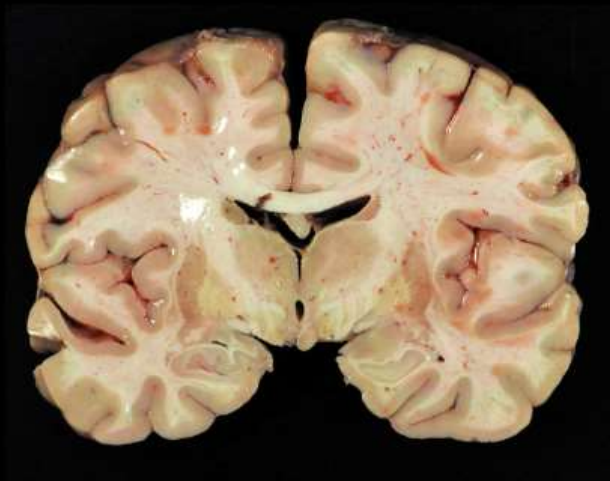
Normal 65 y/o

**NFL Linebacker
(45 y/o, 8 Concuss)**

**73 y/o boxer
extreme dement**







Normal Brain



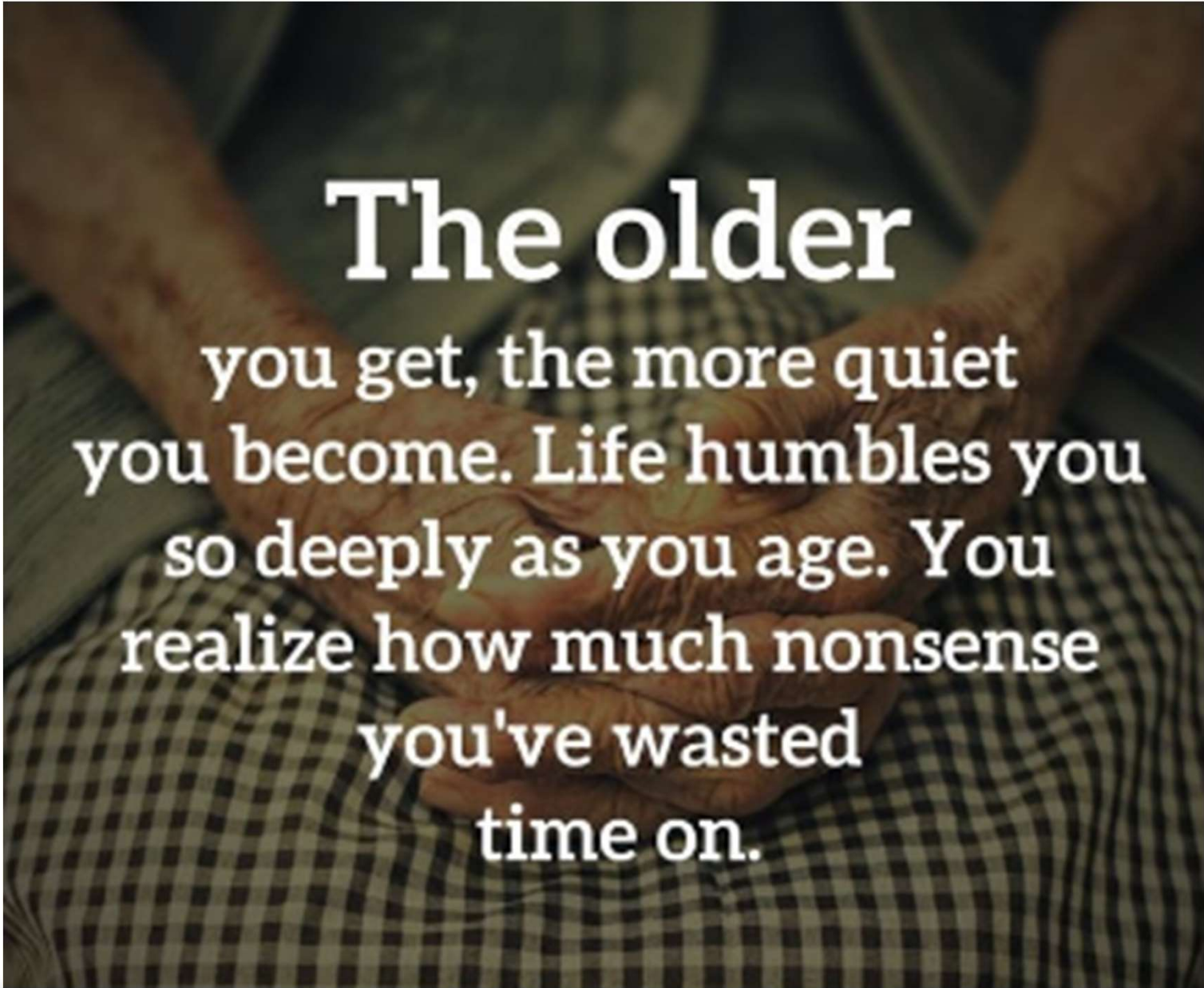
Advanced CTE

Source: Boston University Center for the Study of Traumatic Encephalopathy

TBI Challenges of Old Age

- Ego Integrity v Despair
- Wisdom: accepting victories, defeats, accomplishments and shortfalls. Guilt or regret leads to despair.

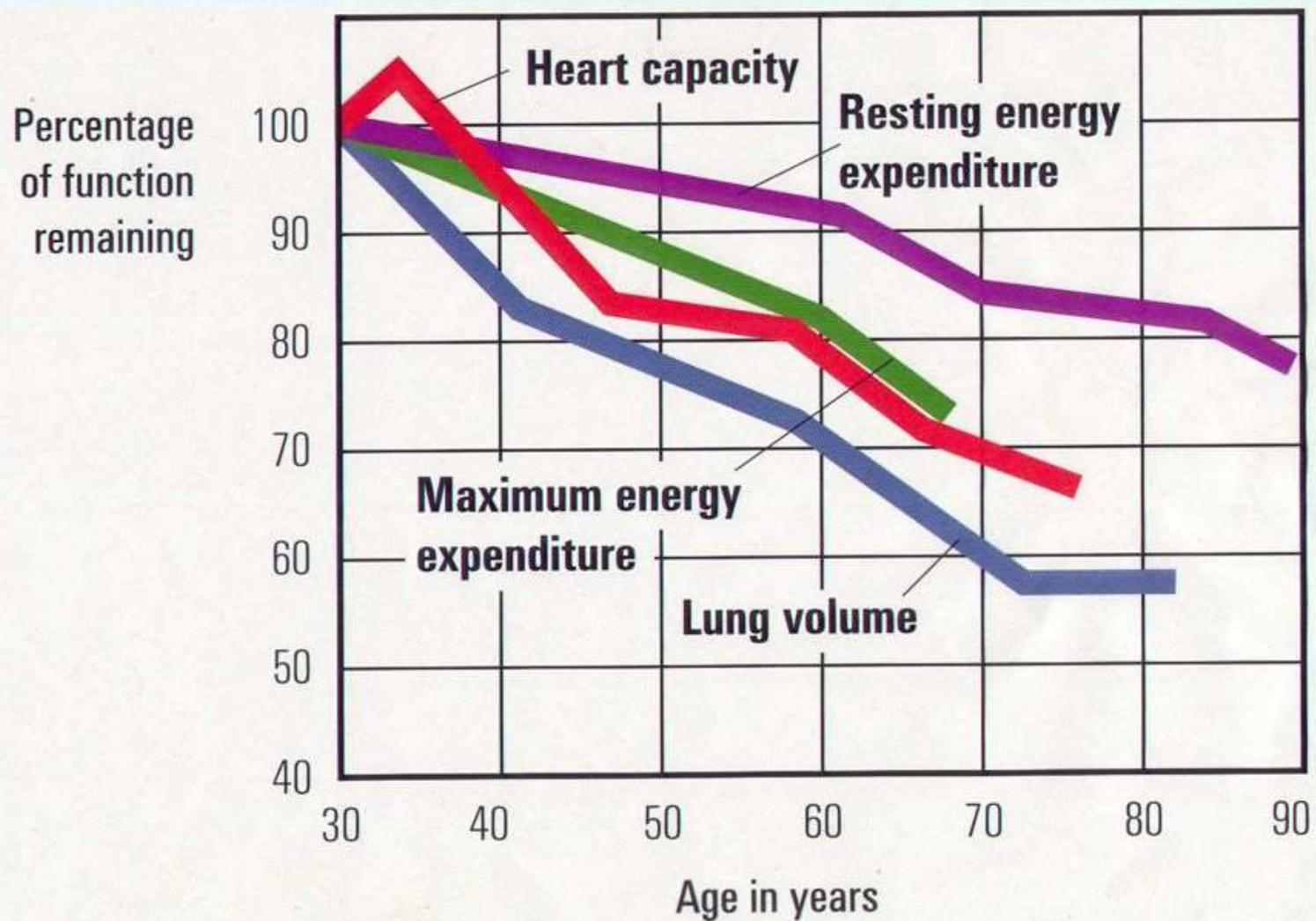




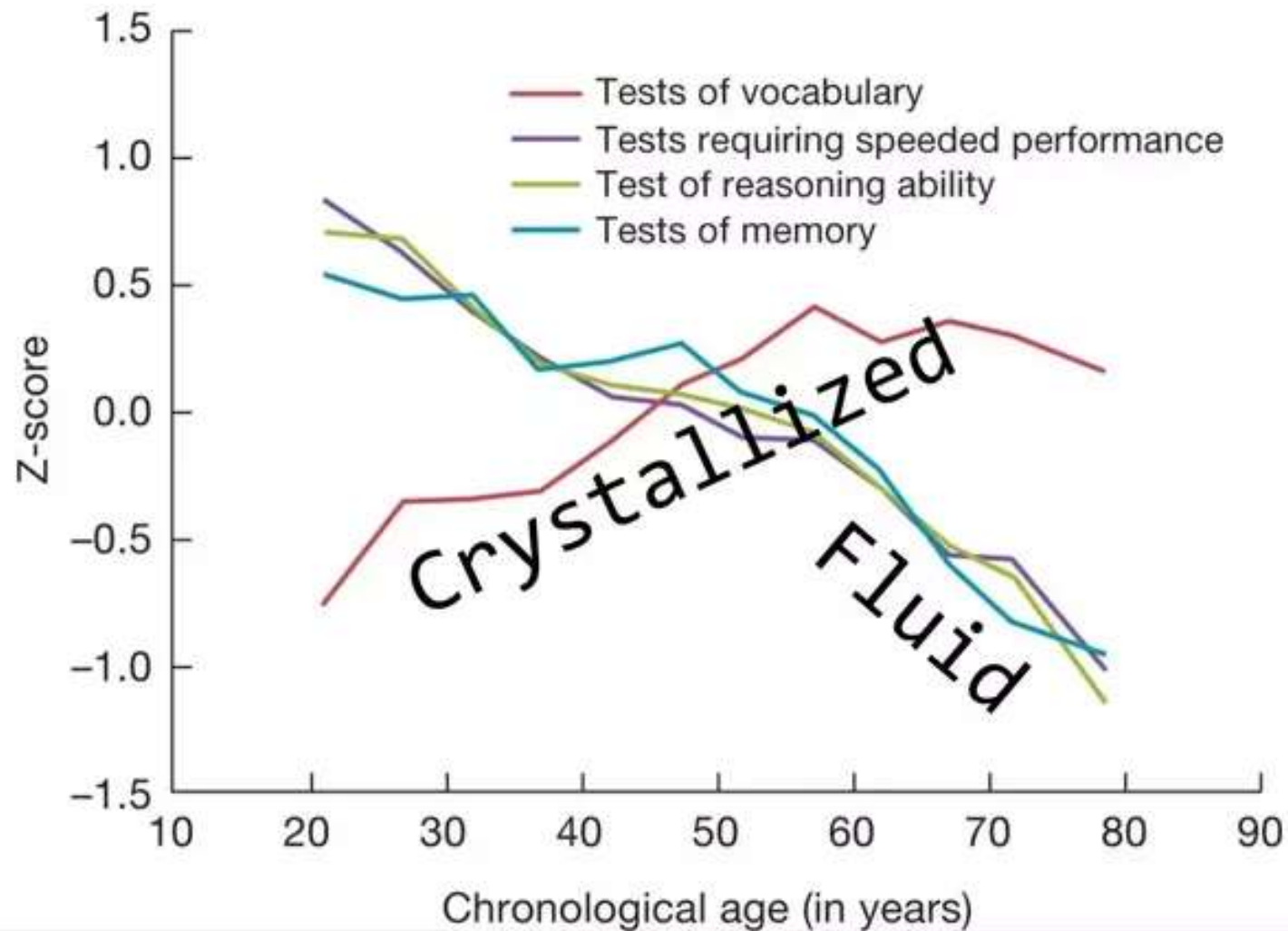
The older

you get, the more quiet
you become. Life humbles you
so deeply as you age. You
realize how much nonsense
you've wasted
time on.

Physical Decline with Aging



Cognitive Changes With Age



AGE & TREACHERY
will always triumph over
YOUTH & SKILL

Other Factors Affecting Health

- **Economic and Social Status**
- **Limited Resources/Insurance**
- **Reduced Health Literacy**
- **Poor Health Practices due to Cognitive Problems**

**Increased Rates of Obesity, Hypertension,
Depression and Diabetes**

TBI Elevates Risk of Neurodegenerative Disease In General

Alzheimer's – Elevates risk in Dose Dependent Fashion and lowers age of onset.

Parkinsons – Increased risk, lower age of onset

Frontotemporal Dementia – increased risk

Multiple Sclerosis – Risk Factor

ALS – Possible risk factor, more likely with CTE

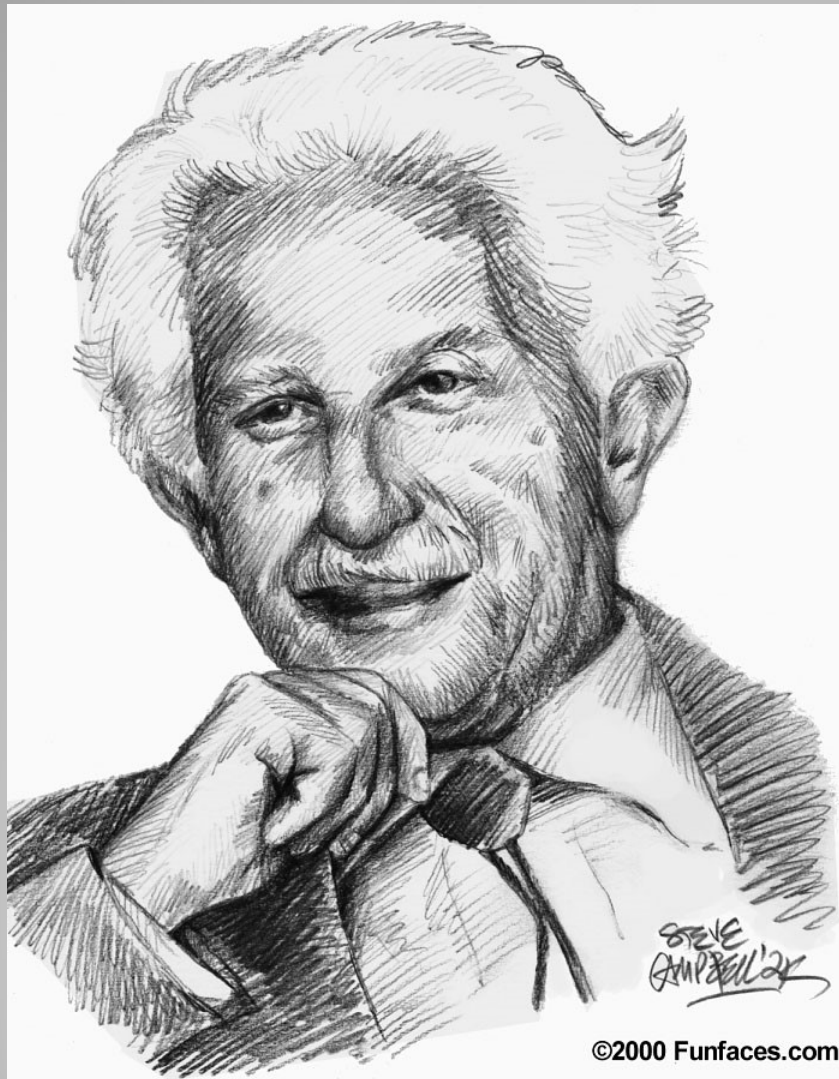
In non-progressive neurological disability (mainly traumatic brain injury, spinal cord injury and cerebral palsy) it is the disability itself that determines life expectancy rather than the underlying cause.

- 1. Mobility**
- 2. Continence**
- 3. Swallowing**
- 4. Epilepsy**
- 5. Severity of Cognitive Deficits**

TBI reduces life expectancy by about 8 years -- to age 70

Cause of Death	Increased Risk for Coloradans with TBI
Seizures	15 times
Mental Conditions (includes unspecified dementia)	5 times
Pneumonias	3 times
Nervous System Conditions (includes Alzheimer's)	3 times
Infections	3 times
Digestive Conditions	3 times
Assaults	3 times
Suicide	2 times
Cardiovascular	2 times
Injuries	2 times





Hope is the most indispensable virtue in being alive...even where confidence is wounded, trust impaired.

Erik Erikson

Questions?

Thank You

Sue went back to work. But she had all sorts of problems.



She kept forgetting where she put things. When the phone rang, she couldn't remember what she was doing. And then she couldn't remember who was on the phone.

Sue began to Lose her ability to be a "team player". She was often Rude and irritable. It seemed that Sue was in a bad mood more and more.

The people in the office became more and more impatient. They didn't understand why Sue couldn't just "get with it" or "snap out of it".

