



Translational Research Group

at the USMC Center for Advanced Operational Culture Learning (CAOCL)

Today's Brain Science Won't Help You Understand Teens

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BLUF: ABC News Headline: *Dzhokhar Tsarnaev's Teen Brain May Have Pushed Him to Violence*ⁱ

As illustrated by the above headline, popular news coverage vastly overstates the relationship between the state of teenage brain research and complex behavior. Teen brain science lacks strong conclusions, and journalists can easily distort or misunderstand the findings.

Inaccurate Assertions: The headline and article make several inaccurate assertions: 1) The brain has control over the individual; 2) The brain “hijacks” the individual prior to cognitive “maturity” at age 25; 3) Humans cannot empathize until their mid-20s; and 4) Indicators in the brain alone can predict complex behavior.

Accurate Assertions: In contrast to the article's false insights: 1) The brain influences but does not control the individual. Michael Gazzaniga, a prolific cognitive neuroscientist, published an entire book in 2011 in which he repeatedly - and scientifically - undermined the belief that the brain controls the individual.ⁱⁱ 2) An older brain does not necessarily equate with more sound decisions. Science provides behavioral evidence that decision-making skills are not necessarily age-dependentⁱⁱⁱ and that multiple factors influence decision making independent of age (e.g., the nature of the decision and demographics such as educational level).^{iv} 3) Lack of empathy until one's twenties? Thankfully, even very young children display empathy.^v 4) Finally, regarding indicators in the brain predicting complex behavior, the research doesn't exist. We don't even know the fundamental cause of most psychiatric disorders.^{vi} More importantly, the variation in brain activity across people, contexts, and cultures in response to the same tasks also precludes predicting behavior based on brain activity alone.^{vii}

Current and Historical Evidence: As convenient as these excuses are (e.g., “It's not MY fault, officer, arrest my brain!”), they are also contrary to both past and contemporary evidence of amazingly mature behavior performed by those under 25. Historically, men and women under 25 were typically raising multiple children – and many still do – as well as bearing enormous household responsibilities. For nobility, tweens could hold responsibilities for the realm, though senior advisors counseled them. Conversely, the extended childhood so common in developed nations today could actually preserve adolescents from experiences that could help mature their decision-making abilities. Yet, when the situation demands, such maturity still exists: the 17-year old Syrian refugee who must earn a living as the sole supporter of his younger siblings;^{viii} the twelve-year-old who assists medical staff in a war zone;^{ix} the heroic act of Corporal Jason L. Dunham.^x

Conclusion: Many individual and contextual reasons factor into why people engage in any complex behavior. Beyond diseases that have been solidly identified as organic in nature (e.g., Alzheimer's), a clear, simple answer about the relationship between activity in the brain and complex behavior at any age is simply wrong. The evidence is not there, nor is it likely to be for decades.

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- ⁱ Susan Donaldson James, "Dzhokhar Tsarnaev's Teen Brain May Have Pushed Him to Violence," *ABC News*, April 23, 2013, <http://abcnews.go.com/Health/boston-marathon-bomb-suspect-dzhokhar-tsarnaevs-teen-brain/story?id=19019227#UXbPKUokSUG>
- ⁱⁱ Michael S. Gazzaniga, *Who's in Charge? Free Will and the Science of the Brain* (New York: HaperCollins, 2011), 71, 107, 108, 124-126, 131, 133, 135, 138, 141, 193, 200, and 215.
- ⁱⁱⁱ E.g., The ability to delay gratification was independent of age in this study following participants from age 4 to 40 - B. J. Casey et al. "Behavioral and Neural Correlates of Delay of Gratification 40 years later," *Proceedings of the National Academy of the Sciences of the United States Early Edition* (August 29, 2011): 1-6.
- ^{iv} Wendy J.L. Thornton & Heike A. Dumke, "Age Differences in Everyday Problem-Solving and Decision-Making Effectiveness: A Meta-Analytic Review," *Psychology and Aging* 20, no. 1 (March 2005): 85-99.
- ^v Nancy Eisenberg has a long history of studying children and prosocial development, to include empathy. See Dr. Perri Klass, "Understanding How Children Develop Empathy," *New York Times Blog*, December 10, 2012, <http://well.blogs.nytimes.com/2012/12/10/understanding-how-children-develop-empathy/>. See also research cited on helpfulness in very young children: Emma Seppala, "The Compassionate Mind: Science Shows Why it's Healthy and How it Spreads," *Observer May/June 2013* 26, no. 5 (2013): <http://www.psychologicalscience.org/index.php/publications/observer/2013/may-june-13/the-compassionate-mind.html>.
- ^{vi} Dr. Richard A. Friedman, "A Dry Pipeline for Psychiatric Drugs," *New York Times*, August 19, 2013, <http://www.nytimes.com/2013/08/20/health/a-dry-pipeline-for-psychiatric-drugs.html?src=me&ref=general>.
- ^{vii} Michael S. Gazzaniga, *Who's in Charge? Free Will and the Science of the Brain* (New York: HaperCollins, 2011), 183-185; 197-199.
- ^{viii} Jodi Rudoren, "A Lost Generation: Young Syrian Refugees Struggling to Survive," *The New York Times*, May 8, 2013, <http://www.nytimes.com/2013/05/09/world/middleeast/syrian-refugees-in-jordan-struggle-to-survive.html?pagewanted=all>. Ironically, even a UNICEF worker quoted in this article inappropriately talks about the brain, as if it matters more than behavior – it has pervaded the U.S. culture and is given misguided importance considering the state of the research to date.
- ^{ix} Eline Gordts, "Aleppo's Children: Channel 4 Documentary Chronicles Misery In Syria," *The Huffington Post*, March 27, 2013, http://www.huffingtonpost.com/2013/03/26/aleppos-children-channel-4_n_2958110.html.
- ^x USMC Medal of Honor Recipient: See "Marine Corporal Jason L. Dunham," *Jason L. Dunham Memorial*, <http://www.jasonsmemorial.org/about.html>.