

# A Model for Analysing and Grading the Quality of Scientific Authorities Presented to State Legislative Committees

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Longitudinal studies have confirmed that human brains continue to mature and restructure throughout adolescence, with the prefrontal cortex – responsible for executive functions – maturing into an individual’s twenties.<sup>1</sup> Studies examining adolescent decision-making demonstrate that young people prioritise rewards when assessing risk,<sup>2</sup> take more risks in ‘hot’ contexts<sup>3</sup> and are more likely to take risks when in the presence of their peers.<sup>4</sup> These findings have motivated arguments that the immaturity of an adolescent brain could impact on culpability for criminal offences; a point recognised by the US Supreme Court in 2005:

From a moral standpoint it would be misguided to equate the failings of a minor with those of an adult, for a greater possibility exists that a minor's character deficiencies will be reformed. Indeed, “[t]he relevance of youth as a mitigating factor derives from the fact that the signature qualities of youth are transient; as individuals mature, the impetuosity and recklessness that may dominate in younger years can subside.”<sup>5</sup>

Since 2007, states have begun to ‘*Raise the Age*’ and move towards a national consensus of 18 for the upper age limit of juvenile court jurisdiction. Vermont has even gone beyond this, raising the age limit to 20.<sup>6</sup> Little is known, however, about the extent to which, one, the evidential body of adolescent brain science is informing this legislative movement, or, two, robust science is presented to legislative decision-makers and by whom.

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<sup>1</sup> Jay N. Giedd et al., *Brain development during childhood and adolescence: a longitudinal MRI study*, 2 NAT. NEUROSCI. 861, 861-863 (1999).; Jay N. Giedd, *Structural magnetic resonance imaging of the adolescent brain*, 1021 ANN. N.Y. ACAD. SCI. 77, 77-85 (2004).

<sup>2</sup> Margo Gardner & Laurence Steinberg, *Peer Influence on Risk Taking, Risk Preference, and Risky Decision Making in Adolescence and Adulthood: An Experimental Study*, 41 DEV. PSYCHOL. 625, 625-635 (2005); L.H. Somerville, et al., *Frontostriatal maturation predicts cognitive control failure to appetitive cues in adolescents*, 23 J. COGN. NEUROSCI. 2123, 2123-2134 (2011).

<sup>3</sup> B. J. Casey, et al., *The adolescent brain*, 1124 ANN. N.Y. ACAD. SCI. 111, 111-126 (2008).

<sup>4</sup> Laurence Steinberg, *A Social Neuroscience Perspective on Adolescent Risk Taking*, 28 Dev. Rev. 78, 78-106 (2008).

<sup>5</sup> *Roper v. Simmons*, 543 U.S. 551, 570 (2005).

<sup>6</sup> Act of May 30, 2018 Vt. Acts & Resolves No. 201 (increasing the age of juvenile court jurisdiction to 20 as of 2022).

We have developed a model for analysing and grading the quality of scientific arguments and authorities presented to legislative committees examining *'Raise the Age'* legislation and have applied it to four states: Connecticut, Vermont, Michigan and Wisconsin. The former two were selected as states which had already, or were repeatedly attempting, to raise the age of juvenile jurisdiction above 18 and the latter two were states which, as of 2018, had not reached the national consensus of 18. Almost 700 pieces of evidence were examined, assessing criteria including whether studies were peer-reviewed, performed in humans, randomised control trials or whether they were opinion-based. Testimony was also categorised by author and a thematic analysis conducted.

Our research has shown that campaign organisations, academia, religious groups, police chiefs and parents regularly provide testimony in this public process and that the themes of funding, recidivism and serious offences are repeatedly referenced. The model tells us that overall, although detailed scientific arguments about brain science and culpability are made to the legislature, poor quality evidence is provided to support these and, most often, there is a lack of scientific evidence entirely.

This paper provides a summary of the results from Connecticut, Michigan, Vermont and Wisconsin. Part I discusses the methodology and development of the analysis model and Part II offers conclusions about the quality of science referenced, who participates, and the themes discussed in public committee testimony.