

Written Testimony of  
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My name is Tara Kuther and I write in support of H.B. No. 5546, An Act Concerning Sentence Modification for Juveniles. I am a professor of psychology at Western Connecticut State University. My area of expertise is life span developmental psychology with an emphasis on adolescent development. I have taught college courses in adolescent development for the last 16 years and some of my research examines risky behavior in adolescence and young adulthood, including substance use and delinquent activity.

It was once believed that adolescents' brains were no different from those of adults; however over the last decade we have learned that the brain is not fully mature until the early twenties. The adolescent years are a critical time for brain development. Puberty is accompanied by a burst of brain development with a rapid increase in connections among brain cells, similar to that which occurs prenatally and in the first three years of life. Excess connections are then pruned by experience, molding the parts of the brain responsible for rational thought and decision making. This process begins in early adolescence but is not completed until early adulthood and influences adolescents' vulnerability to strong emotions, impulsivity, and poor decision making, as discussed below.

### **Immature Social and Emotional Perception**

Compared with adults, adolescents demonstrate a poor ability to perceive others' emotions. For example, in studies where both adolescents and adults are asked to label the emotions displayed in photographs of adult faces, adolescents tend to incorrectly identify emotions, often labeling surprise and fear, for example, as anger. Adolescents are more likely to incorrectly attribute social stimuli as compared with adults – and this developmental difference is correlated with differences in brain activity during social and emotional perception tasks.

Functional magnetic imaging scans indicate that adolescents and adults use different parts of the brain in emotionally arousing tasks. Adults use the limbic system (responsible for emotion) and the prefrontal cortex (responsible to decision making and higher order thought). Adolescents' brains, however, show activity predominantly in the emotional center and markedly less activity in the prefrontal cortex. Adults' brains show the capacity to temper emotional reactions with reasoning, but adolescents' brain activity suggests a poor link between emotion and reasoning.

### **Increased Reward Salience**

In early adolescence, the balance of neurotransmitters (brain chemicals) associated with impulsivity, novelty seeking, and reward salience shift. Adolescents become primed to seek out excitement and are more vulnerable to the influence of rewards. Potentially rewarding stimuli feel more rewarding for adolescents. We have long known that adolescents tend to weigh the potential benefits of behaviors (e.g., social status, pleasure) more heavily than the perceived risks (e.g., physical harm, short and long-term health). Neurological research supports these findings. In the presence of real or perceived rewards, adolescents show heightened activity in the brain systems that support reward processing and reduced activity in the areas responsible for inhibitory control, as compared with adults.

### **Susceptibility to Peer Influence and Poor Future Orientation**

The social world – the peer group – is a powerful motivator of behavior. Adolescents' decisions are more heavily influenced by their peers than are those of adults. A great deal of research suggests that susceptibility to peer influence increases between childhood and early adolescence, peaks at around age 14-15 and declines slowly into late adolescence.

Similarly, when adolescents and adults are compared with regard to their ability to envision themselves in the future, adults demonstrate a greater future orientation—the ability to project themselves into the future – than do adolescents. Adolescents are less able to envision future consequences of their actions.

### **Recommendation**

Given findings regarding adolescents' relative neurological immaturity, specifically the findings that the parts of the brain responsible for complex decision making do not mature until the twenties, I write to support the creation of a procedure to take a "second look" at long sentences imposed on juvenile offenders after a portion of the sentence is served.

Decisions made in adolescence are often influenced by emotional reactivity, susceptibility to pressure from others, poor future orientation, and risk and benefit estimates that favor good short term and bad long term outcomes. All of these are factors whose influence decline as the parts of the brain responsible for executive decision making and planning mature. The juvenile brain is substantially different in structure and function than the adult brain, suggesting that those who commit crimes during this vulnerable period be given a second look upon maturity.