



May 23, 2017

The Honorable Senator Floyd Prozanski, Chair
Senate Committee on Judiciary, Members

Kristen Mackiewicz Seghete, PhD
Assistant Professor
Department of Psychiatry

RE: House Bill 3242—Testimony in Support

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Dear Chair Prozanski and Members of the Committee:

My name is Kristen Mackiewicz Seghete, PhD., and I am Psychology Faculty (Assistant Professor) within the Department of Psychiatry at Oregon Health & Science University (OHSU) and a licensed psychologist. At OHSU, I am the Director of the Stress, Cognition, Affect, and Neuroimaging (SCAN) Lab and conduct pediatric neuropsychological evaluations. My past research experience and current research in the SCAN Lab is focused on understanding normative development of cognitive brain processes, particularly executive function, during adolescence and young adulthood and the impact of childhood maltreatment and early life adversity on cognitive and emotional brain processes during adolescence and adulthood.

Adolescence is an important period of change and transition, not only behaviorally but also from a neurobiological perspective. This is a developmental period during which individuals transition to being able to live independently, frequently conceptualized as beginning with the onset of puberty and ending in the early 20's. Full brain development and maturation coincides with the end of the adolescent period in the early 20's. Brain maturation includes (but is not limited to): pruning, or reduction in grey matter, after an increase in grey matter volume, which results in retaining neurons and connections of importance and trimming away those that are not being used in order to increase efficiency; increased integrity of white matter, or the "super highways" of the brain, that connect different regions of the brain; and stronger functional connections between brain regions that are not anatomically close to each other but need to connect and "talk" in order to support mature cognitive and affective processes, such as decision making and regulation of emotional responding.

There are many differences in higher order cognitive processing and emotional regulation observed between adolescents and adults, which are believed to be driven by the protracted structural and functional development of the brain through the adolescent period. Specifically, it has been found that there is often an imbalance between more "cool" cognitive control regions (or the "thinking brain") and more "hot" emotional responding regions (or the "emotional brain") in adolescents as compared to adults. This is reflective of earlier maturation of emotional and reward processing regions (e.g., limbic system) during early adolescence compared to later maturation of higher order cognitive control and emotional regulation processing regions (e.g., prefrontal



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cortex) in mid to late adolescence. Additionally, it reflects continuing maturation or strengthening of the connectivity between limbic regions and the prefrontal cortex from early adolescence through early adulthood. As a result of protracted and imbalanced development, cognitive maturation does not occur until late adolescence and psychosocial maturation does not occur until early adulthood.

The timeline for cognitive and psychosocial maturation is important, as both elements are needed when considering adolescent ability to make decisions, particularly under emotional contexts. As adolescents' actions are strongly motivated by reward/incentive or threat, even more than adults, they are more likely to engage in impulsive behaviors and poorer decision-making in immediate contexts of promised incentive or feeling threatened. As such, their decision-making is likely more impacted by promised incentives/rewards or the removal of threat than adults.

Specific to the proposed Bills, some studies have found adolescents, particularly in the early to middle adolescent period, do not actually understand their *Miranda* rights as well as adults even when they acknowledge understanding them. This includes reporting beliefs that they have a right to remain silent, but that this right is diminished when they are specifically questioned.

Please refer to the uploaded articles, referenced below, for further details, elaboration, and support of the presented information.

Thank you for your time and consideration in reviewing my written testimony. Based on our current knowledge of the developing adolescent brain and subsequent decision-making processes, I urge your yes vote.

Sincerely,

A handwritten signature in black ink that reads "Kristen Seghete". The signature is written in a cursive, flowing style.

Kristen Mackiewicz Seghete, PhD

References:



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