Research Statement:

If granted access, the ABCD data set will be used to explore potential relationships between brain health and childhood environmental variables such as activity involvement, exposure to conflict, diet, community involvement and other adolescent behaviors. The research is motivated by a desire to better understand the origin of poor brain health and social violence. Additionally, recent studies have suggested that cost to society as a result of social violence could be predicted at ages as early as 3 years “based on assessments of brain health” (1). The exploration of this initial release could expose key metrics to better understand a child’s “brain health” to mitigate the potential for future social violence. We believe that this data set is well apt to answer our questions about brain health and childhood environments.

The analysis that we conduct will include use traditional statistical tests of correlation following clear hypothesis. Additionally, we will be using machine learning classifiers such as Support Vector Machines, and Random Forests using target variables that indicate poor brain health such as presence of depression, anxiety, substance abuse..ect. At this point, we will only request the survey responses and not the MRI data. This research is a component of the coursework required in a Graduate Student course at the University of Vermont titled “Principles of Complex Systems”. The work will be reviewed and critiqued by Professor Peter S. Dodds.

1. Duke University. "Applying the '80/20 rule' to social costs: Adults with the most costly problems could be spotted in preschool." ScienceDaily. ScienceDaily, 12 December 2016. <www.sciencedaily.com/releases/2016/12/161212115702.htm>.