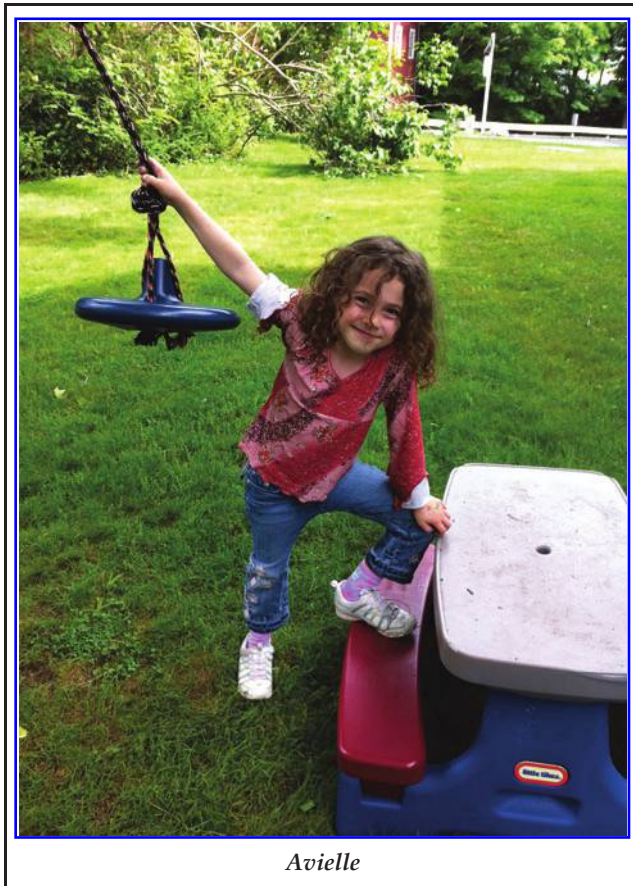


## Understanding Brain Health Can Prevent Another Sandy Hook Shooting

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Avielle

**I**T HAS BEEN SAID IN MANY DIFFERENT WAYS and in many different contexts that, in life, we have little control over what happens to us. However, what we do have control over is how we respond to life events. Indeed, it could be argued that it is how each of us responds to life's challenges that make up the core of our individuality and character. When faced with tragedy, we all respond in different ways. When our daughter, Avielle Rose, was murdered with 19 of her classmates and 6 of her educators on December 14, 2012, in the Sandy Hook Elementary School massacre, my wife and I were faced with the most tragic crucible of our lives. On that day we lost our future, our reason, and our

greatest joy. We questioned, "Why would anyone want to commit such a heinous act of violence?" We are now driven to answer this question, not only for ourselves but also for the people from all over the world who wrote letters of condolence to us, many asking the same and similar questions, "How could this be happening again after Littleton, Tucson, and Aurora?" "How many more of these mass shootings do we endure?"

Being scientists, we are compelled to seek answers to questions that begin with "how" and "why." And in response to this tragedy, we have started the Avielle Foundation. Our goal is to take a scientifically rigorous approach to preventing violence, violence of any kind, but certainly we want to understand the brain pathologies that underlie a young man's obsession with mass murder. Therefore, the mission of The Avielle Foundation is to prevent violence through research, discovery, understanding, and education.

The first phase of our development strategy has been to officially establish The Avielle Foundation as a not-for-profit 501(c)3 organization and to garner support across various disciplines, including the political arena, the scientific and clinical communities, and the communities of everyday citizens. We are bolstered by the extraordinarily enthusiastic responses we have received in this first phase. We were granted 501(c)3 status approval in July 2013. We have met face-to-face with President Obama, Vice President Biden, and many U.S. senators and representatives who support and value our mission. We have strong and enthusiastic support from the scientific community, including Nobel laureate neuroscientists, psychiatrists, psychologists, therapists, neurologists, ethicists, and educators. But most importantly, we have been building the support and fostering the engagement of everyday citizens. The onus is now on us, in the second phase of our development strategy, to communicate the need for focused efforts in understanding and preventing violence to people who can make change happen—scientists, physicians, educators, law enforcement, parents, and young adults. An important extension of the foundation's voice into our supporting communities is our relationship with Mary Ann Liebert, Inc. publishers and the powerful new journal *Violence and Gender*.

As Americans, it seems our inclination is to react to violence rather than prevent it. While putting a dollar value on the cost of crime is very complex and may be debated, a conservative estimate has been set by the U.S. Department

of Justice at around \$450 billion annually. This accounts for lost wages, victim compensation, legal costs, and most notably, incarceration. We are all shocked by the seemingly pervasive and enduring presence of violence throughout our communities, yet topics of solution and fault are both divisive and paralyzing. The debates on firearm laws, mental health, the influence of violent media, the role of the family unit, legal processes and rights regarding incarceration, and the corrections industry have us at odds and distrusting each other. The propagation of fear in these discussions leads to stigma, an inability to confront adversity, and an unwillingness to explore the diversity of our world. What is not debatable is the profound benefit to society, well beyond the fiscal scope, of researching violence prevention. Clearly, violence is a large psychological, societal, and economic burden.

We can only speculate why there is such an unmet need for this research and postulate that there are three primary reasons:

1. Unlike parents and those suffering from other brain maladies such as schizophrenia, Parkinson's disease, attention-deficit/hyperactivity disorder, and post-traumatic stress disorder, who demand that research be done and someone champion their cause, most victims of violence demand justice, not research.
2. Studying the brain as it pertains to behavior is expensive and not readily accessible.
3. The brain is a very complex and difficult organ to study, and as a result, much of our view of brain illnesses is based purely on symptomatic diagnosis. This leads to a lot of fear, trepidation, and stigma, as brain disease concepts are "mental," intangible, poorly defined, and invisible.

What we need is less fear and more hope. We need the promise of a safer, more nurturing, and supportive world. Understanding the brain pathologies underlying aggression and violence is a clear and unmet need, both an unmet need to know "why" and an unmet need for hope. We want to be able to identify problems in the brain that can result in the manifestation of behavioral symptoms of violence, aggression, and antisocial behavior and provide biological definitions and causality. We no longer want to say a child is antisocial, this teenager is depressed, or this adult is a psychopath. There will be a time in the very near future when the underlying brain pathologies that lead to these symptoms are identified and understood. The time to enhance our scientific exploration of these pathologies is now. And the *Violence and Gender* journal will provide the credible resource to share this knowledge across the many disciplines researching aggression and violence.

The Avielle Foundation is going to champion efforts to understanding the underlying biochemical and genetic anomalies associated with violence. We begin by changing the language of all things "mental" to those of the "brain,"

thereby making the invisible visible. There are tangible, measureable changes in gross structure, cellular structure, gene expression profiles, and biochemistry associated with brain pathologies and resulting behaviors. We want to use these signatures (and eventually biomarkers) to identify those at risk of violent behaviors and to predict the success of interventions, be they behavioral modification, environmental changes, or pharmacological in nature. Fortunately, technologies used to view and study the brain, and to identify these biomarkers, are advancing at a rapid pace, becoming increasingly sensitive, affordable, and accessible. They span the range from next generation sequencing and genome-wide association studies to dual functional magnetic resonance imaging (fMRI)-positron emission tomography (PET) scans. While these technologies are going to help pave the way to understanding the pathologies of brain illnesses, it is likely novel innovations, which we have yet to discover, that will provide the needed paradigm shift. These innovative technologies will both enable research to progress and facilitate the assessment of behavioral modification and therapeutic intervention successes. Ultimately, we need to bridge the gaps between this measured biochemistry, functional, and structural change data and the observed behaviors. That is to say, we need to bridge the "is he cruel to animals?" behavioral sciences and the "pee in the cup" biochemical sciences to elucidate not just correlations but viable treatment, intervention, and prevention strategies. The efforts of our Foundation and this Journal will help build that bridge.

With the help of extensive education and support programs designed to show the public the importance and effectiveness of knowing brain causality, violence, and aggression, people will recognize early warning signs of behavioral indicators of violence and aggression. They will feel safer going to their doctor or taking their child to the pediatrician when he or she knows *why* the symptoms exist. The doctor will be able to give hope to the patient by naming a visible and measureable problem and then provide viable treatment options. In the end, lives may be saved, communities made safer, families healthier, and everyone will be better off.

#### Author Disclosure Statement

Dr. Richman is the founder and CEO of The Avielle Foundation.

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