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Perspective

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The War-Zone Mentality — Mental Health Effects of Gun Violence in U.S. Children and Adolescents

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Does gun violence affect the mental health of U.S. children? That question has the same answer as most inquiries about child and adolescent development: it depends. Rarely does a simple cause–effect relationship apply to the same degree to all children, and the same exposures may even have opposite effects on different children. Such variability is an essential truth of the "ecological perspective" on child and adolescent development. But from this perspective, consideration of gun violence's effects on the mental health of young people highlights two issues among the many facing U.S. society: traumatic responses in children directly exposed to gun violence and contamination of the consciousness of young people, particularly those with serious mental health problems.

Witnessing gun violence is clearly traumatic and can lead initially to acute stress reaction and then to post-traumatic stress disorder (PTSD). But the bigger and more socially important story is post-traumatic stress *development*: How do children and adolescents develop in the wake of trauma? Not surprisingly, the answer is the same: it depends.

In perhaps 85 to 90% of cases, mental health sequelae of a single traumatic incident resolve, typically within a year. That's the good news for kids for whom gun violence is a horrible aberration, a terribly bad day in a generally safe and supportive life. The small proportion of children or adolescents who experience long-term damage from a single incident of traumatic violence tend to be those whose lives were already disrupted beforehand. Many, if not most, of these single incidents of gun violence are the shootings that make the front page, and of course they can indirectly traumatize vast numbers of young people, as images of murder accumulate in their social-media–fed consciousness. But these incidents do not account for most of the gun-violence trauma directly experienced by U.S. children and adolescents. This violence occurs in a subset of neighborhoods, where it often becomes a regular feature of daily life — multiple-incident chronic trauma rather than single-incident acute trauma.

Having served as a psychological expert witness in murder cases for 30 years, I have witnessed the challenges faced by such chronically traumatized young people. They are unlike children and adolescents who've

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had only one bad day caused by gun violence, who are typically inundated with "psychological first aid" and therapeutic interventions. Rarely do the young people in "war-zone" neighborhoods receive substantial mental health support — most essentially, trauma-informed psychotherapy — as they undergo posttraumatic stress development. They are left largely on their own, and any "therapy of reassurance" is not credible: it does no good to tell them "It's OK, things are back to normal," because "normal" is the problem. I often ask the young men I interview in jails and prisons how many 8-year-olds they would estimate have witnessed a shooting; the typical response is along the lines of "All? Most? 80%?" though the actual percentage is more like 10%.

Young people for whom such exposure is standard are likely to develop a range of problems from both experiencing and normalizing gun-violence–related trauma. In their 1999 analysis of trauma outcomes, Solomon and Heide reported that beyond "normal" PTSD, chronic trauma produces "poor self esteem/self concept," "interpersonal distrust," "feelings of shame," and "dependency."[1] These are significant developmental issues in their own right. But I have found that when other chronic trauma (including child maltreatment in the home) occurs in the context of community violence, it also yields a much more dangerous symptom: development of a "war-zone mentality."

Although researchers such as Sampson have reported finding resilience and even "thriving" in poor, marginalized communities in cities such as Chicago,[2] a study conducted in Chicago by Bell and Jenkins revealed that in the neighborhoods where community violence flourished, 63% of elementary school children reported having witnessed a shooting.[3] Their level of exposure, in other words, was the same as that in Lebanon and among Palestinian children during the peak years of political violence in the West Bank and Gaza Strip — hence the characterization of these U.S. neighborhoods as war zones. Such high exposure results in a worldview in which community violence is normal. But this normalization can lead to hypersensitivity to threat and validation for preemptive assault — what I have termed the war-zone mentality.

Through this process, traumatized young people (mostly boys) become "child soldiers." The larger context in their communities, which often includes poverty, racism, cultural support for extreme corporal punishment (beating of children), and a history of armed street gangs, disproportionately predisposes them to perpetrate gun violence themselves. They are frequently drawn to gangs, at least in part to compensate for the "poor self esteem/self concept," "interpersonal distrust," "feelings of shame," and "dependency" that arise from untreated chronic trauma. What's more, they are disproportionately likely to be facing these socially toxic communities without the benefit of strong, positive male role models, and they often report (to me and others) that they were drawn to gangs because they sought a sense of family acceptance they found lacking at home. One young man who was in jail facing murder charges told me, "Until I turned 14, I had never met anyone who had a father living in the home."

Jivani's 2018 analysis of violent and socially disaffected behavior in marginalized communities around the world concludes that where fathers are commonly absent, boys are at heightened risk from any socially toxic influences in their environment.[4] Gun-violence trauma is crucial to the developmental path that leads to the next generation of gun violence.

When it comes to contamination of consciousness, I have had occasion to talk with one actual and two would-be school shooters. I was struck by how these psychologically and socially vulnerable boys were informed by the scripts provided by media accounts of other school shootings — particularly the 1999 shooting at Columbine High School in Colorado. They studied Columbine as a kind of primer on what to do when you're a troubled, angry, sad teenage boy in a country that gives you ready access to lethal weapons. They are not alone.

Teenagers are particularly vulnerable to something called "the audience effect": adolescents tend to see themselves as if they were in a play and their peers were the audience (or sometimes fellow actors). This phenomenon predates Internet-based social media, but it is excruciatingly obvious today, as many mass murderers now post before they kill. Such "homicidal leakage" has long been seen with young killers. It's part of the show — a quintessentially American show. In these adolescents' troubled minds, if anger and sadness are the question, gun violence is the answer.

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An anthropological investigation illuminates the severity of this problem. People with a diagnosis of schizophrenia are not generically more violent than other Americans, and in fact are more likely to be victims than perpetrators of violence. However, a three-country study of the content of auditory hallucinations among people diagnosed with schizophrenia found that in the United States, violent imagery permeates the thinking of people who are thought to be "out of touch with reality."[5] In Ghana, hearing voices was often perceived as having a positive conversation with God, and in India the voices were frequently critical of the hearer's housekeeping style ("clean your house!"). Whereas 70% of the voices heard by U.S. participants told them to hurt themselves or others, only 20% did so in India and only 10% in Ghana. Thus, even people who are usually considered disconnected from reality may be "infected" by the American culture of violence.

An audio interview with Dr. Garbarino is available at NEJM.org

Of course, the United States is saturated not only with violent images but also with the means to translate those images into bloody realities. The physical, cultural, and social availability of lethal weapons offers a way to implement the most violent imperatives. Twenty-five years ago, I asked a group of suburban 10-year-olds if they could get access to a gun "if they needed to," and virtually all of them said yes. They still can.

The effects of gun violence on young people in the United States are multidimensional, but as someone who has interacted with hundreds of juvenile victims and perpetrators of gun violence, I find these two aspects particularly worrisome.

Disclosure forms provided by the author are available at NEJM.org.

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Intradermal Vaccination for Monkeypox — Benefits for Individual and Public Health

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Intradermal vaccination delivers antigen into the space between the epidermis and the dermis. This space is an anatomically favorable site for immune stimulation, enriched in a heterogenous population of dendritic cells, macrophages, and monocytes that endow this tissue with a potent capacity to detect and respond robustly to immunologic stimuli, including those present in vaccines. For these reasons, the role of the dermis in adaptive immunity has been exploited for allergen testing and tuberculosis skin testing. And smallpox vaccination was developed by Jenner using something similar to intradermal administration: variolation, or the practice of scratching immunizing material into the skin.

Intradermal vaccination has been extensively studied for prevention of a wide range of viral diseases, including influenza (for which there is a licensed intradermal vaccine), Japanese encephalitis, hepatitis A, hepatitis B, human papillomavirus disease, polio, rabies, varicella zoster, and yellow fever. In the 1970s, Germany's smallpox eradication campaign deployed it for vaccinating more than 100,000 persons with modified vaccinia Ankara (MVA), which forms the basis for the JYNNEOS vaccine currently being used to combat monkeypox.

Among the advantages of intradermal vaccination is that it can generate immune responses equivalent to those achieved with subcutaneously or intramuscularly administered vaccine but with as little as one fifth to one tenth the dose, while avoiding the rare risk of nerve, blood-vessel, or joint-space injury. To address the technical challenge of shallow administration with a needle, technologies have been developed to ensure proper vaccine placement in the intradermal space,

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