

## Why violence is so contagious

By Ana Swanson

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An eerie thing happened after the shootings at Columbine High School in Colorado. Variations of the shooting, in which Eric Harris and Dylan Klebold killed 12 other students, one teacher, and then themselves in 1999, started showing up across the United States and the world.

Some shooters copied Harris and Klebold's tactics or their trenchcoats. Others wrote about them in their manifestos, or recorded similar "basement tapes," in which they explained motives and said goodbye to their families. Thousands more young people compiled hit lists, phoned in bomb threats, brought guns to school and divulged Columbine fantasies online, but never carried them out.

Before the end of 2007, 12 rampage shootings had occurred in the United States; eight of the shooters specifically mentioned Columbine, according to research by sociologist Ralph Larkin. Before Columbine, rampage shootings had been rare outside the United States. By the end of 2007, 11 major rampage shootings took place in Germany, Sweden and other countries, six of which imitated or referenced Columbine, Larkin says.

As Malcolm Gladwell writes in the *New Yorker*, some shooters have been shown to be psychopaths, others psychotic, and others perfectly sane. Many are abused or bullied, but some appear to come from stable, loving families.



People take part in a candlelight vigil on Oct. 1 after a mass shooting at Umpqua Community College in Roseburg, Ore.

(STEVE DIPAOLA/REUTERS)

Given the variation, it's hard to say what makes people carry out horrific acts of violence like these. Any genetic basis for violence is still not well understood. An analysis of 37 incidents of school violence by the U.S. Secret Service revealed that the only significant common factors were that shooters were male with histories of depression and attempted suicide.

However, research into the brain and violent behavior suggests that exposure to violence — whether personally or through the media — is one important factor. Some people who study violence explain these recurring patterns with a simple metaphor: That violence is contagious and spreads like a disease. Just as tuberculosis spreads in the lung and cholera multiplies in the intestine,

a violent experience or image can take hold in the brain, and be reproduced from there into real life. The more emotional and shocking the images -- as were those that emerged from Columbine -- the more contagious violence proves to be.

"If you're exposed to violence, you're more likely to catch it," says Rowell Huesmann, a psychologist at the University of Michigan who has spent decades researching aggression.

This may be why suicides spike after the suicide of a politician or celebrity — and why the World Health Organization cautions media to practice restraint in reporting these stories. It may be why victims of child abuse appear more likely to become

abusers themselves. It may be why studies of post-war societies show an upswing in homicides, theft and robbery after wars are over. And it may be why Columbine, one of the most reported events of the 1990s, inspired so many iterations.

“Why would someone do violence to their kid when they know how bad it was themselves? Why is someone who was exposed to violence at the hands of their enemy do violence in their family? It makes no sense,” says Gary Slutkin, an epidemiologist who advocates treating violence as a public health issue. “It only makes sense if violence is contagious.”

The research on how violence spreads -- and how we might stop it -- is relevant to all sorts of violent behavior, but it feels particularly salient at a time of frequent mass shootings. Those who see violence as a contagious process advocate the same approach that public health workers take to stopping tuberculosis or HIV: limiting exposure and stopping its spread.

In practice, that could mean new reporting suggestions for the media on how to cover violent events like mass shootings. It could mean that average people, realizing that their brains are vulnerable to violence, choose to take additional steps to shield themselves or their kids. Or, it could mean rethinking how communities police themselves, putting more resources into detecting and stopping conflicts and violent events before they start, instead of punishing people afterward.

These changes would come at a cost -- the energy and money put into prevention, for example. And there's also the danger that efforts to shield people from gratuitous violence would impinge on free speech and lead to censorship.

Nobody knows quite why one person commits violence and another person doesn't. But the research shows we

can take steps to limit the chance of people adopting violent behaviors. Just like we make decisions about how far to go to prevent the spread of disease -- during the Ebola outbreak, the country monitored people coming from infected areas for potential new cases, but didn't ban them altogether, for example -- we face trade-offs in how far we want to go to limit the spread of violence.

## Monkey see, monkey actually do

In the 1970s, experiments by a psychologist at Stanford named Albert Bandura revealed the relatively automatic way in which children pick up violent behavior.

The experiments involved a “Bobo Doll,” an inflatable figure painted to look like a clown. Bandura brought two groups of kids into the lab to first observe an adult playing with toys, then play with the toys themselves. The first group watched an adult hit and kick the Bobo doll, while another group watched the adult play with toys peacefully.

He found that the kids who watched the adult behaving aggressively were much more likely to beat up on the Bobo Doll themselves. The effect was stronger when the adult was of the same sex as the child, suggesting that kids were more likely to imitate people they identify with.

Decades later, scientists began to discover just how much our brains are wired to imitate the actions we see around us -- evidence suggesting that human behavior is less guided by rational behavior than people believed.

In the 1990s, Italian researchers observed that a set of neurons would fire both when a macaque monkey grabbed an object, and when it saw another monkey grab the same object. Later research showed that humans also have these so-called “mirror

neurons” in the premotor cortex, the part of the brain responsible for planning and executing actions.

This system helps humans learn lots of things by imitation -- including violent behaviors. When we watch someone else behave violently, mirror neurons activate our own motor system as if we are doing the action ourselves. According to Marco Iacoboni, a professor of psychiatry and biobehavioral sciences who studies mirror neurons, these neurons may be the biological mechanism by which violence spreads from one person to another.

They could also be part of the reason that watching violent TV, movies and news and playing violent video games appear to make people more aggressive.

Compared with previous generations, the number of Americans who experience war and homicide first-hand has fallen sharply. Yet the explosion of media has given us more access to more violent imagery than ever before.

Numerous studies have shown that viewing violent TV shows is linked with more aggressive behavior -- including one 15-year study of 329 young people by Huesmann, who showed that the linkage existed regardless of the family's social status or parenting style, or the child's intellectual capacity or initial aggression level.

Research by Bruce Bartholow of the University of Missouri has shown that both short- and long-term exposure to violent video games reduces the electrical activity in the brain when the person is shown violent images -- a sign that these games desensitize people to the horror of violence. Those who played violent games also behaved more aggressively in a subsequent activity, in which they had to deliver bursts of unpleasant white noise to an opponent.

Being desensitized against blood and gore can be useful for soldiers in battle or trauma surgeons; training and repetition allow them to overcome the initial shock and do their jobs. But repeatedly witnessing blood and violence also makes people less empathetic, less likely to intervene to stop violent acts, and more likely to react aggressively to small annoyances.

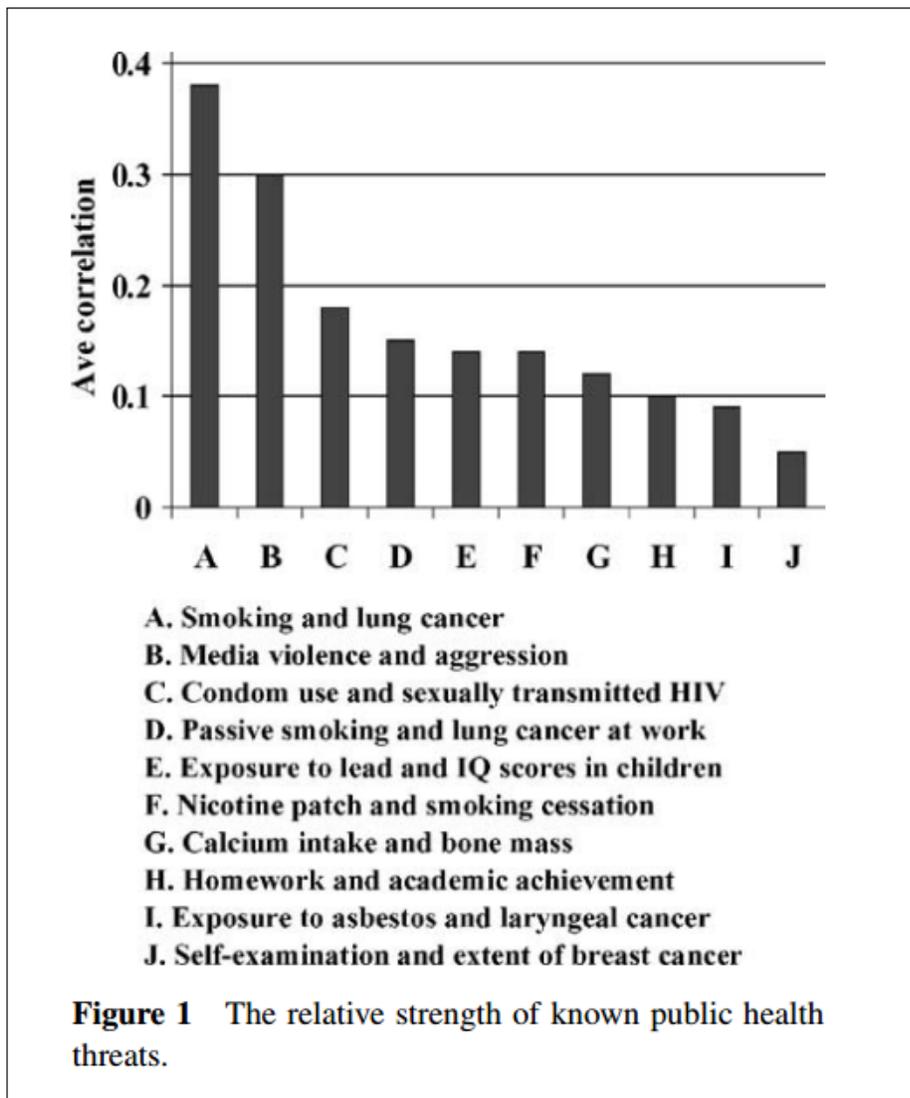
Bartholow points out that this principle -- that exposing people to violence helps prepare them to commit violent acts themselves -- is already well-accepted by one institution that should know: the U.S. Army. The army has developed a first-person shooter game to get its recruits used to blood and violence in a virtual environment before they confront it in real life.

Yet he believes that a certain degree of desensitization is necessary for anyone to do something like a mass shooting. "To be able to act that violently ... one has to overcome the kind of natural aversion that people have in our culture to that kind of mass violence."

The research has critics. Cheryl Olson, a psychiatrist at Harvard Medical School who studies video games, has argued that there is little evidence of a link between playing violent games and serious real-life violence or crime, and that playing video games has other benefits for kids, as an outlet for expression and social connection.

Furthermore, research hasn't shown obvious ties between video games and school shootings in the United States. The report by the U.S. Secret Service found that only 12 percent of the 41 attackers between 1974 and 2000 they analyzed had an interest in violent video games.

Like others in their field, Huesmann and Bartholow are careful to say that lots of factors contribute to aggression and violence, not just violent media. But they emphasize that numerous



The Role of Media Violence in Violent Behavior, L. Rowell Huesmann and Laramie D. Taylor, 2006.

studies have shown that being exposed to violence -- whether in real life or through the media -- is linked with more aggressive behavior.

"The 14-year-old boy arguing that he has played violent video games for years and has not ever killed anybody is absolutely correct ... as is the 45-year-old two-pack-a-day cigarette smoker who notes that he still does not have lung cancer," Huesmann and colleagues write in a review of their work. "But both are wrong in inferring that their exposure to their respective risk factors (violent media, cigarettes) has not causally increased the likelihood that they and people around them will one

day suffer the consequences of that risky behavior."

Indeed, Huesmann says the influence of media violence is large enough to be classified as a public health threat. In one study, he points to two analyses that suggest that the correlation between media violence and aggression is higher than that between condom use and sexually transmitted HIV, and exposure to lead and IQ scores -- and nearly as high as the correlation between smoking and lung cancer.

There's one more big way that repeated exposure to violence can lead people to carry out previously unthinkable acts,

researchers say -- by subtly influencing our understanding of why people around us are doing the things they do.

Psychologists have observed that kids who experience physical, verbal and psychological aggression are more likely to develop something called "hostile attribution bias," in which they infer hostile intent not just from obviously hostile actions, but also from ambiguous ones. If someone with hostile attribution bias sees two people whispering, for example, he or she might assume the conversation is about them. If they get cut off in traffic, or if someone bumps into them in the hallway, they might assume that person was acting intentionally, rather than just being careless.

Many mass shooters, including the Columbine killers, showed signs of hostile attribution bias, describing their acts as revenge for perceived injustices, bullying, female rejection and public humiliation.

The Columbine killers, for example, posted rants, essays and other documents online about their desire to "kickstart a revolution" of oppressed kids who had been bullied and victimized by "jock" persecutors, Larkin writes, giving "inspiration to subsequent rampage shooters to exact revenge for past wrongs, humiliations and social isolation."

Hostile attribution bias can result from abuse, but it can also stem from behaviors that fall below that threshold, such as teasing, shouting, rejection and belittling. And it can also arise from media violence, studies suggest. After being repeatedly exposed to violent media, people tend to see ambiguous events as being more hostile and aggressive reactions as more normal.

## Stopping the spread

Once you start to see violence as a contagious process, the response

becomes clearer, aggression researchers say: limiting exposure and stopping its spread.

For many people, that might sound eerily similar to recommending censorship. But Huesmann and others oppose censorship on principle, saying that the media have an obligation to report the facts and dispel myths about violent events, and that free expression is necessary for a peaceful society.

Yet Huesmann thinks the media should think twice about showing gratuitous violence, and might one day adopt guidelines for reporting on shootings that are similar to the ones it already uses for suicides. For example, the World Health Organization cautions the media to avoid sensationalizing or normalizing suicide, and avoid an explicit description of the method used or of photographs or videos that might inspire copycats.

After all, Columbine was one of the most-covered news events of the 1990s, receiving higher ratings on CNN than the fall of the Berlin Wall, the World Trade Center bombing, the 1992 and 1996 presidential elections, and the death of Princess Diana, according to Nielsen.

When it comes to reporting on mass shootings, threat assessment experts have some recommendations for the media, Mark Follman writes for Mother Jones. The media should report on the perpetrator with dispassionate language; minimize the use of the killers' names, especially in headlines; avoid reposting "pseudocommando" or other posed photos that might be seen as glorifying the killer; and avoid republishing their manifestos, except when absolutely necessary.

Of course, the media has to weigh the potential risks of this kind of reporting with the benefit of sharing news, and the freedom of information. As Follman writes, both journalists and the public responded with horror when

the *New York Daily News* put stills from a shooter's perspective -- taken from a video when a disgruntled TV reporter gunned down ex-colleagues in August -- on its cover.

On an individual level, researchers say people may also want to think carefully about the costs of exposing themselves or their kids to gratuitous and unnecessary violence. Obviously, many people watch violent media and play violent games without consequence. Still, neurology and psychology present ample evidence that witnessing violence alters our brains and behaviors in potentially undesirable ways.

On a community level, psychologists and researchers support more intervention to halt and rechannel aggressive behavior. Ken Dodge, a psychologist at Duke University who studies hostile attribution bias, says kids who show signs of this behavior should be counseled to slow down their responses and use problem solving techniques to avoid reacting too aggressively.

Gary Slutkin is an epidemiologist who started a group called Cure Violence, which runs community-based programs to detect and stop violence in more than 25 cities around the world. His program is mainly focused on high-crime urban populations, but he believes it could be used to a much broader degree across the country.

Slutkin's group uses face-to-face counseling and intervention to try to track and halt the potential spread of violence in adults in a community -- an approach that Slutkin insists has been very effective at stopping violence.

Evaluations of the group's program sites -- one of the Baltimore program by both the Centers for Disease Control and Prevention and Johns Hopkins and one of the Chicago program by the National Institute of Justice and Northwestern University -- show a reduction in shootings of more than 40 percent. And

the group claims that its modest outlays result in huge savings for families and the government, including costs for medical and mental health care, criminal justice and wage losses.

The organization employs workers called “interrupters” whose job is to find

potential conflicts and issues in their neighborhood and resolve them before violence happens. This might sound difficult or impractical, but Slutkin points out that health workers detect and stop the spread of rare epidemics of bird flu, plague and SARS all the time, and are well equipped to the task.

“Right now, there is very little plague or bird flu or SARS, why is that? Because there are health workers out there looking for cases, and they’re able to prevent a first case, or if there is a first case, they’re able to prevent the spread,” he says.