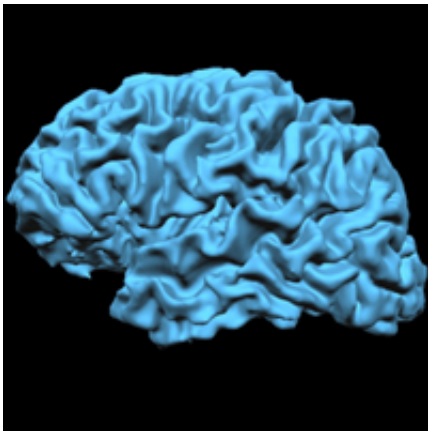


Study examines impact of violent media on the brain

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MRI brain scan

With the longstanding debate over whether violent movies cause real world violence as a backstop, a study published today in *PLOS One* found that each person's reaction to violent images depends on that individual's brain circuitry, and on how aggressive they were to begin with.

The study, which was led by researchers at the Icahn School of Medicine at Mount Sinai and the NIH Intramural Program, featured [brain](#) scans which revealed that both watching and not watching violent images caused different [brain activity](#) in people with different aggression levels. The findings may have implications for intervention programs that seek to reduce [aggressive behavior](#) starting in childhood.

"Our aim was to investigate what is going on in the brains of people when they watch violent movies," said lead investigator Nelly Alia-Klein, PhD, Associate Professor of Neuroscience and Psychiatry at the Friedman Brain Institute and Icahn School of Medicine at Mount Sinai. "We hypothesized that if people have aggressive traits to begin with, they will process [violent media](#) in a very different way as compared to non-aggressive people, a theory supported by these findings."

After answering a questionnaire, a group of 54 men were split by the research team into two groups—one with individuals possessing aggressive traits, including a history of physical assault, and a second group without these tendencies. The [participants](#)' brains were then scanned as they watched a succession of violent scenes (shootings and street fights) on day one, emotional, but non-violent scenes (people interacting during a natural disaster) on day two, and nothing on day three.

The scans measured the subjects' brain metabolic activity, a marker of brain function. Participants also had their blood pressure taken every 5 minutes, and were asked how they were feeling at 15 minute intervals.

Investigators discovered that during mind wandering, when no movies were presented, the participants with aggressive traits had unusually high brain activity in a network of regions that are known to be active when not doing anything in particular. This suggests that participants with aggressive traits have a different brain function map than non-aggressive participants, researchers said.

Interestingly, while watching scenes from violent movies, the aggressive group had less brain activity than the non-aggressive group in the orbitofrontal cortex, a brain region associated by past studies with emotion-related decision making and self-control. The aggressive subjects described feeling more inspired and determined and less upset

or nervous than non-aggressive participants when watching violent (day 1) versus just emotional (day 2) media. In line with these responses, while watching the violent media, aggressive participants' blood pressure went down progressively with time while the non-aggressive participants experienced a rise in [blood pressure](#).

"How an individual responds to their environment depends on the brain of the beholder," said Dr. Alia-Klein. "Aggression is a trait that develops together with the nervous system over time starting from childhood; patterns of behavior become solidified and the nervous system prepares to continue the behavior patterns into adulthood when they become increasingly coached in personality. This could be at the root of the differences in people who are aggressive and not aggressive, and how media motivates them to do certain things. Hopefully these results will give educators an opportunity to identify children with aggressive traits and teach them to be more aware of how aggressive material activates them specifically."

Provided by The Mount Sinai Hospital

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