

Itchy Trigger Finger? How About Itchy Brain?

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Police work is very dangerous, often involving bad people with guns, and one of the most dangerous policing tasks is searching and clearing a house. This is where the police go room to room through a building, in pursuit of a suspect, who may be armed and dangerous. The police officer must be fully prepared to shoot—finger on the trigger, mind alert—in case he or she does confront a suspect who is armed and ready to shoot. But the officer must also have the self-restraint not to pull the trigger if he or she bursts into a room and confronts an innocent bystander.

Getting this right is cognitively challenging, which is one reason innocent people get shot—not just by the police but by soldiers as well. Shooting a gun involves a complex cascade of actions, each linked to a specific cognitive ability. From a psychological perspective, a police officer in this frightening situation must mentally inhibit an already initiated action—stop in his tracks, cognitively—in order not to squeeze the trigger if an innocent person is detected. And it all happens instantaneously.

Psychological scientist Adams Biggs of Duke University has been studying shooting performance and cognition. As part of this project, he has been working with colleagues to link civilian casualties to failures of response inhibition—and more important, to see if civilian casualties might be reduced by improving trainees' cognitive inhibition abilities. Here's a description of their work:

The scientists recruited young men and women to play a video game called *Reload: Target Down*. This game is played on Nintendo Wii, which allows players to move a mock firearm in real space and squeeze a realistic trigger. Shooters enter either a simulated apartment or embassy and attempt to kill the bad guys without inadvertently killing innocent civilians or hostages. Each successful killing of a hostile target earns up to 100 points, depending on accuracy, while each accidental killing of a civilian costs 1000 points. Shooters also earn points by killing the hostile targets quickly, so players are trying for both speed and accuracy at once. The competition for points is merely an incentive for shooters to perform their best under pressure.

The important statistic is total civilian casualties, which the scientists tallied for each volunteer over four rounds of *Reload*. After the simulated shooting, each volunteer completed four computer tasks, all meant to assess attention and response inhibition. Finally, they completed self-reports on impulsivity, ADHD and autism symptoms.

The idea was to compare each volunteer's response inhibition ability with his or her total civilian casualties, to see this specific cognitive skill is indeed linked to innocent deaths. And it is, clearly. Those with poor inhibitory control and high attentional impulsivity were more likely to shoot civilians in the simulated scenarios. What's more, attention deficits—but not motor impulsivity deficits—were significantly linked to innocent deaths—suggesting “an itchy brain more so than an itchy trigger finger.”

This is intriguing in itself, but Biggs wanted to go further, to see if cognitive training might actually

improve shooting accuracy and decrease civilian casualties. Only some of the volunteers were given three one-hour training sessions on two different inhibition tasks. Others, who served as controls, were trained in visual search techniques. Then all the volunteers played *Reload* again.

The results, reported in a forthcoming issue of the journal *Psychological Science*, were dramatic. Those trained in cognitive inhibition killed significantly fewer innocent civilians this time around, while the controls showed no change. Importantly, subjects with high levels of ADHD symptoms benefited most from the training—suggesting that those with attentional deficits might be identified for training.

These findings could find a practical application, and soon, since response inhibition training shows exciting potential as a training method for police and military. The findings might also lead to more insights into cognition and firearms, insights with the potential to reduce society's death toll.

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