

Foreword

by Gavin de Becker

Dave Grossman is the leading expert in a subject nearly all people recoil from. It is also a subject people run toward every day: killing.

Readers of Dave's classic book, *On Killing*, experienced something rare: an unobstructed glimpse into what we are and how we function—at our best and our worst. We are compassionate and violent; we are humane and animalistic; we are protectors and killers.

No other book had ever so completely set aside politics and judgment, and revealed so effectively—in precise scientific detail—what happens when one human being kills another.

For soldiers and police officers, Dave's work changed everything. *On Killing* became a central resource at the FBI Academy, at West Point, at hundreds of police departments and military organizations, and at universities like Berkeley. *On Killing* was also nominated for a Pulitzer Prize.

Now, how do you make West Point, the FBI Academy, and Berkeley all happy with the same book? Well, you just tell the truth.

And that's what Dave Grossman does.

Now, in *On Combat*, Dave Grossman and Loren Christensen pioneer beyond the old horizons of history, psychology, and physiology, and bring back critical new insight. This book will fascinate readers of all types, its insights perhaps most interesting to military leaders, psychologists, scholars, and statesmen—but for warriors, much more is at stake than mere information: Warriors will learn how to keep going even if shot, and how to prepare the mind and body for survival instead of defeat. Thus, the teachings in this book amount to modern armor.

Police officers and soldiers already know a lot about maintaining physical readiness, but it is the mind that must first be properly prepared, the mind that controls the hands, arms, eyes, and ears. *On Combat* shows us how the body responds to lethal combat, what happens to your blood flow, your muscles, your judgment, your memory, your vision and your hearing when someone is trying to kill you. And you'll learn what it's really

like to kill another human being, what you'd feel right after you shoot someone, and what you'd feel an hour later, a day later, a year later.

Dave teaches police officers and soldiers that, "Just as a fireman has to know all about fire, you have to know all about violence." Indeed, warriors have gained great knowledge about violence, but many gained it while in danger. And far too many didn't survive the lethal academy of combat. This book makes all past warriors our teachers. One interesting lesson is that our bodies sometimes have more wisdom about combat than our minds.

We have a brain that was field-tested millions of years ago in the wild. I call it the wild brain to distinguish it from the logic brain so many people revere. The logic brain can't do much for you once the situation becomes critical. The logic brain is plodding and unoriginal. It is burdened with judgment, slow to accept reality, and spends valuable energy thinking about how things ought to be, used to be, or could be. The logic brain has strict boundaries and laws it wants to obey, but the wild brain obeys nothing, conforms to nothing, answers to nobody, and will do whatever it takes. It is unfettered by emotion, politics, politeness, and as illogical as the wild brain may sometimes seem, it is, in the natural order of things, completely logical. It just doesn't care to convince us of anything by using logic. In fact, during combat, the wild brain doesn't give a damn what we think.

Ideally, the wild brain helps us to receive the most powerful asset nature has given us: intuition. The root of the word intuition, *tuere*, means "to guard and to protect," and that's exactly what it can do for us—particularly if prepared with accurate and relevant information.

For example, courage is usually the star in war stories, but fear too does great things in combat. Fear readies the body for action by increasing blood flow in the arms and legs. Lactic acid is heated in the muscles, and our breathing and heartbeat become more determined. Most people know about adrenaline, but fear provides another amazing chemical to increase our chances of survival: cortisol. This one helps the blood clot more quickly, just in case we are cut.

The body can also react to combat in ways that are not at all helpful. Warriors might experience impairments to vision, judgment, and hearing, or they might experience reduced motor skills—and they likely will experience all this during violence—unless the mind and body are integrated. That's where *On Combat* makes its greatest contribution. By the act of teaching warriors what to expect, Dave and Loren have given a whole new resource to those we ask to fight

on our behalf, and it isn't only enhanced fighting ability. Knowing how to tame and manage the sometimes counterproductive reactions of the body, many more warriors will have the presence of mind to avoid combat altogether. They'll be able to make choices rather than merely hold on to the physiological roller coaster during combat.

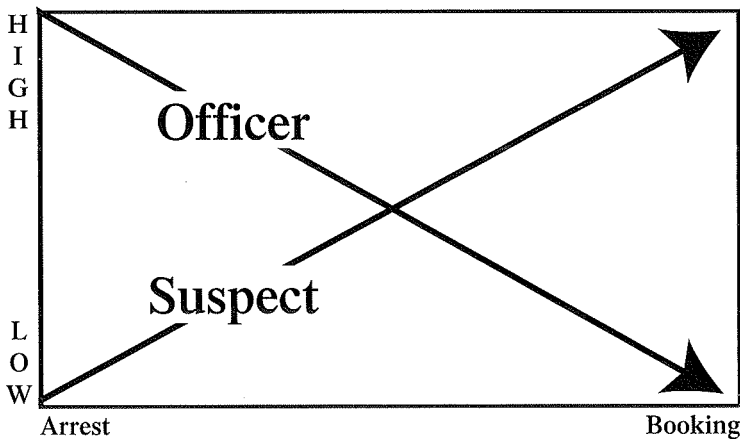
The concepts in this book will soon reach millions of police officers and soldiers around the world, and I am grateful for the opportunity to say what you'll want to say just a few pages from now: Thank you, Dave and Loren, for this profound gift.

—Gavin de Becker

Look at the “Officer vs. Suspect Stress” graph and note the difference between the officer and the suspect during and after a violent arrest. This was first introduced by the U.S. Marshals in reference to escapes during prisoner transports, but it has far wider and broader application to military and law enforcement.

The officer went into the arrest when he was in “Condition Red,” a heightened state of alertness and awareness. He managed to catch the suspect when the man was completely off guard in “Condition White.” There was a scuffle and the officer got the man “cuffed and stuffed” into the back seat of the patrol vehicle. Now, if the officer is not careful on the way back to the station, he might think that the danger is over and allow himself to relax. Meanwhile, the suspect is still high on adrenaline and growing increasingly unhappy over the loss of his freedom.

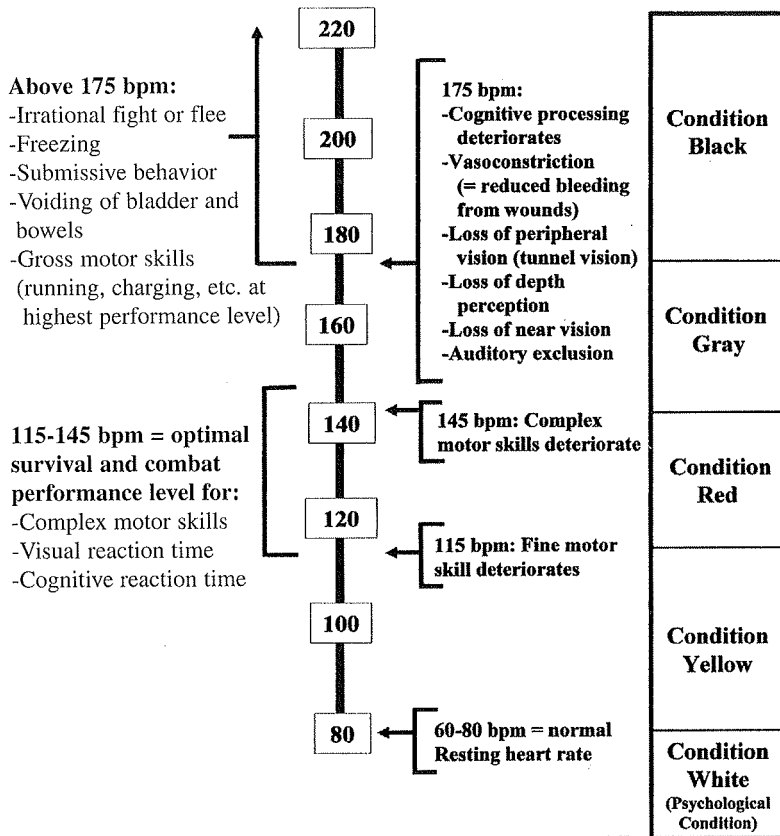
Officer vs. Suspect Stress
Stress Levels during Arrest, Transport and Booking



Heart Rate

Beats Per Minute

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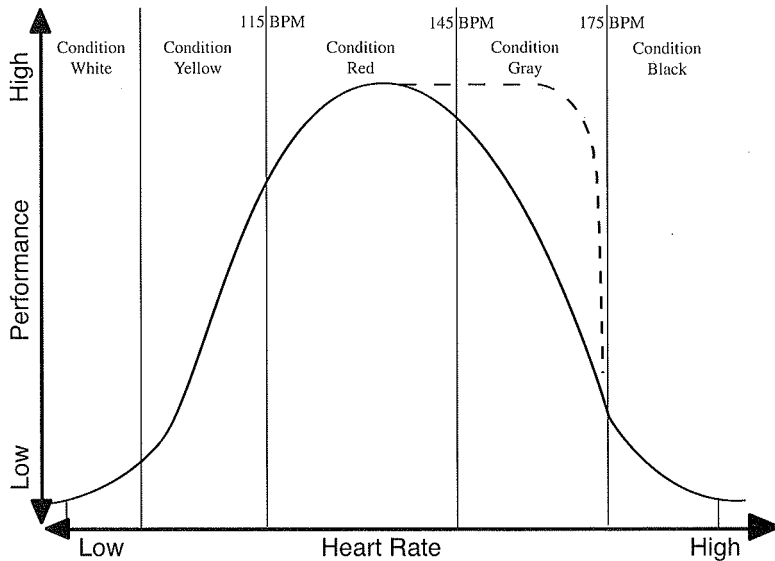


EFFECTS OF HORMONAL OR FEAR INDUCED HEART RATE INCREASE

Notes:

1. This data is for hormonal or fear induced heart rate increases resulting from sympathetic nervous system arousal. Exercise induced increases will not have the same effect.
2. Hormonal induced performance and strength increases can achieve 100% of potential max within 10 seconds, but drop 55% after 30 seconds, 35% after 60 seconds, and 31% after 90 seconds. It takes a minimum of 3 minutes of rest to "recharge" the system.
3. Any extended period of relaxation after intense sympathetic nervous system arousal can result in a parasympathetic backlash, with significant drops in energy level, heart rate and blood pressure. This can manifest itself as normal shock symptoms (dizziness, nausea and/or vomiting, clammy skin) and/or profound exhaustion.

Unified Model of Stress and Performance



Perceptual Distortions in Combat

From *Deadly Force Encounters*
by Dr. Alexis Artwohl & Loren Christensen
Based on Survey of 141 Officers

- 85% Diminished Sound (auditory exclusion)
- 16% Intensified Sounds
- 80% Tunnel Vision
- 74% Automatic Pilot (“Scared Speechless”)
- 72% Heightened Visual Clarity
- 65% Slow Motion Time
- 7% Temporary Paralysis
- 51% Memory Loss for Parts of the Event
- 47% Memory Loss for Some of Your Actions (“Perseveration”)
- 40% Dissociation (detachment)
- 26% Intrusive Distracting Thoughts
- 22% Memory Distortions (“Perceptual Set?”)
(Role of fear and past associations)
(Role of videotaping)
- 16% Fast Motion Time

For additional info on perceptual distortions in combat, refer to,
Into The Kill Zone by Dr. David A. Klinger is highly recommended.
www.warriorscience.com

Later in this section, an entire chapter will be dedicated to Dr. Dave Klinger's superb National Institute of Justice (NIJ) study of 113 police shootings. At this point, however, I want to pull out a portion of his study that provides a powerful insight into this perseveration effect. In this table drawn from Dr. Klinger's NIJ report, we see that as the number of shots fired goes up, the ability to recall how many were fired goes down.

<u># of Shots Actually Fired</u>	<u># of Cases in Which this # of Shots Fired</u>	<u># of Cases w/# Shots Recalled Correctly</u>
1	33	32
2	16	14
3	14	12
4	18	11
5	7	2
6	8	3
7	3	1
8	3	0
9	3	1
13	1	0
14	1	0
15	1	0
16	1	0
18	1	0
28	2	0
41	1	0

You could conclude from this simply that the more shots fired the harder it is to remember (with equal chance of over or under estimating), but Dr. Klinger also recorded the fact that in 21 cases, the officers thought they had fired fewer rounds while nine officers had no idea how many shots they fired. The more rounds fired the more likely this was to occur. Only four individuals thought they had fired more rounds than they actually did.

One of the most important new findings in Dr. Klinger's study, an area that no one had previously explored, are his revelations as to what officers thought and felt before, during and after their shootings. Dr. Klinger reported the percentages who had particular thoughts and feelings (1) at any time during the shooting, (2) prior to it, and (3) upon shooting. Here is what he found:

	<u>At any time</u>	<u>Prior to shooting</u>	<u>Upon shooting</u>
Disbelief	42%	32%	34%
Fear for self	41%	35%	30%
For others	60%	54%	49%
To survive	30%	27%	23%
Rush	55%	44%	46%
Thoughts	14%	10%	9%

Thoughts/Feelings Experienced in 113 Gunfight Case Studies

Dr. Klinger makes several excellent points in his discussion on the role of "fear for self" and "fear for others" that occurred in the majority of cases. He talks about how some subjects were "concerned" about others, while having a negative response to the word "fear," claiming that they did not feel any "emotional trepidation."

One particularly telling example concerned an officer at a bank robbery who was fearful for himself and others. Dr. Klinger says, "Once he started shooting, however, the fear he felt for himself evaporated, as the sense that he had to protect the bank customers and employees took over. Thus, though the officer was engaged in a furious gun battle where all the shots fired by the

robbers were directed at him, the only fear he felt was for others.” This is an excellent example of the protective, warrior thought processes that occur in what I call the “sheepdog” response, which will be discussed later in the book.

Distortions of Vision, Sound and Time

With curious art the brain, too finely wrought,
Preys on herself, and is destroyed by thought.
—Charles Churchill
Epistle to William Hogarth

The perceptual distortions data is one of the real gems in this study. Drawing from his 113 cases, Dr. Klinger has given us another fix on the phenomenon, as can be seen in the following table.

	<u>At any time</u>	<u>Prior to shooting</u>	<u>Upon shooting</u>
Tunnel vision	51%	31%	27%
Visual clarity	56%	37%	35%
Both	**%	10%	11%
Intensified Sound	82%	42%	70%
Diminished Sound	20%	10%	5%
Both	**%	0%	9%
Slow Motion Time	56%	43%	40%
Fast Motion Time	23%	12%	17%
Both	**%	0%	2%

(** = not reported.)
Distortions of Vision, Time and Sound Experienced in 113
Gunfight Case Studies

It is useful to recap these figures, and note that in the “prior to shooting” phase, at least one distortion was experienced by 88 percent of the officers. In the “upon shooting” phase, the percentage went up to 94 percent. This implies that when the shooting begins, stress increases, as does the occurrence of distortions. (However, there is cause to believe that firing can be a sort of relief for some people that in some cases lowers the stress levels.)

Clusters of Distortions

Though this be madness, yet there is method in't.

—Shakespeare
Hamlet

One of the most valuable aspects of Dr. Klinger's research is how he brings all the data together for an indepth understanding of how these distortions "cluster" immediately before and during combat. Prior to firing, 70 percent of the officers reported at least two distortions, 37 percent reported three or more, six percent experienced four or more, and one person said he had five distortions. No one experienced all six. The average (mean) was 2.02 distortions immediately prior to firing.

The incidence of distortions was greater during firing, with an average of 2.45. Officers experienced at least two distortions in 76 percent of the shootings, three or more in 57 percent, four or five in 15 percent and five distortions were experienced in four percent of the cases. To me, this implies that as stress levels go up—usually when the officer is firing—there is an increased incidence of perceptual distortions.

Combining the "prior to shooting" and "upon shooting" data, 89 percent of the officers experienced more than one distortion. In 82 percent of them, officers reported at least three distortions. Dr. Klinger notes that:

[This] means that the vast majority of the observed multiple distortions in the overall [before and during] scale are not due to the continuation of a single type of distortion across [the] two time points . . . in most shootings, officers experience multiple perceptual anomalies during the course of the event.

The most common type of clusters occur when the same distortion happens both immediately before and during combat. A correlation, or "relationship" is commonly abbreviated as "r" with $r = 1.0$ being a perfect correlation (an extraordinarily rare event in nature), and $r = 0.0$ indicating absolutely no relationship (which is also an extremely rare event in the real world). The relationship between each sensory distortion, immediately, before and after firing a weapon in combat, is as follows:

- $r = .61$ for visual clarity
- $r = .50$ for tunnel vision
- $r = .46$ for slow motion time
- $r = .44$ for fast motion time
- $r = .23$ for diminished sound
- $r = .14$ for intensified sound

This means that if the subject had heightened visual detail during one period, before or after, he is likely to have heightened visual detail during the other period ($r = .61$). If he experienced intensified sound during one period, he is not particularly likely to have intensified sound during the other period ($r = .14$).

Of particular interest are the other relationships Dr. Klinger has identified. For example, fast motion time prior to firing is associated with intensified sound prior ($r = .24$) and while firing ($r = .25$). Those who experienced fast motion time while firing, were somewhat more likely to experience intensified sound prior to ($r = .30$) and while ($r = .28$) firing.

I believe these might be panic responses: Time flashes past at an accelerated speed and sounds are frighteningly loud and overwhelming. However, since all the officers in this study successfully fired upon and hit their opponents, the term "panic" may be inappropriate. Those officers who experienced diminished sound prior to firing were more likely to experience slow motion time both during ($r = .28$) and while ($r = .24$) firing. Other relationships included: tunnel vision and diminished sound while firing ($r = .29$), and slow motion time and diminished sound prior to firing ($r = .28$).

This may imply some kind of a predator response, where the hunter focuses so exclusively on the prey (tunnel vision) that other sounds diminish and time slows, so that the bellowing of the prey or the sounds and motions of the rest of the herd do not distract it.

Interestingly, there were some negative correlations or relationships, in which one element went up, or was more likely to occur, while another went down, or was less likely to occur (this is usually expressed with a negative number). Thus, some excluded each other to some degree. For example, tunnel vision prior to firing is somewhat less likely to occur in concert with heightened visual detail ($r = -.38$); this negative relationship is also true while firing ($r = -.27$). Thus we see tunnel vision as something that is less likely to occur with increased visual acuity. In the hypothetical prey model, increased visual acuity would be useful, since the fleeing prey needs to see every possible option and avenue of escape, while staying alert to any ambushing or intercepting predators. Meanwhile, the pursuing predator fears nothing except losing the prey. So for it, tunnel vision is potentially a survival trait.

Today we live in a world in which no place or time is ever truly safe in war. Although the soldier on this modern battlefield is like some ancient demigod calling in thunderbolts from above, the basic technology of the small arms weapons carried by the soldiers, weapons that kill by simply transferring kinetic energy from bullet to body, have reached an evolutionary dead-end in the twentieth and twenty-first centuries.

The basic, close-range killing weapon has not changed fundamentally in nearly a century, but as we have seen in this chapter, there has been a new, evolutionary leap in the conditioning of the mind that uses that weapon to kill at close range. The development of psychological conditioning processes to enable an individual to overcome the average, healthy individual's deep-rooted aversion to close-range killing of one's own species is a true revolution. This is a revolution on the battlefield, and it is a revolution that has also had an unprecedented influence on domestic violent crimes, which will be addressed in the next chapter.

- c.1700BC: Chariots provide key form of mobility advantage in ancient warfare
- c.400BC: Greek phalanx
- c.100BC: Roman system (pilum, swords, training, professional leadership)
- c.900AD: Mounted knight (stirrup greatly enhances utility of mounted warfare)
- c.1300: Gunpowder (cannon) in warfare
- c.1300: Wide scale application of longbow defeats mounted knights
- c.1600: Gunpowder (small arms) in warfare, defeats all body armor

- c.1800: Shrapnel (exploding artillery shells), ultimately creates renewed need for helmets, c.1915
- c.1850: Percussion caps permit all-weather use of small arms
- *c.1870: Breechloading, cartridge firing rifles and pistols
- c.1915: Machine gun
- c.1915: Gas warfare
- c.1915: Tanks
- c.1915: Aircraft
- *c.1915: Self-loading (automatic) rifles and pistols
- c.1940: Strategic bombing of population centers
- c.1945: Nuclear weapons
- c.1960: Large scale introduction of operant conditioning in training to enable killing in soldiers
- *c.1960: Large scale introduction of media violence begins to enable domestic violent crime
- c.1965: Large scale introduction of helicopter in battle
- c.1970: Introduction of precision guided munitions in warfare
- c.1980: Kevlar body armor provides first individual armor to defeat state-of-the-art small arms in 300+ years
- *c.1990: Large scale introduction of operant conditioning through violent video games begins to enable mass murders in domestic violent crime
- c.1990: First extensive use of precision guided munitions in warfare (approximately 10% of all bombs dropped), by U.S. forces in the Gulf War
- c.1990: Large scale use of combat stress inoculation in law enforcement, with the introduction of paint bullet training in U.S. law enforcement training
- c.2000: Approximately 70% of all bombs used by U.S. forces in conquest of Afghanistan and Iraq are precision guided munitions
- c.2000: Large scale use of combat stress inoculation in military forces, with the introduction of paint bullet combat simulation training in U.S. Army and U.S.M.C. troops

* Represents developments influencing domestic violent crime.

(Note: Dates generally represent century or decade of first major, large-scale introduction)

Table I: Landmarks in the Evolution of Combat

- c.1690: French army institutes first scientific, systematic approach to surgery
- c.1840: Introduction of anesthesia overcomes surgical shock
- c.1840: Introduction in Hungary of washing hands and instruments in chlorinated lime solution reduces mortality due to “childbed fever” from 9.9% to .85%
- c.1860: Introduction by Lister of carbolic acid as germicide reduced mortality rate after major operations from 45% to 15%
- c.1880: Widespread acceptance and adaptation of germicides
- c.1930: Sulfa drugs
- c.1940: Penicillin discovered
- c.1945: Penicillin in general use, and ever-increasing explosion of antibiotics thereafter
- c.1960: Penicillin synthesized on a large scale
- c.1970: CPR introduced on wide scale
- c.1990: 9-1-1 centralized emergency response systems introduced in U.S. on wide scale
- c.2002: Harris, et al., landmark study by U. Mass and Harvard, published in the journal *Homicide Studies* concludes that medical technician advances since 1970 have prevented approximately three out of four murders

(Note: Dates generally represent century or decade of major, large-scale introduction)

Table II: Landmarks in the Evolution of Medical Lifesaving

Increases in Worldwide Violent Crime

I think about your work on the effects of violent pop culture when the news tells us of dictators like Saddam and Kim Jong-Il, who are addicted to American “action” movies. One wonders whether the pernicious effects of our “culture of violence” may be extending beyond our borders!

Our toxic products tend to sink to the bottom of humanity, where they will do the worst harm, in our society or elsewhere in the world. The American electronic media has much to answer for.

—Asher Abrams, Gulf War veteran
Correspondence to Colonel Grossman

Thus, instead of murder, we have to assess attempted murder, aggravated assault or some other consistently defined violent attack as an indicator of violent crime, and by this measure the increase is staggering. The study by Anthony Harris, mentioned above, concluded that in the U.S. the aggravated assault rate reported in the FBI Annual Crime Report is a highly accurate reflection of the problem in the U.S. (This study and many others, however, have concluded that the National Crime Victimization Survey is increasingly inaccurate.)

Consider the following per capita crime rates, as reported by each nation to InterPol. (The U.S. data is from the “FBI Annual Crime Report”, and the Canadian data is from their Centre for Justice.)

U.S.	1957-00	5x
Canada	1962-00	4x
Norway/Greece	1977-99	5x
Australia/New Zealand	1977-99	4x
Sweden/Austria/France	1977-99	3x
8 other European nations*	1977-99	2x

(*Belgium, Denmark, England-Wales, Germany, Hungary, Netherlands, Scotland, and Switzerland.)

The increase in violent crime in all these nations occurred during a period when medical and law enforcement technology should have brought murder and crime rates down. Similar increases have been noted in India, Latin America and Japan, and all of these nations have identified media violence as a significant new factor that is contributing to this problem. As we shall see, the same factors that caused a revolution in combat are also causing an explosion of violent crime at home.

The Brain Scans

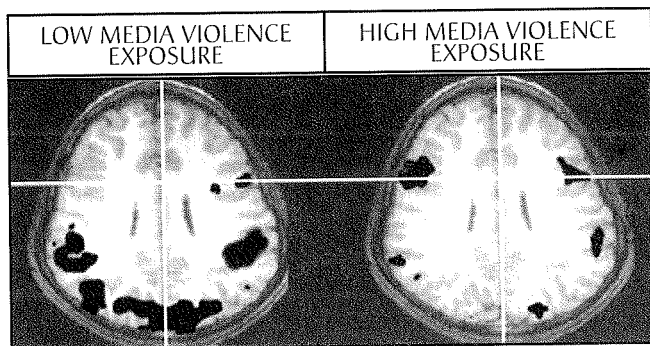
The following two sets of the fMRI pictures or brain scans show the differences in brain activity between teenagers who had been exposed to a lot of media violence and those who had been exposed to very little.

To understand the pictures, you need to know that the scans on the left are teens with low exposure to media violence and the scans on the right are teens with high exposure. The larger the black area, the more brain activity is occurring in the logical, adult part of the brain.

This is the area that parents want to develop in their children. Conversely, the smaller the black area, the less brain activity is taking place.

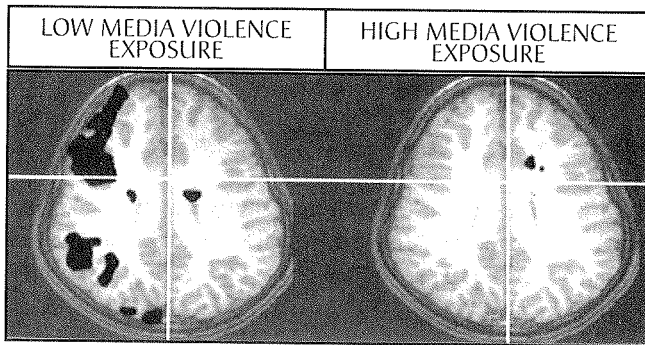
The Video Game

This set of scans shows brain activity when the teenagers were viewing a video game inside the fMRI. The low media exposure teens are using more of the logical part of their brains than the high exposure teens.



Decision Making

This set of scans shows brain activity during a decision making exercise, called Go-No-Go. When it comes to looking into the future, weighing consequences and making decisions, the low media violence exposure group is using a lot of the logical part of their brain; the high media violence exposure group is using very little.



The Conclusion

After studying and comparing all of the brain scans of all the teenagers, what did the researchers conclude?

The most surprising result was that normal teenagers with a high amount of exposure to media violence had reduced activity in the logical part of the brain similar to those of teens with disruptive behavior disorder.

All of the teens with DBD—disruptive behavior disorder—had less activity in the logical part of their brains than normal teens. The more violence they had seen, the more pronounced the deficit.

The normal teens that had seen very little media violence had the most activity in the logical part of the brain—the part that parents want to develop in their children.

All of these results indicate that there is a correlation between the amount of media violence children see and their ability to think logically.

Next time you find your child playing a violent video game or watching an action movie, think. Because you want them to be able to do so.

Diagnostic Criteria for Posttraumatic Stress Disorder

(Extracted from the Diagnostic and Statistical Manual (DSM-IV)
of the American Psychiatric Assn.)

- A. Exposure to a traumatic event in which both of the following were present:
1. Experienced, witnessed, or was confronted by event(s) involving actual or threatened death or serious injury . . . of self or others
 2. Response involved intense fear, helplessness, or horror
The disorder may be especially severe or longer lasting when the stressor is of human design (e.g. torture, rape). (DSM-III-R notes that: some stressors frequently cause the disorder (e.g. natural disasters or car accidents).
- B. Traumatic event is persistently reexperienced in one or more of the following ways.
1. Recurrent, intrusive, distressing recollections of the event . . .
 2. Acting or feeling as if the event were recurring including: "sense of reliving" the experience, illusions, hallucinations and flashbacks—including while awakening or intoxicated
 3. Intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event
 4. Psychological reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event
- C. Persistent avoidance of stimuli associated with the trauma, or numbing of general responsiveness, as indicated by at least 3 of the following:
1. Efforts to avoid thoughts, feelings or conversations associated with the trauma
 2. Effort to avoid activities, places, or people that arouse recollections of the trauma
 3. Inability to recall an important aspect of the trauma
 4. Markedly diminished interest or participation insignificant activities
 5. Feelings of detachment or estrangement from others
 6. Restricted range of affect (e.g. unable to have loving feelings)
- D. Persistent symptoms of increased arousal (not present before the trauma), as indicated from 2 or more of the following:
1. Difficulty falling or staying asleep
 2. Irritability or outbursts of anger
 3. Difficulty concentrating
 4. Hypervigilance
 5. Exaggerated startle response
- [Self medication]
- E. Duration of the disturbance (symptoms in B, C, and D) of at least one month
- F. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning

Acute: if duration of symptoms is less than 3 months

Chronic: if duration of symptoms is 3 months or more

With Delayed onset: if symptoms were at least 6 months after the trauma.