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THE EFFECTS OF SUBLIMINAL WEAPONS EFFECT ON AGGRESSIVE
BEHAVIOR IN COLLEGE LEVEL STUDENTS

by
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Submitted in partial fulfillment of the requirements of the
Masters of Arts Degree
of
The Graduate School
at
Rowan University
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Approved by
Dr. Klanderman

Date Approved 5/3/05

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ABSTRACT

Gary A. Roskoski

THE EFFECT OF SUBLIMINAL WEAPONS EFFECT ON NEGATIVE BEHAVIOR IN COLLEGE LEVEL STUDENTS

2004/05

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This study evaluated the difference in displayed aggression in subjects randomly assigned to either a subliminal weapons effect condition or to a controlled condition. 30 students from a small public University in New Jersey signed up for the study to receive credit for their introductory psychology course. The subjects were then randomly assigned to one of the two conditions; the subliminal weapons effect conditioned consisted of a poster of "Scarface" holding a gun pointed toward the subject on the blackboard (the poster had a sign asking that it not be removed by a professor). The controlled condition had no stimuli on the black board. The subjects then completed a survey dealing with their attitude of the dining hall. The results showed that the subjects in the weapons effect condition showed a significantly higher level of aggression than the control group did.

Acknowledgement

I just wanted to take the time in this thesis to acknowledge my family. They have been my constant supporters and greatest fans from day one. I would like to thank my parents for their infinite time, patience, love, support, and faith. Without my father: Gary W. Roskoski, or my mother: Linda Roskoski; I would certainly be lost, I love you both very much and just wanted to thank you for believing in me even at times I did not believe in myself. I want to thank my sister: LynnAnne Ludwick, my brother: Dominic Roskoski, and brother-in-law: Paul Ludwick for being the best siblings ever, and my two nephews: Garet and Nate for showing what true joy really is and making me smile everyday. I want to thank my grandfathers: Al Roskoski, and Nunzio Franchi who have showed me what true inner strength is, and how to enjoy life even in the face of adversity.

This thesis is dedicated to the memory of my late grandmothers: Anne Roskoski, and Anita Franchi. Anita Franchi always had faith that I would be something great one day; maybe even a doctor. This thesis is one of the first few steps on that path to my Ph.D. This is my gift back to her for all of her years of support and love...Thank you nanny for never doubting me, especially now; and thank you for always being with me.

I also wish to dedicate this thesis to the memory of Americo "Ricky" Grohowski; a great friend and a great person who was taken away from this world much too soon and much too young.

--G.A.R.

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Chapter I: Introduction

Need:

There are numerous research studies that indicate the negative roles that weapons play in our society today. The fact of the matter is that weapons, whether thought of as positive or negative, are the basis for who we are as a society. Dupuy (1990), explains that *Homo sapiens* probably first recognized how valuable sticks and rocks could be when used as tools for finding food, building a shelter, finding a mate, or simply to satisfy the human desire to dominate. The use of these objects by early man developed into using sharper rocks and sticks instead of the previous blunt ones. Early man set the pattern for discovery, adoption, improvement, and using tools and weapons to suit different necessities and capabilities. These early discoveries set man on the path to develop much further than his primitive counterparts.

Research has long been interested in the way that environment can shape behavior. Much research is available on how a person's environment can come into play in how he or she behaves. As society advances, so does technology and inadvertently the way we view the world. But the simple fact remains that no matter how technologically advanced a society becomes, environmental stimuli can have a profound effect on a person's behavior. One aspect of environmental stimuli that the researcher finds most interesting is the "weapons effect". Simply stated, the weapons effect says that a person that has the potential to be angry will be more likely to act aggressively when an aggressive stimuli is present. The basis of this study will aim to see whether or not the mere reference to an aggressive stimulus (in pictorial form) will produce such aggressive

behavior as well. The research aims to investigate how much of our behavior can be attributed to external stimuli or cues from one's surroundings.

Purpose:

People seem to be so busy in day to day life that they fail to realize how much of their behavior can come directly from (or be influenced by) the environment around them. Most people would not think that a subliminal concept in one's surroundings can produce a profound reaction in one's thoughts, actions, or demeanor. In focusing on how the population of the world lives, works, plays, and communicates together, it is important to look at every aspect of the environment that indefinitely shapes who we are, who we become, and even how we act. The purpose of this study aims to examine to what extent, if it all, subtle environmental cues can shape a persons attitude and behavior. Environmental cues are always around us; this study proposes that they might have more of an impact on our behavior than previously thought. This study will propose the question: Does the subliminal pictorial presence of weapons increase the likelihood of negative responses on a survey questionnaire?

The purpose of this thesis is to examine the effect, if any, that the presence of weapons, or pictures of weapons, can have on a college level student. The aggression of the subject will be defined by his or her responses on a survey given by the researcher. Subjects will be randomly assigned to either the "weapons effect" or "non-weapons effect" categories. The two categories of survey responses will then be compared and the significance will be analyzed. This will determine to what effect, if any at all, the presence of weapons had on these college student subjects.

Hypothesis:

The hypothesis of the study is that the pictorial presence of weapons will increase the aggressiveness of the subject's responses to a likert-scale type of questionnaire. The researchers hope to show that the subjects presented with pictures of weapons display more negative or aggressive answers on the questionnaire than the subjects who are not exposed to the weapon enhanced setting.

Background:

Of all the tools and discoveries that man has made, weapons are among the most basic and yet, still among the most important. Carbon dating of archeological discoveries shows that around five million years ago *Homo habilis* was using rocks with a rough sharpened edge as a tool for hunting and building. Without weapons modern man might not have ever evolved from other primates. Weapons not only helped early man defend himself against carnivorous animals and enemies, but scholars generally agree that *Homo Sapiens'* brain grew dramatically in size between 600,000 and 250,000 years ago. This brain growth enabled complex thought and tool making, as a result of consuming extra protein that could only come from a meat-rich diet. It can be argues that in a way, the creation of weapons aided in the early development of the human brain. Human intelligence stands out from animals in at least two areas: the ability to harness the element of fire, and the ability to create, to manufacture, and to use tools and technology. Both of these elements come together potentially as firearms, one of the most influential inventions in human history (Swan, 2003).

For more than five decades, Americans have been concerned about the frequent depiction of violence in the mass media. Society has also been highly concerned with the

harm these portrayals might do to youth (Anderson et al, 2003) and the rest of the population. Subliminal messages and images seem to be everywhere we look in today's world. In every commercial seen on television, magazine advertisement, and sky-high billboard sign; society is constantly being fed information without knowing they are really receiving it. How does this fact affect the daily life of people in today's world? The answer is that whether or not people know it, the environment can constantly have an influence on the way we behave. Can something as simple as a picture with a negative connection, such as a weapon, effect the mood or response of a person? This is the question that this thesis aims to investigate.

Twenty-four years ago, Dr. Lester Adelson published a statement in a medical society journal called *The Pharos*. He wrote that "(t)he accessibility of a firearm permits the instantaneous metamorphosis of a law-abiding person into a murderer." What Adelson had done, knowingly or not, was lay the foundation for what would become known as the weapons effect hypothesis. The weapons effect is a simple premise: Guns provoke impulse violent responses, and the presence of firearms anywhere (except in the hands of government employees) is to be feared (Kopel, 2002). Berkowitz and LePage (1967) hypothesized that the mere sight of a firearm could trigger aggression from an already angered person because of the learned association between violence and guns. Berkowitz and LePage concluded that the presence of the weapon might have elicited an intense aggression reaction from the person with the gun.

According to Anderson, et al (2003) research on violent television, films, video games, and music reveals unequivocal evidence that media violence increases the likelihood of aggression and violent behavior. It seems commonsense that people who

are angry behave more aggressively (e.g., Baron, 1971) in a given situation. More and more research is commenting on the idea that if individuals are angered, their aggression is more likely to increase if there are violent cues presented (e.g., Berkowitz & LePage, 1967). Further research suggests that situational cues simply associated with unpleasantness (e.g., Berkowitz & Frodi, 1979) can also lead to an increase in aggression. What is the degree of how these subtle cues can alter the behavior of a person in day to day life? This is the question at hand in this thesis research.

Thirty-seven years ago, Berkowitz and LePage reported on the first study that demonstrated that the presence of a weapon could increase aggressive behavior. These findings along with some failures to replicate have formed a debate on whether or not the weapons effect is a valid phenomenon. But now, more than three decades later, it is clear that this “weapons effect” is real. It has proved successful with guns, knives, real weapons, pictures of weapons, in field settings, as well as laboratory studies (Anderson et al, 1998). This thesis attempts to see if the mere presence of a picture of a weapon can yield aggressive results from a college level psychology participant.

Definitions:

- Weapons Effect: A theory coined by Dr. Leonard Berkowitz in 1967. The theory says that a person that has the potential to be angry will be more likely to act aggressively when an aggressive stimuli is present. In this experiment, the weapons effect will serve as the independent variable. The weapon’s effect will be in terms of a picture of a weapon or weapons, not an actual physical weapon.
- Aggression: Aggression can be many different things in many different situations. In this study, aggression will be defined as negative responses on the

survey given by the researcher in either the “weapons effect” or “non-weapons effect” conditions.

- Survey: The survey will be provided by the researcher, and will consist of a 7-point Likert Scale questionnaire. In this survey, lower scores represent higher levels of aggression. For example, a 1 on the questionnaire would mean a negative response and a 7 would indicate a positive response. Negative responses will be regarded as aggressive.

Assumptions:

The flaws that can be foreseen in this thesis are basic ones. It is impossible in today's post September 11th day and age, to recreate the true weapons effect experiment. You cannot, especially in a college setting, have a weapon (such as a rifle or pistol) simply sitting on the table in view of the participants. It would result in absolute chaos, and the possible involvement of local authorities. To contain this limitation, the researcher will be using weapons in pictorial or poster form. The pictures of the weapons will still be in plain view of the participant, but will not be as influential as an actual weapon. In doing this, the risk of frightening the participant away will dramatically diminish which will help the research immensely. The assumption is that the pictorial depiction of weapons will be just as effective as actual presence of weapons.

The research presented here is attempting to see how the weapons effect can subliminally affect the mood of a college level participant. Keeping this in mind, there will be no mention of the weapons presented in the room where the study will take place. In this respect, there is the chance that participants will not even take notice to the weapon pictures presented in this study. To try and alleviate this assumption, the

researcher will have a large poster board with various weapons presented on it. The researcher will also strategically place the participant so he or she is sitting directly in plain view of the poster board. This should minimize the slim chance that the participant takes no notice of the weapons being present to him or her.

Limitations:

The major limitation that can be foreseen in this research thesis is that the subjects selected will be from college level psychology courses in a university from Glassboro, New Jersey. This defiantly limits the validation of this study throughout the population. All the results and discussions will keep in mind that this is not going to hold true throughout all populations and circumstances. It is simply the result of one Master of Art's thesis experiments from a New Jersey university. Other limitations will most assuredly come from subject selection, because it can be assumed that most undergraduate students from New Jersey do not properly represent the entire population of the world. Also, it can be said that college student participants will not be putting their full attention into completing my study. The subjects will be getting credit for their classes for participating, which could mean that they will rush through the procedures to get done in the least amount of time as possible.

Summery:

The summery of things to come in this thesis are as follows: In chapter two the researcher will go onto a literature review of the weapons effect and related topics. This will span the early history of the first experiment dealing with the weapons effect and it will lead to the most recent information available on how the weapons effect can attempt to explain some results. In the third chapter the methodology of the experiment will be

revealed. The participants, setting, design, and procedures will be explained at this time. Chapter four will be dealing with the results section. Any charts or explanations of findings will be in this section, as well as a comparison between original hypotheses and actual results. Chapter five will be a discussion section in where we see how this current study relates to findings of the past. This section will also explain the results and how or why they are important to the psychological world.

Chapter II: Literature Review

Brief History of Weapons:

Weapons and the use of weaponry have been around since the dawn of early man. James A. Swan, Ph.D. talks about the impact that weapons had on early man's survival and that without weapons and their use for hunting, man might never have developed further than his primitive brethren. When the weapons themselves, and hunting skills developed further, hunting became a major key to the survival of the human race and a prominent force in the evolution of man. Hunting also led to advancements in artistic expression, culture, mythology, science, and technology. Weapons might just be the most important invention and discovery man has ever created or come up with (Swan, 2003).

Weapon use as a sport was originated for the refinement of hunting skill to enable survival, this ultimately led to weapon use as recreation; and we now have target shooting, sport hunting, world championship and Olympic athletic contests. The use of firearms as a sport originated in France in the early Fourteenth Century, shortly after the actual invention of firearms. By 1472 there were accuracy contests using the latest firearm weapons of the time period, and today there are an estimated 70-million people in the world that participate in hunting and target shooting for sport. All this evolved from a once pure entity used for the advancement of the human race: the weapon. In the book *The Evolution of Weapons and Warfare* (1984) it explains that the early firearms were not very successful or useful for that matter. In fact they are reported as inaccurate, short of

range, slow to fire, heavy, and awkward. In fact, crossbows were used right up until 1566; and it was not until thirty years later, in 1596, that firearms were officially adopted as an infantry weapon in England (Dupuy, 1984). Weapons have gone through some dramatic changes over the years to become the firearms we know today.

Attitudes towards Weapons:

In this post-September 11 world that we live in, both weapons and aggression can be a touchy and sensitive topic of discussion. There is no way that a weapon can be present in a public place without people noticing it. The way people view weapons in today's society will directly impact their reaction to a weapon. In a study measuring the attitudes of young people toward guns in America, Great Britain, and Australia patterns of response were analyzed according to gender and nationality. American respondents showed the highest scores on rights, followed by crime, and then protection; which can suggest that Americans believe that guns are more likely to stimulate crime than to protect from crime. The British and Australian respondents were more likely to feel that guns stimulate crime as well. A surprising fact is that both the Australian and British respondents scored higher on rights factor, and lower on the protection factor. This can suggest that they have a stronger belief in the individual's right to own a gun than a guns capability of protecting an individual from a crime. All three nations scored lower on protection than any other factor presented, which opposes the argument in favor of keeping guns for protecting ones self against crime (Cooke, 2004).

The views of weapons can also depend on where a person lives and how that society views weapons and aggression. In a study done on weapon ownership and the willingness to respond to threats with violence compared Tokyo and Mito, Japan to

Charlotte, North Carolina. The study concluded that the American sample was twice as likely as the Japanese sample to say that they would use a weapon when confronted by a stranger or known acquaintances, or if someone were to enter their homes illegally. The data also stated that the willingness to use a weapon in both countries was significantly associated to whether the person owned a weapon for personal safety, and also to being a male. These findings are consistent to the weapons effect perspective held by Berkowitz. One can argue that weapon owners may have an aggressive mindset to begin with, but the findings still remain the same. The availability of weapons has long been associated with the violence rate in the United States, and this study seems to reinforce those beliefs (Friday, 2000).

Some people also view gun ownership as both a right and privilege of every American citizen. Pro gun Americans argue that carrying any weapon can make the difference between being an easy prey to ill-meaning citizens and going through life unharmed. They suggest that criminals can have the advantage of superior numbers, initiative, and ruthlessness. They claim that the law abiding citizens can counter those advantages with better weapons and effective training with them. They also suggest that avoiding trouble is the best policy; but they also say that if trouble does come your way, it is always best to have a back-up plan available. They compare carrying a gun to wearing a seatbelt while driving: don't go out looking for an accident, but be prepared to minimize the damage if one should occur (Why own gun, n.d.).

Historians believe that during the 19th century, at least some cities had more crime than they do today. The same historians also believe that there were fewer murders in the 19th century as well. The fact is that because assailants in those times used a club or a

knife, it would have been much harder to kill a victim. Criminologist Zimring argues that wave of youth homicide in the 1980's was highly due to the high numbers of semiautomatic handguns available on the streets to the youth at that time. Jens Ludwig, a political science professor at Georgetown University explains that the availability of guns does not necessarily affect the rate of crime; rather it increases the amount of crimes committed with guns; which leads to an increase in lethal crimes. He adds that "If you punch me in the face, I get a bloody nose. If you shoot me in the face, I die." (Leyens, n.d.).

Malecki and Demaray (2003) explain that the recent violent episodes in several schools in the United States have influenced the professionals who work with children and adolescents to search for an explanation for why children can become aggressive in schools. School personnel would feel more comfortable if they could actually identify students who may be at risk for violent behavior. Researchers have focused on the fact that weapon possession and the behaviors and risk factors are highly associated with one another. In fact, a positive correlation between weapon possession and the risk of committing violent acts has been identified. Carrying a weapon has been associated with physical violence; and children in the United States are carrying weapons to school at an alarming rate. It has been reported that 7% of high-school age children reported carrying a weapon to school, and 8% reported being threatened or injured by a weapon on school property. At the middle-school grade level, 47% of boys carry a knife while 25% carry a gun to school in an inner city, high risk area (Malecki & Demaray, 2003).

Aggression and the Society of Man:

Aggression and violent behavior are few of the aspects of society that give way to alarm and a concern in the population. Some people argue that it should not be the job of the researcher to study problems at all, but to rather look at the behavior of humans in a calmer light. Another case could be made that the contribution of the academic world to the understanding of man's aggressiveness towards his fellow man, has been a limited one. A big problem in doing so is that it is almost impossible to recreate a setting to stimulate violence and aggression in a laboratory. In real life, problems are greater, they are real, and they matter to the person dealing with the aggression (Marsh & Campbell, 1982).

One of the most notable characteristics of human behavior is that it has to be learned to be imitated or reproduced. All of the behaviors and actions that humans put forth have either been inspired by or directly learned from another human being (Montagu, 1968). Even with this knowledge, there is still conflict on whether aggression is caused from heredity or caused by outside stimuli in the environment. That question has been debated about long before psychological experimentation came to try and prove or deny it. This research aims to look further into aggression, not necessarily where it comes from in society, but rather what situations can cause it.

In a book entitled Man and Aggression (1968), it describes our world to be a place where "...hostility and aggression seem to be a part of every man's nature, in which individual and group violence seem to constitute the incontrovertible evidence of the mark of Cain that every man carries with him". It can be a relief to be told that this is the case when looking for an explanation of human aggression. It relieves the burden of guilt

most individuals carry with them for being the type of people they are. If they were born aggressive, then they cannot be blamed for being the way they were made. On the other side of this controversy of man being naturally aggressive is the belief that human beings are naturally peaceful creatures and are considerate of their fellow men, and would not hurt them unless they were in time of warfare (Montagu, 1968). The book goes on further to say that some people will reject the notion of a man being a peaceful creature and comment on man's "killer instinct". This instinct is held in reserve in civilized public but can also erupt in psychotic episodes in certain individuals (Montagu, 1968).

The western industrial and supposed "advanced" society has come to understand conflict as an everyday part of life.

Newspapers, radio, and television alarm readers and audiences with an apparently endless series of reports – of chronically high levels of child abuse and marital violence within the home; of fighting on the streets, at the workplace, and in sports stadia; of terrorist outrages in airports and discotheques; and of wars and rumour of wars. And as if all this were not enough, everyone faces (or, more likely, turns away from) the appalling and mind-numbing possibility of a nuclear conflict between the superpowers (Klarna, 1988).

With all of this turmoil in the world, it is not surprising that people are angry and that there is aggression in the world. Aggression can take many forms; it can range from the petulance of a child who is frustrated to the actions of a superpower leader. It can be expressed in what people say (an aggressive tone), their actions (acts of aggression), and reasons for actions (impulse aggression).

Aggression is all around us, it is something we all have experienced, and it is something we are all meant to possess, albeit in varying amounts. Football players should have an abundance of it, people in business should have just the right amount, and mothers should have very little. Aggression comes into play in our society even when we talk about something as neutral as intellect. Humans *attack* our problems, or *sink their teeth* into them. They want to *master* a problem they have been *wrestling* with to *overcome* their difficulty. Society views numerous models of aggression; one being that aggression is caused by the anger living inside of the person, acting independently from the person's free will. Another view is that anger can build up over time to a point where the result is inevitable and out of proportion to the immediate cause. No matter which view is acceptable there seems to be a connection between anger, aggression, and warfare (Klarna, 1988).

The Influence of Media Violence:

In 1961, Schramm, Lyle, and Parker conducted one of the first full-length studies of the effect of television on North American children. In one of the very first lines of that report, it is written that "No informed person can say simply that television is bad or good for children. For *some* children, under *some* conditions, *some* television is harmful. For *other* children, under the same conditions, or for the same children under *other* conditions, it may be beneficial. For *most* children, under *most* conditions, *most* television is probably neither particularly harmful nor particularly beneficial" (Schramm et al, 1961). This early view of how television can influence a person can probably still hold true to today's standards of how media can influence violence.

A report done in December of 2003 reports that violent television, films, video games, and music increase the likelihood of aggressive behavior in both immediate and long term contexts. This report goes on further to discuss that media violence has a modest direct effect ($r = .13$ -.32) on forms of serious violent behavior. It has also been noted that for many individuals, the negative effects of childhood media violence can extend into adulthood even when the media violence is no longer seen by the individual. This research stems even to individuals who are not typically highly aggressive, meaning they are negatively affected in both short and long periods of time. In the discussion section of this report, one of the major findings listed was the exposure to media violence can increase physical aggression, verbal aggression, aggressive thoughts, aggressive emotions, and things linked to violent and aggressive behavior (Anderson, 2003).

Craig Anderson has also done studies with Karen Dill (2000) with similar outcomes. In their two studies that examined violent video games and the effect they had on aggression-related variables; it was found that real life violence in video games was positively related to the aggressive and delinquent behavior displayed by a person. In a second study done by Anderson and Dill (2000), laboratory exposure to a graphically violent videogame increased a participant's aggressive thoughts as well as aggressive behavior. In both studies however, males had a more hostile view of the world than the females did. These findings also are consistent with the General Affective Aggression model. This model explains that exposure to violence in the form of video games will increase aggressive behavior in both the short term and the long term experiences (Anderson & Dill, 2000).

Anyone that has had children, worked with children, or even spent some time with children in front of the television can account for the obvious and almost direct effect of shows like “The Mighty Morphin Power Rangers” and “The Three Stooges” on the behavior of the child. But the real question being asked is not if the effect is plausible, but rather has the effect been demonstrated by scientific literature. Joanne Savage (2004) writes that it is quite plausible that the role that a child’s biological status along with parents, neighborhood, schools, and other features of the child’s environment can overwhelm any effects that viewing television is likely to have on all but a few neglected children. Savage quotes a 1999 article by Jenkins saying that “[r]eal life trumps TV every time”. Savage feels that future studies on this phenomenon are necessary to make a valid argument in either favor of the effect of media violence on aggression. She argues that it may not be totally appropriate to focus all the attention on television violence, but to rather look towards causes of early childhood aggression and to parental neglect as well (Savage, 2004).

The concern for media violence stretches far outside the household. John Murray, a developmental psychology professor at Kansas State University thinks the effects of media violence can defiantly be more long term than people think. He adds that we do not fully understand the scope of it, but the evidence available suggests that media violence is stored away and can provide a guide for future behavior (Medill, 2000). Using magnetic resonance images (MRI’s), Murray studied children’s brain patterns as they watched the movie “Rocky IV”. During the fight scenes, the MRI’s showed an increase of activity in the parts of the brain that respond both to risk and to emotional arousal as well. Another thing Murray and the other researchers were shocked to learn

was that there was an increase in activity in the pre-motor part of the brain (the part that actually plans movement). It was as if the viewers were mentally imitating the boxing movements. There was also an increase in the part of the brain responsible for long-term storage of traumatic or emotionally arousing events (Medill, 2000). According to this research, there is more to media violence than is seen at first glance.

The Birth of the Weapons Effect:

One of the first studies to examine a relationship between the nature of weapons and aggression was done by Feshbach in 1956. Feshbach concluded that children who were read stories that had aggressive tones and given aggressive toys to play with displayed more inappropriate antisocial behavior than the children read neutral stories and given neutral toys to play with (Feshbach, 1956). The one drawback was that the aggressive stories were always paired with aggressive toys, and neutral stories were always paired with neutral toys. This means that the contribution of the toys and stories to the aggression displayed behavior could not be 100% determined. This study had a major impact on the psychological world and helped pave the way for more research in how environmental stimuli can affect behavior. Mendoza (in a 1972 unpublished doctoral thesis) has also supported these findings by showing that children who played with aggressive toys, such as tanks, guns, or soldiers, displayed more aggressive play behavior than children who played with neutral toys (Turner et al, 1976). These facts have also been confirmed by a study explaining that children who played with guns rather than airplanes showed a significant increase in both physical and verbal antisocial behavior (Turner & Goldsmith, 1976).

In 1968, Leonard Berkowitz and his colleagues were interested in testing whether or not the presence of weapons lead to aggression in subjects being examined. Compared to the control groups, angered college students produced more aggression toward a confederate in the study after being casually in the presence of guns. With these subjects, the guns did not enhance aggression until the subjects were angered in the first place. But other studies done with younger children show that anger does not have to be a factor. In these studies, the presence of guns did more than just lower the child's restraints against aggressive behavior; they seemed to retrieve aggression that was not otherwise likely to occur.

Experiments were also done showing that using filmed violence can also increase levels of aggression. This study concluded that if society wants to reduce violence, it must first remove the cues that lead to aggressive actions (Berkowitz, 1968). Much of Leonard Berkowitz's research has attempted to determine what stimulus qualities can possibly influence automatic and aggressive reactions. A number of his experiments have demonstrated that the mere presence of objects or situations that are associated with aggression can enhance the amount of aggressive behavior displayed. Berkowitz has had most success with research with people not knowing that they were involved in an experiment. These participants have shown that the sight of a gun or firearm often can lead to heightened attacks upon an available target (Berkowitz & Frodi, 1977). Simons and Turner (1974) offer support for Berkowitz's and Lepage's study. Their findings also concluded that angered participants gave more shocks to their experiential confederate partner in the study when guns were present in the room than when weapons were not present in the room (Simon & Turner, 1974).

These early experiments were the basis for the idea of the weapons effect, which explains that the presence of weapons could lead to an aggressive response in subjects because not only does the finger pull the trigger, but in a sense the trigger might be pulling the finger by stimulating the aggression-facilitating reactions. This theory has been recreated using many different settings and scenarios and many people hold the weapons effect as a legitimate psychological effect. Berkowitz has reasoned that weapons may become associated with aggressive stimuli because of their association with aggressive acts in real life, in books, in newspapers, movies, and in television. When a person is exposed to a weapon, it could elicit a response associated with that weapon (Turner et al, 1977).

Carlson, Marcus, and Miller (1990) conclude that aggression-related cues, such as weapons, that are present in experimental scenarios can defiantly increase the amount of responding aggression by a subject. They also agree that this cue effect can occur more strongly when the subjects have been aroused negatively before their exposure to the specific cues. Fraczek and Macaulay have also found that college students were more aggressive in giving shocks to confederates involved in a study after taking part in a word association test using aggressive stimuli such as weapon names (Fraczek & Macaulay, 1971). More and more research is defending the existence of a weapons effect; and there are many different forms of experimentation to back up Berkowitz's early experiments. The general findings have all been in agreement that the presence of weapons can lead to aggression, the degree to which the subject is negatively aroused is still a question raised by psychologists and reaserches alike.

Other researchers have found a weapons effect to have different outcome in the results of their studies. Pickel, French, and Betts (2003) observed that the presence of a weapon can actually impair a witnesses' memory toward auditory information (as it can impair memory toward visual information). In the study, undergraduates watched a videotape with a male target that held either a neutral item or a weapon. They have concluded that the weapon's presence interfered with the processing of complex auditory information. This idea differs from the weapons effect concept that the researcher is determining in this study; but the relationship remains the same: the presence of weapons in the experimental setting can lead to a negative outcome.

The Controversy of the Weapons Effect:

There have been many critics trying to disprove the existence of the weapons effect as a psychological phenomenon. There have also been many unsuccessful recreations of the original experiment or experiments very close to it. In 1971, Page and Scheidt completed two unsuccessful attempts with eighty-eight male subjects. On their third attempt using sixty-five subjects, they yielded fleeting results. The effect was only obtained because of the subjects proposed knowledge of the purpose of the guns in the study. The experimenters do report flaws in their study, and account for demand awareness for the negative behavior displayed. The experimenters also comment that their study cannot be generalized to non-laboratory situations (Page & Scheidt, 1971).

Reporting further on this phenomenon was Turner and Simons in 1974. They report on evaluation apprehension and subject sophistication on aggressive behavior. The results of their research indicate that increased levels of both subject sophistication and evaluation apprehension lead to a lesser number of shocks administered by the subjects

toward their frustrators. This suggests that the most naïve and unsophisticated subjects should be used in laboratory studies of aggression so that inhibitions do not mask the effects of the independent variables (Turner & Simons, 1974). These early studies propose some different views than that of the researcher conducting this experiment. Berkowitz and Frodi comment on the failure of some attempts to recreate the weapons effect in one of their 1977 studies. They claim that even though there have been several unsuccessful laboratory studies disproving the weapons effect theory; that it can possibly be attributed to strong evaluation apprehension in the subjects and not necessarily flaws in the weapons effect itself (Berkowitz & Frodi, 1977).

More controversy over the weapons effect comes from Gallant and Eisen. They conclude that as the number of guns in America rose, so should the violence and crime associated with firearms. During the last 50 years, firearm ownership has increased by 250%. The weapons effect hypothesis predicts that there should have been a steady increase in violence, and there has not been. The last 20 years have been characterized by significant fluctuations in the overall United States homicide rate. The Centers for Disease Control and Prevention reported that between 1993 and 1997, the firearm-related death rate had been the lowest it had ever been in the last 30 years. Other studies conclude that the weapons effect also has to do with how weapons are acquired. 1,000 7th and 8th grade subjects from a school in Rochester, NY were studied until their 11th and 12th respective year in school. The children who received a gun from their relatives in a lawful manner did not commit a crime using the firearm (0%). Children who acquired guns illegally often did use the gun to commit crimes with it (24%). These researches

also conclude that more research needs to be conducted before any conclusions are made about how weapons truly influence aggression (Gallant & Eisen, n.d.).

Cahoon and Edmonds (1985) concluded from their study that the weapons effect is a weak variable which requires further research to delineate the conditions of its occurrence. They define the weapons effect as an elicitation of aggressive responding by the presence of firearms. In their study, 96 males college students were exposed to either a handgun or non handgun conditions following a positive, negative, or neutral personal evaluation. The weapons were then described and explained as items of home defense, or items used in crimes of violent assault. In this particular study, the presence or absence of the handgun did not affect the hostility or aggression in the subjects studied (Cahoon & Edmonds, 1985).

Guns clearly do not always stimulate increased aggressive behavior of a participant. One possible reason for this fact has to do with the person's interpretation of the weapon and what it means to them. The effect that the scenario or the weapon has on the subject depends on how that person thinks of it; and what meaning it has to them personally. If they feel that a gun is primarily a dangerous and horrible item, it is more likely to evoke stronger anxiety than aggression. Berkowitz puts it best when he says "If we tend to think of guns... as instruments that are deliberately used to hurt others, rather than as objects of sport and enjoyment, the mere presence of a gun... may stimulate us to assault others more severely than we intend" (Berkowitz, 1993). Keeping this in mind, the internal reactions of a person at the sight of a gun are possibly weak in some cases and so the weapon does not heighten the level of aggression unless the individual is

aroused and set on attack mode. The aggressive responses can also be easily hidden by the situational induced inhibitions held by the research participant (Berkowitz, 1974).

The Weapons Effect Using Pictures:

In today's society, it would be impractical to use actual weapons in a study. Instead, the researcher will be using pictures of weapons to simulate the presence of weapons. There have been some successful studies that use pictures instead of actual weapons in experimental settings. Turner et al (1977) report that an unpublished Masters thesis by David Page (Tulane University, 1976) shows the stimulating effect of weapons were observed in both angered and non-angered participants. Page used pictures of guns instead of actual weapons, and measured how many electrical shocks the participants administered to their partners. Page saw no evidence of suspicion among any of his subjects and attributed his findings to the weapons effect (Turner et al, 1977).

In a study conducted by Leyens and Parke in 1975, it was assumed that the weapons effect was due to the aggressive cue value of guns. Weapons can serve as reminders of aggressive activities and can strengthen the probability of displaying aggressive behavior. They concluded that pictures of weapons in gun advertisements and other displays can serve as aggressive cues too. Their hypothesis was that the aggressive behavior would be increasingly proportional to the increasing aggressive meaning of the display. In their study, subjects first saw a series of slides of pre-rated aggressiveness, ranging from low (box of milk), medium (a whistle), or high (a gun). Then the subjects were insulted; then they were finally asked how many electric shocks they would like to administer to a partner as punishment for errors in a learning exercise. The men who viewed gun slides selected a significantly higher amount of shocks to be delivered. The

actual sight of weapons had increased the amount of punishment they wanted to deliver their partner (Leyens & Parke, 1975).

Gian Caprara, a European researcher investigated the aggression response of 120 highly irritable and 120 un-irritable undergraduate students. It was found that the aggressive cues of the slides were sufficient enough to increase subsequent aggressive behaviors in the participants. It was also found that in this study, it did not matter if the subjects were irritable or not for the weapons effect to take place. The presence of aggressive slides increased the intensity of delivered shocks to the confederate helping out in the study. This is one of the few experiments that explain that irritability did not play a major role in the outcome of the weapons effect (Caprara, 1984). More experimentation needs to be done to explore the level of irritability and its effect on the weapons effect.

A study in 1989 also demonstrated the weapons effect by testing the speed of participants clenching their fists after the presentation of images of firearms. 24 male and 24 female university students were told to press with their right hand a device that showed slides on reception of an acoustic signal. Speed of fist clenching was recorded in the four different conditions created in the study. These four conditions were made up of the two levels of acoustic signal: aversive and non aversive; and the two types of slides shown: firearms and tools. The pairing of the aversive signal and simultaneous presentation of slides of firearms led to an increase of speed in the clenching of fists of the participants. When demographics were considered, it was found that males were much quicker than females at clenching their fists in the above described scenario (da Gloria et al, 1989).

In three experiments discussed done by Bartholow et al. (2004) it was concluded that pictures of assault guns were more likely to produce hostile and aggressive thoughts and behaviors among hunters than pictures of guns used for hunting. Also concluded from their studies was that non-hunters displayed more aggressive behavior toward hunting guns over assault rifles. Bartholow and his researches were also surprised to find that non-hunters expressed a more negative reaction to the hunting guns over the assault rifles. The researchers felt this finding could possibly reflect the negative attitudes about hunting held by a population of people that do not hunt. Bartholow concluded the studies by saying that these studies support the idea that the presence of an assault weapon can increase violence and aggression, even when they are not used in an aggressive act. These findings also show the important differences in how people think and react to guns intended for sport compared to guns that are solely for killing people (Bartholow et al, 2004).

In a case study at Rice University by David Lane he proposes the question: Does the mere presence of a weapon increase the accessibility of aggressive thoughts? More specifically, can a person name an aggressive word more quickly if it is preceded by a weapon word prime than if it is preceded by a non-aggressive word prime (Lane, n.d.)? To help answer this question, experiments done by Anderson, Benjamin, and Barlow in 1998 can hold some clues. In the two experiments done by the researchers, they have demonstrated that simply identifying weapons increases the accessibility of aggressive thoughts. Does the gun pull the trigger? This and other extensive researcher suggests that it can and that sometimes it does. This specific research demonstrates one way that exposure to weapons might increase aggressive behavior. This was accomplished by

increasing the accessibility of the aggressive thoughts in the subjects. The researchers close with stating that their study provides an important link in the chain that binds weapon exposure to aggressive behavior, they also realize that much more work needs to be done to actually figure out the full spectrum of importance of the weapons effect (Anderson, Benjamin & Barlow, 1998).

Why Exposure to Violent Images can Increase Aggression and Violence:

What is it about some stimulus characteristics that enable external events or objects to elicit impulsive aggressive responses? It has been proposed that stimuli connected or associated with reinforcements can elicit components of the behavior that lead to these reinforcements. It depends on the extent to which the participant has been rewarded and reinforced for aggression. Stimuli that are connected with these rewards and reinforcement can actually become capable of evoking impulsive aggressive reactions in subjects in a laboratory setting (Berkowitz, 1974). Can this be true; can the reinforcing of violence lead to a more aggressive outlook by a person?

In a United States Senate Commerce hearing on “The Impact of Interactive Violence on Children”, Iowa State University Psychology Chair Craig Anderson gave his position on how exposure to violence can increase aggression and violence. Anderson explains that there can be several different ways that exposure to violent media can increase both aggression and violence. He goes on to explain that the most powerful and long lasting way involves the learning processes. Since our infant years, humans learn to perceive, judge, interpret, and respond to specific events in both the physical and social world. Humans learn by constantly observing the world around them; constantly learning the “rules” on how to behave. Behavioral scripts are learned and used to interpret the

events and actions of others; then these scripts are used to guide the behavior of the individual. These knowledge structures develop over time and are based on day-to-day observations and interactions with other people, either real, such as family or imagined, such as mass media (Anderson, 2000).

Children who are exposed to large amounts of violent images learn a number of lessons that can actually change them into more aggressive-type people. They learn that there are lots of bad people in the world who want to cause them harm; they also expect others to be mean and ill-natured. They are more likely to interpret negative events that occur in their life as intentional harm, rather than an accident. They learn that the proper way to deal with harm is retaliation; and even more importantly they do not learn any non-violent solutions to conflict. Exposure to violence, regardless of the source, can be seen in many aspects of the human personality. Evidence shows that exposure can increase feelings of hostility, aggressive thoughts, suspicion of other people's motives, and expectations of how others are going to deal with a potential conflicting situation. Exposure can also lead to desensitization toward violence, and it actually teaches a person that retaliation is a good and proper reaction to certain situations (Anderson, 2000).

Anderson (2000) explained that as these knowledge structures develop over time they can become more complex and therefore harder to change. He compared the developing personality to slow-hardening clay. He explained that environmental experiences such as violent images can shape the clay. Changes that seem easy to make at first when the clay is soft become much more difficult when the clay begins to harden. Anderson argued that longitudinal studies suggest that aggression-related knowledge

structure begins to harden around ages 8, 9, and 10 years of age. These structures become more perseverant as the age of the person increases.

A Biological Pre-disposition Toward the Weapons Effect?:

Can we the weapons effect be attributed to some biological factors imbedded deep with the human brain? Can the weapons effect really be more likely to occur in male participants than it is in female participants? Although America has seen a slight increase in violent crimes committed by women, you could still say that violence is not strictly an American problem, it is an American male problem. Ninety percent of murderers are men, and ninety-nine percent of the rapists are also men. “Almost every study linking media consumption with increased aggression sees such effects in boys far more than in girls, if effects are observed in girls at all” (Leyens, n.d.). The statistics do not lie when examining the difference in aggression between males and females. Over 80% of homicides are committed by men, and most of the victims are also men. Violence in men usually begins with words and then escalates to physical violence. Men resort to violence to protect or gain status and honor. Traditional psychologists believe that boys are trained and expected to be violent, while girls learn and are expected to be more passive (Kenyon, n.d.).

Chart 2.1: Sex Differences in US Crime Statistics.

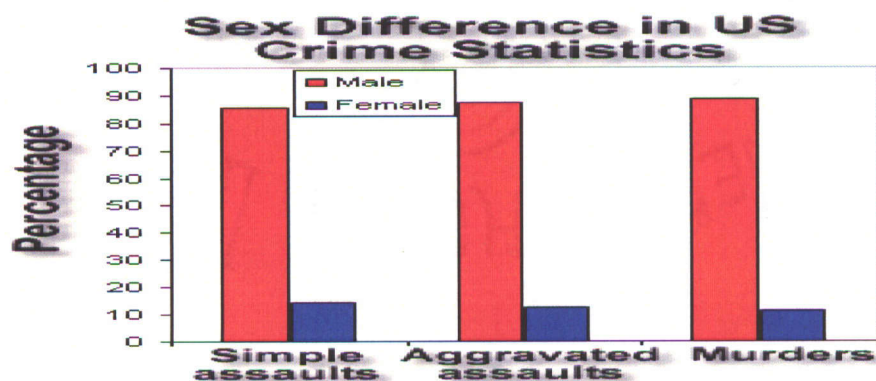


image from: <http://salmon.psy.plym.ac.uk/year2/aggression/aggression.html>

The idea of nature versus nurture has existed since the times of Charles Darwin and his 'survival of the fittest' idea of evolution. A study of rats indicates that nature, and not nurture can hold clues as to the source of aggression in males. Researchers found, when introducing new male and female rats into an already established colony, that male intruders were attacked about two-and-a-half times during a fifteen minute period. It was also found that female rats did not attack other rats, and were not attacked themselves. The researchers measured levels of neurotransmitters, and found that the male rats had a significantly lower level of dopamine and serotonin in the amygdale; which is a brain region associated with the increase of aggressive behavior. The researchers feel that this information can suggest that increased aggressive behavior is influenced by a Y-chromosome that can affect the decrease amygdale serotonin (Toot, Dunphy & Ely, 2002).

Another study explains that scientists believe that a mutation of the gene encoding the enzyme Monoamine Oxidase (MAOA) can cause aggressive behavior. The enzyme encoded by this gene helps to break down neurotransmitter substances; if these substances create a build-up, it can increase a person's violent behavior (Morell, 1993). Another study indicated that men who acted impulsively and who could not control their behavior possessed a certain deficiency in the messenger neurotransmitter: serotonin (Overbye, 1994). The lack of serotonin along with nonadrenaline has been connected to aggressive behavior; research has shown that violent prone individuals could not properly break down these substances (Cowley, 1993). There has also been some research in hormones and their role in aggressive behavior. Researchers from the University of

Chicago explain that low salivary levels of cortisol (a stress hormone) in boys ages 7 to 12 are associated with the early onset of aggression, and also a more long term aggressive history. In a study of boys with behavior problems conducted over four years, it was found that those with low cortisol levels displayed antisocial behavior at a much earlier age. These boys also showed three times the amount of aggressive symptoms, and were more likely to be selected by their classmates as mean or aggressive than boys with a higher level of cortisol (Easton, 2000).

Scientists at Johns Hopkins University have also discovered a genetic basis for aggressive behavior displayed by male mice in a laboratory setting. They found that male mice that lack a particular gene are unusually violent and attack one another without cause. The missing gene is the one that enables the brain to make the neurotransmitter nitric acid, which helps regulate emotional behavior. Disturbances in these brain cells may attribute to the aggressive behavior displayed by these mice (Venere & Purdy, 1995). Research like that can spur questions like 'are there genes that can determine aggression, or how evil a person can be'? Florida State behavioral geneticist, Dr. Whitney says that in the areas of criminal behavior and aggression, up to 50% of behavior, including violence throughout a given human population may be heritable. Hard evidence can be linked between this fact and other inherited disorders like schizophrenia (Stephenson, 1996). With more and more information researchers are trying to determine exactly to what extent of violent behavior can be attributed to genetics and heredity.

New research by Becky Ham shows that many boys will say they are not interested in playing with guns; in fact they may list guns as their least favorite object in a

group of play items. Many of these same boys will still touch a gun if left alone with one in their presence. In an experiment by Marjorie Hardy, Ph.D., two-thirds of the boys who touched an air pistol when left alone were the same boys that claimed the gun was their least favorite object in a group of play items. According to Hardy, their behaviors conflicted with the truth – because the boys were curious enough about the gun to pick it up and examine it. Hardy's study involved 55 boys ranging in ages from 9 to 15 who were recruited from a summer camp. These boys were shown a different variety of toys such as a Nintendo © Game Boy, art supplies, and Lego's ©, along with these items was mixed in an unloaded and disarmed air pistol. The boys were then asked to rank the objects according to how much they wanted to play with each object. The boys were then asked to return a week later and were left alone with the objects listed above. Boys who had ranked the guns as their least favorite were asked not to touch one of the other objects; and boys who showed some interest in the gun were asked not to touch the gun. Looking through a two-way mirror, Hardy watched the boys. Many of those who were not warned against the gun still played with it while alone; even though all but three of the boys denied touching it when the researcher returned to the room. None of the boys touched any of the other forbidden objects that the researcher asked them not to (Ham, 2003).

In Hardy's study, boys under the age of 12 said they were actually less interested in the gun after being warned not to touch it. This being the case, it was the younger boys who were significantly more likely than the older boys to touch and examine the guns. These findings defiantly demonstrate the inconsistency between the actual behavior displayed by the boys and the children's actual reported interest in the guns

(Ham, 2003). Does this research show that guns are an inherited curiosity in most boys, and can this fascination with guns and violence follow the child into adulthood? In a January 2003 article, it was stated that parents who thought that it was okay for children to play with toy guns were more likely to be male parents, and have male children, and be of white ethnicity (Cheng, Wright & Moyer, 2003). To further reinforce the findings, a December 2003 article reports on a self-report questionnaire given to upstate New York junior high school students. In a survey of the 167 males and 167 females, correlation coefficients and regression analyses revealed that males with more experience with guns reported reacting more violently to frustration. The same males also admitted to having participated in greater numbers of violent incidents (Ding, Nelsen & Lassonde, 2002). As additional research is conducted and more information is gathered on genetic factors to identify biological links to aggression, it may be found that genetic evidence is located sooner than anybody thought. This evidence may help to understand more about punishment tactics for aggression and how society will perceive aggression from that point on (Price-Huish, 1997). There are some other biological ideas that research has shown can relate to aggression. More and more research is leaning towards the amygdala as the region of the brain responsible for aggression. The central nucleus of the amygdala may be a control center for fear; which can explain its role in aggression. The role of the amygdala is complex. Some studies report that the removal of the amygdala can increase aggression, while others report that it has a taming effect. Studies have shown that an amygdectomy reduces violent behavior in humans, although the side effect is a loss of emotion in the patient (Kenyon, n.d.). Although there needs to be further investigations

on this question, these results should be kept in mind when reading the results of this and other experiments related to this topic.

Illustration # 2.1: Image of the Brain's Amygdala and Hippocampus.

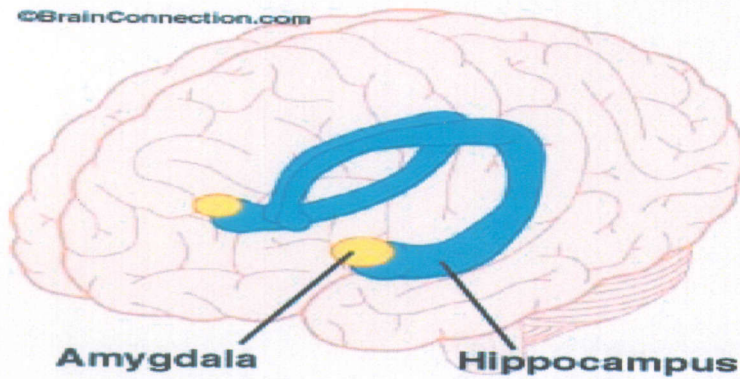


image from: <http://www.brainconnection.com/topics/?main=gal/amygdala>

Weapons Effect Manifesting in Today's Society

The weapons effect has expanded and grown since its early implications in the 1960's. The weapons effect can now be seen being manifested in recent news articles and news topics. In a 2003 report on community norms on toy guns, it is written that toy gun play has been associated with aggressive behavior. It has also been suggested that child health professionals advise and council families on limiting the exposure to guns and aggressive stimuli. 830 parents who had completed all the child data responded their regards to toy guns. 67 percent of the parents believed that it was never alright for a child to play with toy guns. 66 percent of those parents stated that they never let their children play with toy guns. We have become a society who lives in fear of allowing the youth of our culture display any kind of aggression whatsoever, even though it is a perfectly naturally human emotion (Cheng, Wright & Moyer, 2003).

The society we live in is adopting a more zero-tolerance attitude toward everything remotely violent. Has it gone overboard and out of hand? Schools are

banning dodge ball and other games such as tag because these games encourage and condone violent behavior. Some schools are even removing any references to the military from their libraries, and some high schools are going as far as banning military recruiters from their institutions. Some elementary school students In Texas and Louisiana have been suspended for something as simple as pointing pencils at one another and exclaiming the word “pow”; or drawing pictures of soldiers in class. Students in Mississippi were actually held in prison for such trivial infractions as throwing peanuts at other students (Lott, jr., 2001).

The most shocking of these zero tolerance actions occurred on May 9th, 2001 near Tampa, Florida. A fifth-grader was handcuffed at Oldsmar Elementary school and removed from school and taken into police custody. The student was then suspended from the school system. The district spokesman Ron Stone was quoted with saying that it was “normal procedure” in a situation such as this. What situation could warrant the arrest of a fifth-grader? His dastardly deed was drawing a few pictures of weapons that were ultimately seen by a teacher. His treatment was the same he would have received if he had in fact brought an actual firearm or weapon inside of the school walls. The principal, David Schmitt explained that the boy would most likely not return to finish out the school year, and then be moved into another school system. Schmitt also reassuringly commented that this incident involved no real weapons, and the children were in no danger at all (Kopel, Gallant & Eisen, 2001). Society is cracking down harder and harder on aggressive acts; but to hold the same punishment for drawing a gun in school to actually carrying a gun in school seems like it is being taken to an unnecessary level.

Summary:

Weapons have played an important role in how we evolved and who we are as a society. Weapons have a negative connotation to some people and are objects that other people can not live without. Studies have shown that merely being in the presence of a weapon can lead to aggressive and antisocial behavior by a person. Other studies conducted have found the weapons effect to be a myth put forth by demand characteristics by the participant. There are also some biological factors that can play into the amount of aggression displayed by a participant. Although it is agreed by most researchers that more studies and research are necessary before a conclusive answer is agreed upon dealing with the presence of weapons and displayed aggression. This study tends to investigate whether or not simply being in a room with pictures of weapons can lead to an increase in negative answers on a survey conducted by the experimenter. The next chapters will outline the method and procedure behind the experiment itself. Then in later chapters, the results will be analyzed and discussed further.

Chapter III: Methods

Sample:

Subjects were randomly assigned to each condition and all were from a small college in southern New Jersey. The subjects were all students in the psychology department of the school. The subjects received class credit for participation of the study. The sample consisted of 30 participants; made up of 12 males and 18 females. The ages of the subjects ranged between 18 and 25 years with a mean of 20.27 years. 73.3% of the subjects were white, 10% were Black, 10% were Hispanic, 3.3% were Asian, and 3.3% were listed as other. 36.7% of the subjects were freshman, 10% were sophomores, 20% were juniors, 30% were seniors, and 3.3% of the population sample was made up of graduate students. There were an array of subject majors represented by the subjects who participated in this study; with 3.3% being undeclared, 20% being psychology majors, 6.7% being biology majors, 13.3% being communication majors, 6.7% being history majors, 6.7% being music education majors, 6.7 percent being elementary education/psychology majors, 3.3% being athletic training majors, 3.3% being finance majors, 6.7% being health and exercise science majors, 6.7% being law/justice majors, 3.3% being sociology majors, 3.3% being English/secondary education majors, 6.7% being writing arts majors, and 3.3% being education majors.

Measure:

The study used a Likert-scale type of survey created by the researcher to measure the amount of aggression without having the subject truly know what is being measured.

The survey asked the participant to rate his or her opinion of the University's food service in the dining hall. The subjects were asked to rate from 1 (negative response) to 7 (positive response), which made 4 a neutral option. An example of one of the questions was:

How would you describe the taste of the University's cafeteria food?

--1-----2-----3-----4-----5-----6-----7--
(TERRIBLE) (EXCELLENT)

Procedure:

The procedure was as follows; each subject was given the survey individually. The subject came into the room assigned by the University and was asked to sit at a desk facing the chalk board. On the chalk board was either a poster of a weapon in plain view (that appeared to be from another class with the instructions: "do not remove" on it), or nothing (just a blank chalk board). The subject then completed an informed consent sheet explaining a little about the experiment without revealing the true nature of the investigation. The subject was then asked to fill out a demographic sheet which identified age, race, year in school, and gender. The subject was then asked to fill out a 10 question Likert-scale survey asking him or her to rate their feeling about the University's food service in the cafeteria. The data was then collected and entered in the statistical analysis program SPSS and the output was then analyzed and will be discussed in the discussion section of this thesis.

Design:

The design for this study was an Experimental one using two samples. The independent variable has 2 levels; those being the presence of the weapon in pictorial form or the absence of the weapon in pictorial form. The dependent variable is the

amount of negative responses on the Likert-scale survey. This experiment is trying to show that the presence of a weapon in pictorial form will lead to more negative answers on the Likert-scale survey. The sample will be from a University in Southern New Jersey, and thus the results cannot be conclusive to the entire population.

Hypothesis:

The hypotheses of the study were as follows:

- H_0 = The pictorial presence of weapons has no effect on the aggressiveness of the subjects responses.
- H_1 = The pictorial presence of weapons increase the aggressiveness of the subjects responses.

Analysis:

The statistical analysis that was used to determine the statistical significance of this study was an Independent Samples T-Test. SPSS was used to determine the statistical significance of the independent samples T-Test as well as the demographic statistical information about the subjects who were involved in the study.

Summary:

Now that the design of the study has been described; coming up in the next chapter will be the results section. In the results section, all the demographics will be reviewed as well as the results of the study itself. The independent T-Test will be analyzed and described. The SPSS statistical output will also be shown and explained. Then the results will be dealt with further in the discussion section which follows the result section.

Chapter IV: Results

Introduction

In this study, the main area of focus was the impact of the presence of a weapon on a college student's aggression level. From February to March of 2005, subjects were individually assessed to determine their level of aggression by way of a survey. The survey detected aggression by the level of responses; with lower scored responses representing higher levels of aggression, and higher scores representing lower levels of aggression. Subjects were randomly assigned to one of 2 conditioned rooms: one contained a poster with "Scarface" holding a gun on the chalk board, and the other had no stimulus present. A 10 question Likert-Scale survey created by the researcher was then used (and is available in Appendix 3) to determine the actual score which determined the amount of aggression portrayed by the subject.

Results

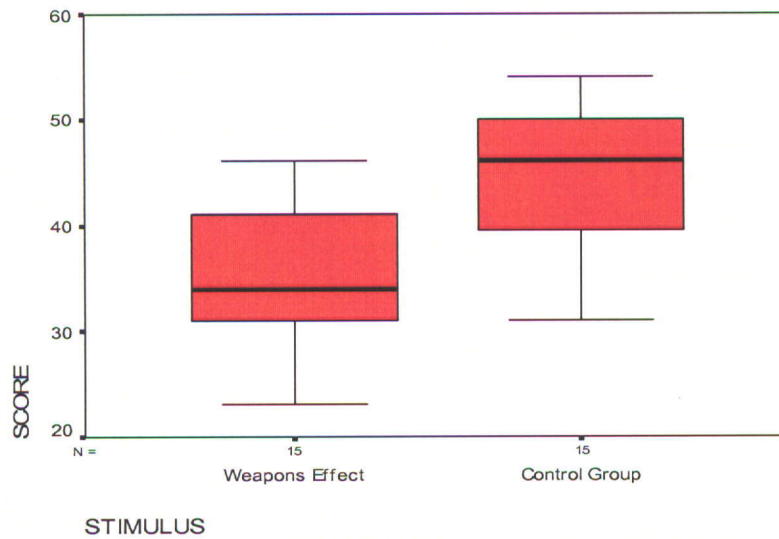
An independent-samples *t*-test was used to compare the means of the two separate, independent sample groups (the weapons effect group and the control group). The findings were as follows: The control group condition had an mean score of 44.87, while the weapons effect condition had an mean score of 35.27. These results were significant at the .001 level; $t_{(28)} = 3.9, p \leq .001$.

Summary

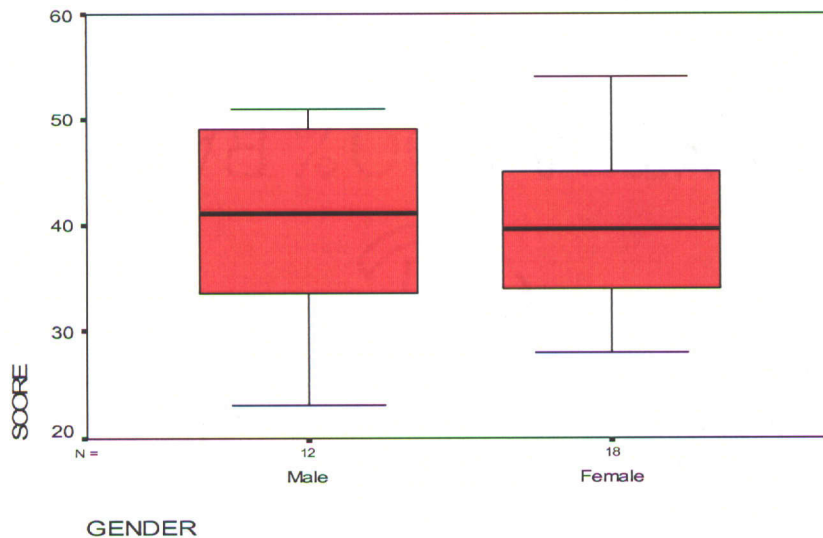
Based on the information above and represented in the graph below; it is apparent that in this experiment, the subjects that were randomly selected to the weapons effect

condition scored significantly less on the survey than the subjects who were randomly selected to the control condition did (keeping in mind that lower scores represent higher levels of aggression). Chart 4.1 shows the average scores of both the subjects in the weapons effect condition, and the average scores of the control condition; while Chart 4.2 shows the mean scores of the males as compared to the females.

Chart # 4.1: Weapons Effect Condition Compared to the Controlled Condition
Average Scores on Experimental Survey.



4.2 *Chart # 4.2:* Gender Differences in the Displayed Level of Aggression in the Weapons Effect Experiment.



Chapter V: Discussion Section

Summary

The literature was reviewed explaining what the weapons effect is and whether or not it is an actual psychological phenomenon or not. Noting that the majority of the literature acknowledges the weapons effect as a legitimate idea, it was decided to do a study dealing with the weapons effect at a Southern New Jersey University. After reviewing the literature review, an educated hypothesis was made in favor of the weapons effect. It was hypothesized that in this experiment, subjects exposed to a weapons effect condition would react more aggressively in terms of a survey being conducted. A survey was created which asked the subjects to rate the dining hall of their University and then a stimulus was chosen of a poster from the movie “Scarface” with Al Pacino standing and holding a very big semi-automatic weapon in his hands.

The experiment was then run in rooms assigned by the University and subjects were run individually over a period of two months. The data was collected anonymously and the subjects were given credit for their introduction to psychology classes via the sign-up sheet. The information was then input into SPSS psychological statistics program to run the independent sample *t*-test and to calculate the demographics of the study as well. After reviewing the completed surveys it was shown there was a significantly higher level of aggression shown by subjects in the weapons effect condition by an average of 9.6 points.

Conclusion

The data represented in this study shows a significant difference in aggression displayed which can be attributed to the presence or absence of weapons in the environmental setting. The research presented here agrees with that of the likes of Leonard Berkowitz and his colleagues who also believed that the weapons effect was a true and important psychological phenomenon. Berkowitz's 1968 study showed that the presence of a weapon enhances a college student's aggression level towards a confederate. Turner et al's study in 1977 showed the stimulating effect that pictures of guns had on how many electrical shocks were given to participants in the study. These past research studies, along with many others, had an impact on the present research done in this study; which has similar findings.

The one area of study that did not show significance was that of gender. The men did not display more negative answers than the women as suggested by much of the research. Research by Kenyon showed that over 80% of the homicides in the world are committed by men and that most of the victims are also men as well. Research also showed that male rats had significantly lower levels of dopamine and serotonin in the amygdale (a brain region associated with aggressive behavior). The findings in this study show that men and women displayed almost equal levels of aggression (with women scoring slightly more aggressive than men). This can be due to the fact that 18 women participated in the study compared to only 12 men.

This research also agrees with past research that says there needs to be further studies done over a wider population to determine what extent the results of this study and studies like it could have on entire school systems, towns, cities, and even countries.

The purpose of this study was to examine the weapons effect on a very small scale to see if there is any truth to this psychological phenomenon. More studies are necessary to truly get to the heart of the matter; but this study shows that to some degree, there is more to the weapons effect than most people think. Berkowitz closes his classic 1968 study by saying that if society wants to reduce violence, it must first remove the cues that lead to aggressive actions. Leyens and Park (1975) end their study by explaining that weapons can serve as reminders of aggressive activities and can strengthen the probability of displaying aggressive behavior. They also explain that pictures of weapons in gun advertisements and other displays can serve as aggressive cues as well.

This study provided a glimpse of how external subliminal stimuli in the environment can help to shape one's level of aggression. The population in this study was very small and can not speak for the entire population. However, this research does show that more investigation needs to be done to determine to what effects billboards, music, commercials, and virtually anything in our environment can have on the level of aggression displayed. This research, along with similar past research, and future research which builds off of this research, could be the key society needs to see a dramatic drop in displayed aggression.

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Appendices

Appendix A

Informed Consent for Gary A. Roskoski's Survey Study

Voice Your Opinion about the Food Services at Rowan University

I agree to participate in a study dealing with surveys on the quality of food served at the dining hall at Rowan University conducted by Gary Roskoski from the School Psychology program at Rowan University.

The purpose of this study is to evaluate the student's view of the food quality, preparation, staffing, and general view of the Rowan University dining hall and food services. The data collected will be separated from the consent forms, and all participants will remain anonymous. The only things that will be evaluated from the participants will be their demographic sheet. This will help the researcher determine the thoughts from different genders, ages, ethnicity, and year in school.

I understand that I am being asked to fill out a demographic sheet, and then a survey explaining my views on the Rowan University dining hall. I also understand that my participation in this study should exceed no more than 15 minutes.

I understand that my responses on this survey will be kept anonymous and that all data gathered will be kept confidential. I agree that any information obtained from this study may be used in any way thought best for publication or education provided that I am in no way identified and my name is not used.

I understand that there are no physical or psychological risks involved in this study, and that I am free to stop my participation at anytime without penalty or risk.

Lastly, I understand that my participation does not imply employment with the state of New Jersey, Rowan University, Gary A. Roskoski, or any other project facilitator.

If I have any questions or if I encounter any problems concerning my participation in this study I may contact Dr. John Klanderman at (856) 256-4500 extension 3797.

You are asked to save all questions until after the survey is collected; and then you may ask as many questions as you want or need to.

Your participation is greatly appreciated.

(Participant's Printer Name)

(Signature of Investigator)

(Date)

Gary A. Roskoski's

Dining Hall Survey

Demographics Sheet

My age is _____ Gender _____.

I am A FRESHMAN SOPHMORE JUNIOR SENIOR

I am WHITE BLACK ASIAN HISPANIC OTHER

My major is _____.

Appendix C

1. How would you rate Rowan University's food service prices?
--1-----2-----3-----4-----5-----6-----7--
(EXPENSIVE) (CHEAP)
2. How would you describe the atmosphere in the Rowan University dining hall?
--1-----2-----3-----4-----5-----6-----7--
(TERRIBLE) (EXCELLENT)
3. How would you describe the cleanliness of Rowan University's dining hall?
--1-----2-----3-----4-----5-----6-----7--
(TERRIBLE) (EXCELLENT)
4. How would you describe the taste of Rowan University's dining hall food?
--1-----2-----3-----4-----5-----6-----7--
(TERRIBLE) (EXCELLENT)
5. How would you describe the quality of the food served in the University's dining hall?
--1-----2-----3-----4-----5-----6-----7--
(TERRIBLE) (EXCELLENT)
6. How would you rate the selection of food available at the Rowan University dining hall?
--1-----2-----3-----4-----5-----6-----7--
(TERRIBLE) (EXCELLENT)
7. How would you rate the quality of the employees working at the Rowan University dining hall?
--1-----2-----3-----4-----5-----6-----7--
(TERRIBLE) (EXCELLENT)
8. How would you rate the appearance of the employees working at the Rowan University dining hall?
--1-----2-----3-----4-----5-----6-----7--
(TERRIBLE) (EXCELLENT)
9. How would you rate the cleanliness of the bathrooms in the Rowan University's Dining Hall?
--1-----2-----3-----4-----5-----6-----7--
(TERRIBLE) (EXCELLENT)
10. Would you consider recommending the Rowan University dining hall to your family and friends?
--1-----2-----3-----4-----5-----6-----7--
(DEFINATLY NO) (DEFINATLY YES)

Appendix D

Gary A. Roskoski's Debriefing Form

You have just partaken in an experiment dealing with the subliminal weapons effect. This idea is simple: when weapons are present, the participant is expected to act more violently. In this case, the weapon came in the form of a poster displaying a weapon (unless you were in the control group, in which case there was no weapon stimulus). I am going to measure the amount of negative answers on the survey of participants run in the control group and compare them to the experimental group and see who displayed more aggressive answers.

I feel this research is important because we are constantly being fed information, and sometimes this information comes to us subliminally. Does this affect our daily life in any way? How much control do the media have over us dealing with aggressive thoughts and ideas? I hope that this study will scratch the surface and maybe lead to more investigations into this idea. There are many questions on this subjects and minimal answers. Thank you very much for your interest in this study and for your cooperation. I please ask you to keep the true nature of this study a secret as not to skew the data collected.

If you feel any animosity about this study, you can direct any questions or concerns to Dr. John Klanderman at 856-256-4500x3797. If you would like a copy of the results of this study, please contact me at mongoski@hotmail.com and I will do my best to accommodate you.

Thanking you,

Gary A: Roskoski

Appendix E

