The Effects of Media Violence on Adult Right Prefrontal Cortex Functioning

by

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Abstract

With technology and media becoming a staple of everyday life, it begs the question how this cultural shift, and how we respond to it, is affecting us. The purpose of the study is to determine if viewing excessively violent media influences adult right prefrontal cortex functioning, an area that, when not functioning properly, has been associated with irritability, aggressiveness, and lack of self-control. A total of 46 participants from a university in middle Tennessee had the cognitive abilities of their right prefrontal cortex tested before and after viewing a neutral or violent video clip using three neuropsychological test batteries. Although results did not show significance, it demonstrated a need for further investigation as to how the shift in entertainment could be affecting childhood into adulthood.

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Introduction

In modern society, life is moving at a much faster pace with the increased connectivity and information in the environment at any given moment. A plethora of accessible media has ultimately altered the way the world operates. It follows, that this type of media exposure could also impact how the brain operates, specifically its executive function. Executive function is the higher order processing that characterizes the difference between humans and other animals. This includes but is not limited to impulse control, decision making skills, judgement, morality, reasoning and interpersonal skills (Heilman & Valenstein, 2011).

Recent findings have shown that children who spent a greater number of hours watching television had worse executive function than those who had viewed fewer television hours (Nathanson, Alade, Sharp, Rasmussen, & Christy, 2014). Nathanson and colleagues (2014) included genres such as various cartoons, educational programming, and children's situational comedies and found that, when children are presented with fast-paced stimuli, they show a reduction in executive functioning. Children also tend to learn social behavior from observing their environment. So, if they were exposed to an aggressive character on television, they are more likely to mimic that behavior in real life (Nathanson et al., 2014). Mimicking that aggression and violence may also, in turn, affect executive functioning (Siever, 2008). Movies, video games, and television programming have become increasingly violent and graphic as technology has improved, and filmmakers and game producers are looking for more intense ways to shock and engage their audiences. People with violent video game experience have a lower rate of proactive cognitive control than people without violent video game experience. Overall, violent video game experience has been shown to reduce the recruitment of the lateral frontal cortex over time, suggesting that the fast-paced and engrossing nature of this form of entertainment has an impact on higher cognitive functions (Bailey, West, & Anderson, 2011).

Even viewing this type of aggression, without being actively involved, has been linked to insufficient "top-down" functioning in the prefrontal cortex. This area of the brain is primarily responsible for many higher human processing functions, such as decision making, impulse control, morality, and thought processing (Heilman & Valenstein, 2011). Specifically, the orbital frontal cortex and anterior cingulate gyrus work as a suppression and regulation network (Siever, 2008). This relationship between viewing violence and poor executive control has been tested in several capacities, particularly with adolescents. Matthews and colleagues (2005) underwent an assessment of patients' violent media viewing habits and then tested their aggression via counting Stroop tests. Nonaggressive participants who were exposed to high media violence exhibited the same brain activity patterns as compared to individuals matched to them with aggressive behavioral and conduct disorders, both of which are indicative of right frontal cortex abnormality (Matthews et al., 2005). Stronziok and colleagues (2011) used event related potentials to measure brain activity and skin conductance to determine levels of arousal (or lack thereof) to violent media clips when viewed. Desensitization trends were evident by the linear decrease of neurophysiological reactions with increasing aggression in the videos. Autonomic reactions went down as aggression in the video clips increased (Stronziok et al., 2011). Both studies concluded that activation in critical emotional and consequential brain areas were reduced due to the exposure to media violence (Matthews et al., 2005; Stronziok et al., 2011).

Further, several longitudinal studies have demonstrated how these behavioral effects related to right prefrontal cortex functioning persist well past the immediate time of exposure. Hopf, Huber, and Weiß (2008) found that children's' early violent media exposure was the highest predictor of later delinquency and later elevated violence levels as compared to family conditions, peer relations, school environment, and personality factors in a two-year longitudinal study. Their findings detailed that media-stimulated and organic aggressive emotions associated with motives of revenge were risk factors for school violence and criminality and that engaging with violent video games was the strongest risk factor for criminality. Subsequently, they found that the more often children engaged with violent and horror movies, and the more often the played violent video games beginning in adolescence, the higher the rates of violence and delinquency by age 14 (Hopf, Huber & Weiß, 2008). Hummer and colleagues (2013) investigated the effect of adult self-reported regular media viewing habits within the previous year on executive function using MRI and a neuropsychological test battery. They discovered that those who reported higher levels of regular violent media viewing had poorer scores on tests of inhibition and attention, as well as reduced frontoparietal white matter volume (Hummer, Kronenberger, Wang, Anderson, & Mathews, 2013). These studies both demonstrate that the reduction in brain activation associated with regular violent media engagement have lasting effects that result in altered frontal lobe function and structure, that can carry over into adulthood and leave a lasting imprint.

The present study was designed to expand upon this research and investigate if adults respond to media violence and aggression in the same manner as previously tested adolescents. Although adult brains are thought to be less plastic than children by comparison, the frontal lobes do not finish developing until around age 25 (Heilman & Valenstein, 2012). It was hypothesized that there will be a significant decrease in higher-order executive functioning of the right prefrontal cortex between individuals who view graphic violence versus those who have not.

Methods

Participants

Forty-six participants (N = 46), twelve male and thirty-four female, were recruited from Middle Tennessee State University. The participants ranged in age from 18 years to 38 years (M = 22.89, SD = 4.23), and were fluent English speakers with normal or corrected-to-normal vision. Thirty-eight participants were Caucasian, five were Hispanic, nine were African American, three were Asian American, two were of other categories, and one was mixed race. They had a no history of neurological illness or injury. An informed consent was obtained from each of the participants, and they were then randomly assigned to either a control group or an experimental group.

Apparatus

Prescreening Questionnaire. A researcher developed questionnaire was given to all participants to assess neurological history, demographic information, and their levels of regular engagement with violent media (Appendix A). Participants self-reported their frequency of engaging with media on a daily and weekly basis and were asked to rate the violence levels of the media they engage in on a Likert-scale with one being not at all violent and five being extremely violent. An inventory of which type of media they regularly engage with was also recorded, including movie/television programs, social media or video games.

Beck Depression Inventory-II (BDI-II). The BDI-II (Beck, 1996) was administered to detect depression symptoms that may be a confound to this study, as its affliction is associated with altered brain activities. This was a 21-question self-report survey to measure the severity of depression, with scores ranging from 0 to 63. The variable of interest for this study was the total score.

Buss-Perry Aggression Questionnaire (BPAQ). The BPAQ (Buss & Perry, 1992) was administered to assess baseline levels of aggression of the participant in facets of physical aggression, verbal aggression, anger, and hostility. This was a 29-question self-report survey measured by having participants identify how similar the statements are to their character on a one to five Likert scale, with scores ranging from 29-145. The variable of interest for this study was the total score.

Ruff Figural Fluency Test (RFFT). The RFFT (Ruff, 1996) was used to test for the nonverbal capacity for fluent and divergent thinking, ability to shift cognitive set and executive ability to coordinate this process. The RFFT is a measure of nonverbal/visuospatial fluency consisting of five individual parts, with each part consisting of a unique stimulus pattern. Each of the five parts contains a 5 x 7 array of 35 unique stimulus items, with each stimulus item being comprised of a 5-dot matrix. The test involves drawing as many unique designs as possible by connecting two or more of the dots within each of the matrices within a time limit of one-minute. The first three trials contain the same stimulus pattern but with different distracters placed in the background.

The fourth and fifth trials each contain a different 5-dot matrix. The total number of unique designs produced across the five trials was the variable of interest in this study.

Design Fluency. Design Fluency is a subtest of the *Delis-Kaplan Executive Function System* (Delis, Kaplan, & Kramer, 2001), which is another measure of nonverbal/visuospatial fluency. The format is similar to the RFFT and consists of three separate trials. The first trial consists of a 5 x 7 array of 35 stimulus items, with item being comprised on a 5-dot matrix, much like the RFFT. The participant is asked to draw as many unique designs as possible, but with the restriction of using exactly 4 lines in doing so. The second trial consists of a 5 x 7 array of 35 stimulus items, with each item being comprised of a 10-dot matrix. Five of the dots are solid and 5 of the dots are open. The participant is asked to draw as many unique designs as possible, but with the restrictions of only using solid dots and using exactly 4 lines. The third trial consists of a 5 x 7 array of 35 stimulus items, again with each item comprised of 5 solid dots and 5 open dots. The participant is asked to draw as many unique designs as possibly, but with the restrictions of using exactly 4 lines and switching from a solid dot to an open dot in making the lines. The variable of interest was the total number of unique designs produced across the three trials.

Controlled Oral Word Association Test (COWAT). The COWAT is a measure of verbal fluency and requires the participant to name as many words as possible that begin with a specified letter within 60 seconds. However, they cannot use proper nouns, they cannot count, and they cannot use a stem word and then simply provide different endings. There were two different forms of the COWAT used in this study. Form A consisted of using the letters F, A, and S. Form B consisted of using the letters P, R, and W. The variable of interest for this study was the total number of words produced across the three different letters used in the test.

Digit span. Digit Span is a subtest from the Wechsler Memory Scale – III (The Psychological Corporation, 1997) and is a measure of attention/working memory for verbal information. Working memory has been associated with bilateral activation of the prefrontal cortex (Kaneko, Yoshikawa, Nomura, Ito, Yamauchi, Ogura & Honjo, 2011). The test consists of two conditions. The first condition (Digit Span Forward) involves reading a string of numbers to the participant at a rate of one number per second and then having the participant immediately repeat the numbers in the same order. The first string consists of three digits and the final string consists of nine digits. The strings of digits are also paired, with two of the three-digit strings, two four-digit strings, and so on. The second condition (Digit Span Backward) involves reading a string of numbers to the participant as before, but this time the participants repeats the string in the reverse order. As with the Forward condition the strings of digits become longer and are paired. Also, for the purpose of this study the Digit Span test was divided in half. Specifically, only one of the paired digit strings was read to the participants for the Forward and the Backward conditions initially, and then later in the study the other string was presented. The variable of interest in this study was the total score for both the Forward and Backward conditions.

Spatial Span. Spatial Span is a subtest from the Wechsler Memory Scale – III (The Psychological Corporation, 1997) and is a measure of attention and working memory for visuospatial information, which has been associated with right prefrontal cortex activity (Bor, Duncan, Lee, Parr, & Owen, 2006). The test consists of a board that has 10 plastic squares permanently attached in a pseudorandom fashion. There are two conditions for the test. The first condition (Spatial Span Forward) consists of the examiner tapping out a sequence by touching some of the blocks at a rate of one per second. The participant is then asked to touch the same blocks and in the same order. The test begins with a two-block sequence and ends with a nine-block sequence. The second condition (Spatial Span Backward) again requires the participant to touch the same blocks as the examiner, but this time in the reverse order. As with Digit Span, the items are paired and only one of the pairs was administered initially with the other pair being administered later in the study. The variable of interest was the total score for both the Forward and the Backward conditions.

Procedure

The tests were grouped and divided into three blocks per session, lasting an hour in entirety. The first test block was a prescreening session, in which participants were given the informed consent, the Prescreening Questionnaire, the BDI-II, and the BPAQ. The informed consent was always administered first and then was followed by the other questionnaires, which were administered in a randomized order. The second block of tests consisted of either the RFFT or the Design Fluency test, the COWAT (either the FAS or the PRW form), one half of the full digit span task, and one half of the full spatial span task. The order of presentation of these tests was randomized.

Following the second test block, a five-minute movie clip was then presented to the participant. Participants randomly assigned to the experimental group were presented with an extremely graphic clip of the top 18 most violent scenes from the psychological thriller *Saw* series. Participants randomly assigned to the control group were presented a neutral, non-graphic clip from the family film *The Wizard of Oz*. These clips were matched by total length, number of scenes spliced together, and time in which musical background was played.

The third test block was administered following presentation of the movie clips and was designed to test for a difference in executive functioning of the right frontal lobes after exposure to the clip. This third block consisted of administering the other forms of the tests that were administered in the second block. For instance, if the RFFT was administered first then the Design Fluency test was administered in the third block, and visa-versa. Likewise, if the participants were administered the FAS form of the COWAT in the second block then the PRW form was administered in the third block. Finally, the other half of the Digit Span and Spatial Span tests were administered in the third block. Using two different forms for the tests prevented any confound from practice effects and may also have helped to prevent participant loss of attention caused by simply repeating the exact same tasks. The order of presentation of the two forms of each test was counterbalanced. Also, the order of presentation of the tests was completely randomized.

Results

Initial Analysis

Initial analyses were conducted to determine whether differences existed between the control and experimental groups regarding age, depression, or aggression. A series of one-way ANOVAs was conducted for each of these variables and the results indicated no difference between the control and the experimental group in regard to age ($F_{(1,44)}$=1.77, p=.29), depression ($F_{(1,44)}$=.25, p=.62), and aggression scores ($F_{(1,44)}$=1.49, p=.23). Table 1 presents means and standard deviations for these demographic variables for the two groups.

Given no significant differences existed between the groups regarding age, depression, or aggression, these variables were not considered to represent confounds.

		N	Mean	Standard Deviation
Age	Control	23	23.57	4.79
	Experimental	23	22.22	3.57
	Total	46	22.89	4.23
BDI	Control	23	14.22	8.02
	Experimental	23	12.91	9.53
	Total	46	13.57	8.73
Aggression	Control	23	.27	.10
	Experimental	23	.32	.12
	Total	46	.31	.11

Table 1. *Group descriptive statistics.*

Primary Analysis

Primary analyses consisted of conducting a series of 2 (Group: Control and Experimental) x 2 (Time: Before Movie Clip and After Movie Clip) mixed factorial ANOVAs, with a between factor of Group and a within factor of Time. The results for the Digit Span data (Table 2) indicated no significant Group x Time interaction ($F_{(1, 44)} = 2.79$, $p = .102$). Neither the main effect for Time ($F_{(1,44)} = 1.63$, $p = .208$) nor the main effect for Group was significant ($F_{(1,44)} = 1.28$, $p = .263$). Analysis of the Spatial Span data (Table 3) demonstrated no significant Group x Time interaction ($F_{(1, 44)} = .335$, $p = .566$). There was also no main effect for Time ($F_{(1,44)} = .149$, $p = .702$) or for Group ($F_{(1,44)} = .496$, $p = .485$). The results of analyses from the COWAT data (Table 4) again demonstrated no significant Group x Time interaction ($F_{(1, 44)} = 2.94$, $p = .09$). However, a significant main effect for Time was found ($F_{(1,44)} = 22.66$, $p < .001$). The main effect for group was not significant ($F_{(1,44)} = 2.94$, $p = .09$). Finally, the data from the figural fluency measures (Table 5) also demonstrated no significant Group x Time interaction ($F_{(1, 44)} = .43$, $p = .51$), no significant main effect for Time ($F_{(1,44)}$ =.47, p=.50), and no significant main effect for Group ($F_{(1,44)}$ = .16, p = .69).

		N	Mean	Standard Deviation
Base Digit Span	Control	23	8	2.04
	Experimental	23	9	2.04
	Total	46	8.5	2.08
Treatment Digit Span	Control	23	8.65	1.85
	Experimental	23	8.91	2.17
	Total	46	8.78	2.00

Table 2. *Digit span score descriptive statistics*

		N	Mean	Standard Deviation
Base Spatial Span	Control	23	8.91	1.5
	Experimental	23	8.78	1.48
	Total	46	8.85	1.48
Treatment Spatial Span	Control	23	8.96	1.61
	Experimental	23	8.57	1.27
	Total	46	8.76	1.45

Table 3. *Spatial span score descriptive statistics*

		N	Mean	Standard Deviation
Base COWAT	Control	23	33.17	9.83
	Experimental	23	33.48	8.97
	Total	46	33.33	9.31
Treatment COWAT	Control	23	39	10.46
	Experimental	23	36.22	7.82
	Total	46	37.61	9.24

Table 4. *COWAT score descriptive statistics*

		N	Mean	Standard Deviation
Base Figural Fluency	Control	23	54.30	29.28
	Experimental	23	57.70	36.03
	Total	46	56.00	32.51
Treatment Figural Fluency	Control	23	54.09	27.99
	Experimental	23	47.26	25.92
	Total	46	50.67	26.89

Table 5. *Figural fluency scores descriptive statistics*

Secondary Analysis

Digit Span Backward may be a better measure of working memory for verbal information and hence a better measure of right prefrontal cortex function specifically (Kaneko et. al, 2011). Hence, subsequent analyses were conducted using only scores from the Digit Span Backward portion of the Digit Span test (Table 6). As before, the Group x Time interaction was not significant ($F_{(1, 44)} = .57$, $p = .46$). Additionally, the main effect for Time was not significant ($F_{(1,44)} = .57$, $p = .46$) and the main effect for Group was not significant ($F_{(1,44)} = .57$, $p = .46$). However, this measure also found no significant differences between the before and after media trials, ($F_{(1,44)}=.57$, $p=.46$), or, between groups before and after media performance variation, ($F_{(1,44)}=.57$, $p=.46$).

		N	Mean	Standard Deviation
Base Digit Span Backwards	Control	23	2.91	1.20
	Experimental	23	3.26	1.32
	Total	46	3.09	1.26
Treatment Digit Span Backwards	Control	23	3.13	1.01
	Experimental	23	3.26	1.54
	Total	46	3.20	1.29

Table 6. *Digit span backwards only descriptive statistics*

Discussion

Overall, viewing violent media for the five-minute time period did not hold any immediate effect over adult prefrontal cortex functioning. This could be due to a variety of reasons. Many of the students tested had indicated regular habits of viewing moderate to extremely violent media. Thirty-five participants indicated that when they watch movies or television, they engage with programming involving some form of violence, from combat to murder. Seventeen participants indicated that when they are on social media, some form of human violence is presented to them regularly. Being engaged with that type of content as a norm, might have led them to be previously and consistently desensitized and not as effected by the current exposure (Stronziok et al., 2011; Hummer et al., 2013). Other studies have suggested that television exposure itself lowers frontal cortex activity (Lillard & Peterson, 2011). This would mean that, no matter what content was shown, frontal cortex activity would decline, and we would not see a difference between the control and experimental group. The results of the COWAT within-subjects trial variation support this concept, as all the participants improved scores in the second trial as compared to the first trial after viewing any movie, regardless of its content. As right prefrontal cortex function is related to inhibition function, this supports that lowered inhibition ability would produce higher scores on this measure of fluent thinking (Hummer et al., 2013).

Other notable data recorded the substantial time that many of the participants reported to have spent on social media. Thirty-five participants indicated that they spent seven days a week on social media for some period. Twenty of those participants indicated that they spent between two and three hours per day, and eleven participants indicated that they spent more than four hours per day on social media. Although this study did not take social media into account, other studies have shown that regular social media use influences cognitive abilities, such as working memory, which is also housed in the prefrontal cortex (Myhre, Mehl, & Glisky, 2016).

The reason for finding no effects of viewing violence on prefrontal functioning may be related to the sample used in this study. The majority of the sample was female, which was the result of using a non-probability convenience sample that was comprised almost entirely of psychology majors. Psychology is primarily a female dominated field, making the population that we utilized not entirely representative of the general population (U.S

Department of Education, 2013). Further, research has found that important differences exist between men and women regarding the structure and functioning of the brain. Women have been found to have a larger right orbitofrontal cortex, which has been shown to have a strong effect on working memory and visuospatial skills, as well as a larger ventromedial prefrontal cortex, which effects emotional regulation, such as cognitive anxiety and emotional impulses (Bor et al., 2006; Welborn et al., 2009). Working memory also has shown to have activation differences between male and females. Li and colleagues found that, when using hemodynamic measures on verbal working memory, females showed left prefrontal cortex activation, whereas, males showed bilateral prefrontal cortex activation (Li, Luo & Gong, 2010). These functional differences suggest that different testing batteries for males and females may have been beneficial to accurately assess right prefrontal cortex functioning in the different genders. The results may have been skewed as almost 75% of this sample was comprised of females, as they may have also been skewed had the sample been mostly male.

Problems may also have ensued from extra credit points being used as incentive for students to participate. This may have affected how students performed and whether they were putting forth the effort, truly, to do their best, or if they were trying to speed through it just to get their credit for attending. Thirteen participants scored below a twenty-eight on the baseline COWAT, and seventeen participants scored a two or lower on the baseline Digit Span Backward. These are both well below what normal, healthy college students should score at baseline if they were giving the task their best efforts. There was also no manipulation check for the independent variable. It is possible that the video clips shown did not have the intended effect, and taking an emotional measure before and after viewing the clip would verify that the results obtained are in accordance with the negative reaction participants were anticipated to have (Stronziok et al., 2011; Hummer et al., 2013). As previously mentioned, there were many participants who engaged with violent media on a regular basis, so perhaps an even more graphically violent video, or even exposure to real violence, would be necessary to produce the reaction necessary to determine if violence exposure produced cognitive deficits.

Another possible confound could have been interrater reliability. Three different researchers were conducting the testing sessions, which may have provided above average variation in administration that may or may not have affected participant performance or understanding of the tasks asked of them. Statistical differences in performance on the digit span and spatial span tasks may have been harder to detect in this study, as well. In order to prevent practice effect and test redundancy, both the digit and spatial span tasks were divided in half, so that the first and second trials had different content. This resulted in lower overall scores than being given the full task one time, and possibly made the differences less drastic than they would have been if they were given at full capacity.

In future studies, perhaps, ruling out for all diagnosed mental disorders would be beneficial to ensure that participant performance variation is based solely on the media with which they are presented and not a preexisting condition. Using a sample population of an entire University and not just psychology majors would broaden the subject pool and include more representative gender and age groups to make the results more generalizable to the population. A longitudinal measure may also be valuable, in order to determine if any effects of viewing violence has long-term effects and not just short-term cognitive hinderance.

Despite the lack of significance in the results, there can still be valuable insight taken away from this. The world is changing rapidly with further advancement of technology. This study only scratches the surface of new ways to begin to understand how the world can alter our way of thinking and responding to surroundings. This serves as a foundation for further follow-up research to build on and investigate how brains are changing with society.

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Appendix A

Researcher Developed Prescreening Questionnaire

Demographics:

1. Sex: Male
   Female
   Other: ___________________________________

2. Ethnicity: Caucasian, Hispanic, Mixed Race, African American, Asian American, Native American, Native Hawaiian/Pacific Islander
   Other: _________________________

3. Age: 18-24 25-31 32-38 39-45 46-52 53-60

Medical History:

1. Do you have any history of mental illness? Yes No
2. Do you have any history of neurological disorder/injury? Yes No

Media Engagement:

1. How many days a in an average week do you make time to watch television programs/movies?

   None 1 2 3 4 5 6 7

2. How many hours a day do you spend watching television programs/movies?

None 0-1 2-3 4+

3. If you watch television/movies on a regular basis, what category of programming do you most often watch?

N/A Educational News Entertainment Sports

Other

If other, please specify: ____

4. On a scale of one to five, with one being non-violent and five being graphically and extremely violent, how violent are the television programming/movies you are exposed to? (1-Cartoon Violence, 2-CGI Violence, 3-Mild Human Hand-to Hand Violence such as fighting, 4-Moderate Human Graphic Violence such as shooting, or stabbing, 5-Major Human Graphic Violence such as graphic murder, rape, torture)

N/A 1 2 3 4 5

5. How many days in an average week do you make time to play video games?

None 1 2 3 4 5 6 7

6. How many hours a day do you spend playing video games?

None 0-1 2-3 4+

7. If you play video games on a regular basis, what category of games do most often play?

N/A Roleplaying First-person Action Sports Arcade Virtual Reality Strategy Other

If other, please specify: ____

8. On a scale of one to five, with one being non-violent and five being graphically and extremely violent, how violent are the video games you are exposed to? (1-Cartoon Violence, 2-CGI Violence, 3-Mild Human Hand-to Hand Violence such as fighting, 4-Moderate Human Graphic Violence such as shooting, or stabbing, 5-Major Human Graphic Violence such as graphic murder, rape, torture)

N/A 1 2 3 4 5

9. How many days during an average week do you use social media?

None 1 2 3 4 5 6 7

10. On average, how many hours a day do you spend on social media?

None 0-1 2-3 4+

11. If you engage with social media regularly, which platforms do you most often use?

N/A Facebook Twitter Instagram Snapchat Tumblr

Tinder/Grindr LinkedIn Other

If other, please specify: ____

12. On a scale of one to five, with one being non-violent and five being graphically and extremely violent, how violent is the content on social media you are exposed to? (1-Cartoon Violence, 2-CGI Violence, 3-Mild Human Hand-to Hand Violence such as fighting, 4-Moderate Human Graphic Violence such as shooting, or stabbing, 5-Major Human Graphic Violence such as graphic murder, rape, torture)

N/A 1 2 3 4 5

Appendix B

IRB Approval

IRB
INSTITUTIONAL REVIEW BOARD
Office of Research Compliance,
010A Sam Ingram Building,
2269 Middle Tennessee Blvd
Murfreesboro, TN 37129

MIDDLE TENNESSEE STATE UNIVERSITY

IRBN001 - EXPEDITED PROTOCOL APPROVAL NOTICE

Wednesday, March 20, 2019

Principal Investigator	**Samantha Eisenberg** (Student)
Faculty Advisor	Paul Foster
Co-Investigators	NONE
Investigator Email(s)	*sre3c@mtmail.mtsu.edu; paul.foster@mtsu.edu*
Department	Psychology
Protocol Title	***The effects of media violence on right prefrontal cortex functioning in adults***
Protocol ID	**19-2160**

Dear Investigator(s),

The above identified research proposal has been reviewed by the MTSU Institutional Review Board (IRB) through the **EXPEDITED** mechanism under 45 CFR 46.110 and 21 CFR 56.110 within the category *(7) Research on individual or group characteristics or behavior.* A summary of the IRB action and other particulars in regard to this protocol application is tabulated below:

IRB Action	**APPROVED for ONE YEAR**		
Date of Expiration	**3/31/2020**	Date of Approval	3/20/19
Sample Size	200 (TWO HUNDRED)		
Participant Pool	Primary Classification: **General Adults (18 or older)** Specific Classification: **MTSU students**		
Exceptions	NONE		
Restrictions	**1. Mandatory signed informed consent; the participants must have access to an official copy of the informed consent document signed by the PI.** **2. Data must be deidentified once processed.** **3. Identifiable data must be destroyed as described in the protocol. This includes audio/video data, photo images, handwriting samples, contact information and etc.**		
Comments	NONE		

This protocol can be continued for up to THREE years (**3/31/2022**) by obtaining a continuation approval prior to **3/21/2020**. Refer to the following schedule to plan your annual project reports and be aware that you may not receive a separate reminder to complete your continuing reviews. Failure in obtaining an approval for continuation will automatically result in cancellation of this protocol. Moreover, the completion of this study MUST be notified to the Office of Compliance by filing a final report in order to close-out the protocol.

IRBN001 Version 1.3 Revision Date 03.06.2016

Post-approval Actions

The investigator(s) indicated in this notification should read and abide by all of the post-approval conditions imposed with this approval. Refer to the post-approval guidelines posted in the MTSU IRB's website. Any unanticipated harms to participants or adverse events must be reported to the Office of Compliance at (615) 494-8918 within 48 hours of the incident. Amendments to this protocol must be approved by the IRB. Inclusion of new researchers must also be approved by the Office of Compliance before they begin to work on the project.

Continuing Review (**Follow the Schedule Below:)**

Submit an annual report to request continuing review by the deadline indicated below and please be aware that **REMINDERS WILL NOT BE SENT.**

Reporting Period	Requisition Deadline	IRB Comments
First year report	12/31/2019	The protocol will expire on 06/01/2019 as requested by PI unless a continuing review request is submitted
Second year report	12/31/2020	NOT COMPLETED
Final report	12/31/2021	NOT COMPLETED

Post-approval Protocol Amendments:

Only two procedural amendment requests will be entertained per year. *In addition, the researchers can request amendments during continuing review. This amendment restriction does not apply to minor changes such as language usage and addition/removal of research personnel. .*

Date	Amendment(s)	IRB Comments
NONE	NONE.	NONE

Other Post-approval Actions:

Date	IRB Action(s)	IRB Comments
NONE	NONE.	NONE

Mandatory Data Storage Requirement: All of the research-related records, which include signed consent forms, investigator information and other documents related to the study, must be retained by the PI or the faculty advisor (if the PI is a student) at the secure location mentioned in the protocol application. The data storage must be maintained for at least three (3) years after study has been closed. Subsequent to closing the protocol, the researcher may destroy the data in a manner that maintains confidentiality and anonymity.

IRB reserves the right to modify, change or cancel the terms of this letter without prior notice. Be advised that IRB also reserves the right to inspect or audit your records if needed.

Sincerely,

Institutional Review Board
Middle Tennessee State University

Quick Links:

Click here for a detailed list of the post-approval responsibilities.
More information on expedited procedures can be found here.