

EMOTION WORD PROCESSING AND PREVIOUS EXPOSURE
TO VIOLENT MEDIA: AN EYE-TRACKING STUDY

by

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LIST OF ABBREVIATIONS

Abbreviation	Description
ANEW	Affective Norms for English Words
ANOVA(s)	Analysis of Variance(s)
ELP	English Lexicon Project
ERP	Event-Related Potential
GSR	Galvanic Skin Response
ms	Milliseconds
SCL	Skin Conductance Level

ABSTRACT

The controversy regarding violent media influencing acts of violence is long standing and heavily debated. Most research in this area has prioritized examining correlations between the consumption of violent media and measures of aggression or desensitization with the goal of answering the question “Does violent media cause acts of violence?” This narrow focus has left many other potential questions about how violent media can influence behavior unexamined. This study examines the correlation between reading behavior (measured via eye-tracking) and participant’s self-reported previous exposure to different types of violent media. Participants read sentences containing either a nonviolent, neutral critical word or a violent, negatively valenced critical word. Aspects of their reading behavior was examined to test the hypothesis that participants with higher exposure to violent media would significantly differ from participants with lower exposure to violent media in terms of their reading times. Results from the current study suggest there is a correlation between previous exposure to violent media and faster reading time of violent words. This study is the first to demonstrate this relationship and suggests future study of how media influences human behavior.

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I. INTRODUCTION

Throughout history, people have argued about the negative impact that art and media have on society. Many different art and media forms have been scapegoats for society's problems. This has led to the destruction of literature, which has been prevalent throughout history, in the name of political or religious ideology (Báez & Mac Adam, 2008). The 20th century advances in telecommunications led to both radio and television eventually being regulated due to perceived risks to the public (Bazelon, 1975; Pickard, 2011). The comic book industry was heavily criticized for corrupting the youth, culminating with the assertion that violence in comic books was increasing aggression in readers (Wertham, 1954). This led to the establishment of a regulatory body to control content called the Comics Code Authority (Cowan, 2011). Music genres like rock and roll and rap have been targeted for promoting Satanism and violence (Armstrong, 2002). Seemingly every form of media has received this sort of attention.

The most recent accusations have been largely leveled at video games and film. The Columbine High School shooting in 1999 was claimed to have been influenced by both video games (BBC News, 2001) and film (Bell, 2015). The same argument has been made about many of the perpetrators of more recent mass shootings in the United States, with examples such as the Virginia Tech shooting (Benedetti, 2007), the Aurora Colorado shooting (Green-Miner & Dinha, 2012), and the Sandy Hook shooting (Sheldrick, 2012). Despite the prevalence of the accusation, the idea that violent media has a causal relationship with acts of real-world violence is highly contested (Elson & Ferguson, 2014). Empirical studies of how violent media influences behavior is generally divided into two different aspects: aggression and desensitization.

Aggression Studies

Aggression studies must overcome the ethical problem of studying aggression. It is unethical to conduct a study wherein an expected outcome is a physical act of aggression, therefore this area of study relies on mostly correlational research. Compounding this problem is the vast array of methodologies used to measure aggression in an ethical manner. Scales such as the Aggression Questionnaire (Buss & Perry, 1992), adapted from an aggression measure by Buss and Durkee in 1957, have attempted to measure trait aggression via self-report data. Another common methodology involves the punishment of others. These measures require participants to choose an amount of punishment to be administered to someone else, with larger punishments being considered signifiers of greater amounts of aggression. Some examples include the usage of loud blasts of white noise (Denson, Capper, Oaten, Friese, & Schofield, 2011), the administration of varied amounts of hot sauce (McGregor et al., 1998; Lieberman, Solomon, Greenberg, & McGregor, 1999), and exposure to negative pictures (Denzler, Förster, & Liberman, 2009). Aggression has also been measured in word completion tasks (DeWall & Bushman, 2009).

Empirical studies using these measures of aggression have found that there are effects between playing violent video games and aggression (Anderson & Dill, 2000; Anderson & Bushman, 2001). However, these studies have shown short-term effects of only a few hours and have been contested by many other studies (Goldstein, 2001). Additionally, this effect has been found for video games that are not violent, with

frustration at difficulty and failure being implicated for the increase in aggression (Mahood, 2006).

There have been meta-analyses of thousands of studies which both support and challenge the idea that violent media has a lasting effect on participants. Anderson et al. (2010) conducted a meta-analysis on violent video games and their correlation with aggression. Anderson et al. found significant results supporting all six of their outcome variables, in favor of the theory that there is a causal relationship between video game violence and aggressive behavior. Elson and Ferguson (2014) conducted a meta-analysis examining twenty-five years of research on violent media and aggression, and their findings showed an inconclusive result, and commented it was irresponsible to claim that there was a causal link between actual violence and violent media exposure. This conclusion is also supported in a report on video games and children conducted by Byron (2008). Byron explained that ethical issues prevent causal studies because that would require exposing children to significant amounts of violent content with a possible outcome being aggressive behaviors and personalities.

Desensitization Studies

The other factor often discussed when studying violent media affecting behavior is the aspect of desensitization, specifically the desensitization theory. The desensitization theory is a theory relating to human behavior. In simple terms, desensitization is the theory that the more exposure to a strong stimulus a person has, the less reaction it elicits (Carnagey, Anderson, and Bushman, 2007). This reduced reaction to violence could allow individuals to behave violently without any emotional reservations. The physiological aspect of desensitization is the arousal response to

stimuli. Measurements such as, galvanic skin response (GSR), skin conductance level (SCL), and event-related potential (ERP) are commonly used to examine desensitization.

Carnagey et al. (2007) used GSR and heart rate measurements when recording subjects' reactions while playing video games and showing participants clips of violence in media. One group played violent video games, while the other played nonviolent video games. The study found arousal did not significantly increase while viewing the violent clips among the group which played violent video games, while the group that played non-violent games increased significantly in arousal. In another study, Lang, Bradley, Schneider, Kim, and Mayell (2012) measured GSR while participants played a violent video game. Participants were categorized by levels of experience they had playing the game being used, and the study found that more experienced players were less aroused than less experienced players. A study by Krahé et al. (2011) measured SCL in a similar design and found that participants with more exposure to violent media exhibited less arousal than participants with less exposure. ERP studies of violent media have reported certain neural activation, such as the N300, as being lessened through desensitization to violent video games (Engelhardt, Bartholow, Kerr, & Bushman, 2011). Overall, studies of desensitization to violent media have shown a consistent desensitization effect occurring to other violent media in the short-term. The application of desensitization studies is limited however due to one important factor.

The causal application of desensitization studies relies in the assumption that desensitization to fictional violence equally desensitizes participants to real-life violence. Violence depicted in media is generally exaggerated and cartoonish compared to a real-life counterpart. Ethical limitations prevent the direct comparison of arousal to fictional

violence and real-life violence; it would be unethical and potentially illegal to expose a participant to real-life violence which in itself suggests that there is a fundamental difference between the two. It is permissible to show extensive fictional violence in studies, but footage of comparable real-world violence is not used in research. Without studying a direct comparison, the potential crossover effect between fictional and real world desensitization is a matter of speculation.

Much of the research in this field has prioritized visual mediums like film, television, and video games. While this makes sense due to the popularity of these mediums, the ability to study these specific mediums is highly restricted to correlational research and quasi-experimental methodologies. Some of the lesser studied types of media could provide essential information about the impact of violent media exposure. Books and literature can also be a source of violent media and can be measured differently, potentially providing more pieces of the puzzle. Reading times and the tracking of eye-movements are commonly studied in the field of psycholinguistics, but knowledge of how these aspects are modulated by exposure to violent media is largely unknown.

Reading Variables

To examine the potential impacts violent media exposure may have on reading, it is important to first examine what other variables influence reading. The usage of eye-tracking methodology has allowed for researchers to isolate a number of variables that have been found to impact eye fixation times during reading, which have given researchers critical information about the underlying cognitive and emotional processes that occur as a person reads. A study by Juhasz and Rayner (2003) examined how five

variables: word frequency, subjective familiarity, word length, concreteness, and age of acquisition, influenced eye fixation durations when reading.

Their study found that each of these variables influenced reading time in different ways. Word frequency is directly related to reading time, with words that have a high frequency being read faster than less common words. Examining subjective familiarity found that low frequency words could still be processed faster based on the individual's previous knowledge and exposure to the word. Word length logically impacts reading time with words containing more letters requiring more time to be read than shorter words. Concreteness refers to the abstractness of the word's meaning, words low in concreteness are more abstract while concrete words have a more exact and tangible meaning. Previous studies have found that the effect concreteness has on reading time depends on the context of use, with abstract words being processed more slowly in a neutral context, but not in a meaningful context (Schwanenflugel & Stowe, 1989). Finally, age of acquisition refers to the age at which a word was first learned, and this variable was found to predict aspects of gaze duration.

Emotionality of Words

Aside from physical aspects of words, the emotional aspects of words are another important set of variables to consider when examining reading times. A study by Scott, O'Donnell, and Sereno (2012) looked at how emotional valence influenced reading times and eye fixations. They organized their target words into three categories: negative valence, neutral valence, and positive valence. They also considered word frequency when choosing target words, grouping target words by frequency so that each experimental sentence contained either a positive, neutral, or negative word of a similar

frequency. This served to protect against the notably faster reading times associated with high frequency words. Ultimately, they found that fixation times on emotion words (positive or negative) were faster than neutral words with the exception that high frequency negative words were not read faster than high frequency neutral words.

The study by Scott et al. (2012) is one of many that has examined the emotionality of words influencing reading times and eye fixations. A study conducted by Knickerbocker, Johnson, and Altarriba (2015) examined a more specific aspect of emotional words. The study discusses the distinction between emotion words and emotion-laden words. Emotion words directly refer to a state of mind that can be experienced (e.g. happy), while emotion-laden words are words that are deeply associated with an emotional state but are not states of mind (e.g. debt). Their study exclusively examined emotion words and found that emotion words of both positive valence and negative valence were read significantly faster than neutral words.

These two studies both inform the possibility that violent words, which are generally perceived as negatively valenced, would be read more quickly than non-violent, neutrally valenced words. This effect would logically be combined with the previously mentioned effects word frequency and word length have on reading time, suggesting that short, frequent, negatively valenced words would be read much faster than long, infrequent, neutral words.

A final component of the emotionality of words to consider is arousal. Two studies have examined how arousal modulates word recognition and word processing, and how/if arousal interacts with the valence of the words. A study by Kuperman, Estes, Brysbaert, and Warriner (2014) examined the effects of arousal and valence on word

recognition. They examined arousal in terms of words being either calming or exciting, and found that arousal and valence did not interact, but both interacted with word frequency. Their findings suggest that low frequency words are much more impacted by arousal and valence than high frequency words. However, the results of a separate study by Citron, Weekes, and Ferstl (2014) found that there was an interactive effect between valence and arousal with regards to word recognition. The study found that low-arousal negative words and high-arousal positive words were slower in lexical decision making than low-arousal positive words and high-arousal negative words.

A possible explanation for why positively and negatively valenced words might be read faster than neutral words relates to emotion processing. This is the idea of aversive and appetitive motivational systems, also known as approach-avoidance behaviors. These independent systems attempt to seek out stimuli that relate to positive outcomes and avoid stimuli that are linked to negative outcomes, such as punishments (Lopez, 2009). Words with positive valences would logically be associated with positive outcomes, while negatively valenced words would be associated with negative outcomes. Both possibilities would suggest that a reader might prioritize reading either of these words over a neutral word that has neither a good or bad outcome.

A study by Chen and Bargh (1999) examined this sort of behavior with regards to motoric responses to stimuli of varied valence. In one experiment, participants were shown both negative and positive stimuli and were then asked to evaluate the valence of each stimulus before either pushing or pulling a lever. They found that participants were significantly slower to pull the lever towards them when shown a negative stimulus and also slower to push the lever away when shown a positive stimulus compared to pulling

the lever for positive and pushing for negative. A second study where participants were not asked to evaluate the stimuli but simply push or pull the lever as told was also conducted. Even though participants were not told to evaluate the stimuli presented, the study showed much better reaction time towards pulling positive stimuli as well as pushing away negative stimuli.

Additionally, this phenomenon has been examined in terms of other psychophysiological measures. A study by Bradley, Codispoti, Cuthbert, and Lang (2001) found similar approach/avoidance results when measuring SCL responses to negative and positive stimuli. More relevant to the present study, an examination of this mechanism was conducted with regards to desensitization to violent media and aggression using the ERP methodology (Bartholow, Bushman, & Sestir, 2006). While this study prioritized aggression as a factor, it nonetheless suggests a cognitive connection between exposure to violent media and a cognitive change with regards to how violent stimuli are recognized and responded to. Overall, these studies support the idea of aversive and appetitive motivational systems and suggest a connection between valenced stimuli and a cognitive reaction, as is investigated in the present study.

Lexicons

When studies compare aspects like word frequency or affect, they select words that have previously been recorded and analyzed with regards to these factors. Two major databases have collected and standardized large volumes of words in many different aspects: Affective Norms for English Words database and The English Lexicon Project. The Affective Norms for English Words (ANEW) database (Warriner, Kuperman, & Brysbaert, 2013) catalogues the reported emotionality of words according to three

categories: valence, arousal, and dominance. The two categories of valence and arousal are important to the present topic and have previously been discussed. The English Lexicon Project (ELP) is a collection of over 40,000 words studied and catalogued by multiple universities and researchers (Balota et al., 2007). Three of the factors examined in the ELP are relevant to discussion here. The lexical decision task is a type of task wherein participants are presented with a series of letters and must report whether or not that series makes up a word or a non-word as fast as possible. The naming task similarly requires participants to simply read a word and then say the word out loud. These two measures are common in studies about reading, and the ELP has average reaction times for these measures for the words in its database. The third factor discussed in the ELP is the concept of orthographic neighbors. This refers to a word that can easily be changed to appear like a different word by altering a single letter (i.e. cat and hat). The ELP lists the number of orthographic neighbors for the words in the database.

II. PURPOSE AND HYPOTHESES

The goal of the present study is to examine if and how previous consumption of violent media such as television, video games, films, and reading materials is associated with the amount of time participants spend reading critical words (in sentences) that have either a negative or a neutral valence. The study attempts to combine the study of desensitization to violent media with the study of eye-movements while reading sentences of different emotionality and arousal. The empirical study of text-based media and desensitization to violence is largely unexplored and the study of how violent media exposure could influence eye-movements may expose a new manner in which media exposure influences cognition and behavior.

This study compared reading times on critical words that have been chosen to be either negative or neutral (the other words in the sentence remain constant across the two conditions). These comparisons were made using repeated measures analysis of variance (ANOVA). This manipulation is very similar to that of Knickerbocker et al. (2015), and so it was predicted that when averaging across all participants, faster fixation times on the negative words will be found when compared to the neutral words. Fixation times are measured in milliseconds (ms). The researcher was particularly interested in how this effect may vary based on prior exposure to violent media, so violent media exposure was measured in participants via self-report. It was predicted that a participant's level of previous exposure to violent media would be significantly correlated with their fixation and reading times when viewing sentences containing negative, violent critical words compared to neutral, nonviolent critical words. These correlations were examined using Pearson product-moments correlations to compare self-reported exposure to violent

media with difference scores between reading variables for violent and neutral critical words.

This influence could have occurred in one of two ways: either greater exposure to violent media would correlate to a larger difference between negative and neutral words (positive correlation) or a smaller difference (negative correlation). No specific direction was being predicted because either outcome was plausible based on previously cited research. If previous exposure to violent media had resulted in certain participants becoming desensitized to the negative information, then the dampening of the aversive motivational system would lead to those participants not reading the negative sentences more quickly, as they would not cognitively view those critical words as aversive stimuli. This would have manifested as a negative correlation between exposure and the difference in fixation times between neutral and negative words. Conversely, by being more exposed to violent media, those participants may have a higher subjective familiarity with those negatively valenced words and would therefore read those words even faster than neutral critical words, despite both negative and neutral words being chosen based on average measures of familiarity. This would have manifested as a positive correlation between exposure and the difference in fixation times between neutral and negative words. As such, the current study only predicted a significant correlation, positive or negative, between fixation time to violent, negative stimuli and exposure to violent media.

III. METHOD

Participants

Participants were recruited from undergraduate psychology courses at Texas State University through the online Sona system. Participants were native English speakers and had normal or corrected-to-normal vision. Participants were recruited from PSY1300 (Introductory Psychology) classes as part of a research familiarity option. The expected age range was mostly first and second year college students aged 18 to 21, although age data was not collected.

A total of 80 participants provided eye-tracking data that was included in the analyses. Ethnic/racial composition should have followed the composition of the students enrolled in the psychology program, although this information was not collected. Participants were given credit through the Psychology Department Participant Pool. The credit corresponds to 2 points for their hour of participation. This makes up a small percentage of the overall course points and alternatives (written assignment that takes roughly the equivalent time to complete) was offered to those who did not wish to participate.

Stimuli

Participants read a set of experimental sentences while having their eye movements tracked. The experimental sentences were specifically written to be able to contain two different critical words near the middle of each sentence (see sentence 1, below). Each of the thirty-four experimental sentences could accommodate either a neutral, nonviolent critical word or a negative, violent critical word. The thirty-four

sentences were broken up into two blocks, each containing half negative and half neutral words, such that no two exact sentences are duplicated between the blocks. For example:

Block 1: The local news reported that deadly storms were forming

Block 2: The local news reported that larger storms were forming

The selection process of these critical words was as follows: All negative violent words were taken from the ANEW database (Warriner et al., 2013). The database was first sorted by the most negatively valenced words, and words with a highly negative valence and a violent connotation were selected. These words were then paired with neutral words taken from the ELP (Balota et al., 2007).

Neutral words were selected to best match their paired negative critical word based on several of the factors discussed previously. Possible neutral words were first filtered to only include options that were no more than two characters different from negative words in length. Remaining words were then filtered to only include words that had the same number of orthographic neighbors as the negative critical word. Those neutral words were then filtered to exclude words that were more than 50 milliseconds different to their negative word on two tasks recorded in the ELP: a lexical decision task and a naming task. The remaining neutral words were filtered by a log transformation of frequency, such that only words within one tenth of the negative word's frequency remained. Finally, the remaining words that had a neutral tone were selected and later used to create sentences. Sentences were created that could adequately use either negative or neutral critical words and attempted to keep the critical word near the middle of the sentence. A pilot study was conducted to assess the created sentences (see Appendix B).

Experimental Sentence Norming Pilot Study

In total, thirty-eight experimental sentences were created using the above method. Two blocks were created for testing purposes, each containing half of the sentences with neutral critical words and half with negative critical words, with the critical words switched based on the block being used. Four aspects of the sentences were examined by this pilot study: predictability, understandability, emotionality, and valence. The purpose of the pilot study was to examine how the sentences with either a neutral critical word or a negative critical word were perceived. Sentences with either critical word were not expected to be significantly different in terms of predictability or understandability but sentences containing the negative, violent critical word were expected to be rated as being significantly more emotionally affecting and negatively valenced than the neutral critical words. Fifty-six undergraduate students completed a survey consisting of either of the two blocks of sentences. For each sentence, they were shown the beginnings of each sentence up to the critical word and were asked to input what they predicted would be the next word in the sentence. After this, they were shown the whole sentence and were asked to rate the sentence in terms of understandability, emotionality, and valence based on a seven-point Likert scale.

Chi-square tests were conducted to assess predictability of the critical words, and revealed no significant differences between the condition type and predictability of the critical word ($p = .762$). Paired samples t-tests were conducted to test if the sentences containing the violent, negative critical words were significantly more emotionally affecting and negatively valenced than the sentences containing the neutral critical words. Sentences with negative critical words were significantly more emotionally affecting ($p <$

.001) and negatively valenced ($p < .001$) than sentences with neutral critical words. A paired samples t-test was conducted to test if sentences in either condition were significantly different in terms of predictability. This test found that, contrary to expectation, violent critical word sentences were significantly more understandable than neutral critical word sentences ($p < .005$). Independent samples t-tests were run which identified four specific sentences as significantly different in terms of understandability, and when removed from the analysis, the significant predictability was lost ($p > .05$). Based on this pilot study, thirty-four sentences remained in the present study.

Self-Report Measures

Two self-report measures were administered to participants following their completion of the eye-tracking experiment. The first measure was media consumption survey (see Appendix E). This survey was created to allow for quantification of a participant's exposure to violent media. The present study was designed to examine how consumption of violent media influences eye-movements and therefore a measure designed to generate a quantifiable value for violent media consumption was necessary. This survey contained four, two-part questions asking participants about their average monthly consumption of video games, film, television, and text-based reading materials. The second part of each question asked participants to indicate the proportion of which they consider these materials to be violent, based on their own belief.

The second measure was a shortened social desirability scale adapted from the 33-item Marlowe-Crowne social desirability scale by Reynolds (1982). The 13-item Form C scale was administered through Qualtrics to participants (see Appendix D). This scale is used to determine the potential influence of social desirability bias on participant

responses to the media exposure scale. Participants may be inclined to underreport the amount of time they spend doing the leisure activities the media exposure scale requests due to social pressures, as well as the possible stigma of consuming violent media. This survey consisted of 13 statements concerning personal attitudes and traits, which participants read and then decided whether the statement is true or false as it pertains to them. Example items included “It is sometimes hard for me to go on with my work if I am not encouraged,” “I’m always willing to admit it when I made a mistake,” and “I am sometimes irritated by people who ask favors of me.”

Research Apparatus

The present study utilized an EyeLink 1000 Plus, manufactured by SR Research. The eye-tracker monitored the movements of one eye, sampling once every millisecond with a spatial resolution 0.01 degrees. The eye-tracker was approximately 55 cm from the participant’s eyes while the display screen was approximately 70 cm away. The eye-tracker determined gaze location and duration by shining a very weak spot of infrared light into one of the participant’s eyes (infrared light is below the human’s visible spectrum, so the participant’s vision is not affected by this light). The amount of light absorbed by a person’s retina while in the eye-tracker is less than 7.5% of the suggested Maximum Permissible Exposure for continuous sources of infrared light given by Sliney and Freasier (1973). This level of light is comparable to what you would receive on a bright, sunny day.

The eye-tracker recorded how long participants spent looking at each word in the sentence, as well as how often they reread certain parts of the sentence. This behavioral measure allowed us to estimate ease of processing, where longer fixation (reading) times

indicated more difficulty processing the information. This paradigm made it possible for the researcher to manipulate individual words in a sentence to determine their impact on processing of particular words as well as the overall meaning of the sentence. Stimuli was presented onscreen via the Experiment Builder program (created by SR Research)

Procedure

Participants signed up for the current study via the SONA system by selecting a one hour time slot to participate. Participants came to the eye-tracking lab on the fourth floor to participate. Upon arrival, participants were provided with a copy of the consent form (see Appendix A) and were asked to read through the form. After reading, basic information about the study was discussed, participants were allowed to ask questions, and were then asked to sign the consent form if they chose to give consent to participate. Two copies were signed at this time to allow the participant to keep one copy for themselves.

Participants that consented to participate were then seated in front of the eye-tracker. In order to determine the processing ease of violent versus neutral words, participants were asked to silently read sentences (see Appendix B) on a computer screen while their eye-movements were monitored and recorded by the eye-tracking system. Sentences were presented on screen using Times New Roman 20-point font. In addition to the 34 experimental sentences, 73 filler sentences (see Appendix C) were included in each block to space out experimental sentences and reduce the chance participants would identify the manipulation used in the study. While participants were reading in the eye-tracker, it was important that they hold still, because excess head movements are misinterpreted as eye movements and could compromise the integrity of the data. To this

end, participants were asked to place their heads in a padded, desk-mounted headrest that stabilizes and supports the participant's forehead and chin. To ensure that participants remain comfortable, they were given the opportunity to reposition themselves between sentences, if they chose to do so.

In order to ensure that the participants are in fact reading the sentences (and not just moving their eyes across the screen), participants were occasionally probed with a comprehension question about a sentence that was just read. These are forced-choice two option questions that they answered with either a left or right button press. Participants read through the sentences at a pace that was comfortable for them (taking breaks as needed), and finished reading all the sentences in 30-45 minutes.

Upon completion of the eye-tracking task, participants were taken back to the main room and asked to complete the previously discussed survey (see Appendix D and E) online via Qualtrics. Upon completion of this survey, participants were thanked and left the lab. The entire procedure took less than an hour for each participant. All procedures for human subjects as well as the consent form and stimuli were approved by the Institutional Review Board at Texas State University.

Eye-Tracking Measures

Three eye-tracking measures were used in this study: "first-pass time," "regression path time," and "total fixation time." First-pass time includes the sum of all fixations in a region before fixating in another region, on either side of that region. Regression path time refers to the amount of time a participant spent fixating a region before crossing the right-hand boundary of that region (i.e., before reading later parts of

the sentence). The total time measure is a sum of all fixations in a region, which includes initial fixations as well as fixations back to the region during rereading.

The eye tracking measures were calculated for two sentence regions: the critical region and the spillover region. The critical region consisted of the critical word (neutral or negative valence) in the experimental sentences. The spillover region consisted of the two words immediately following the critical region. Sometimes, an eye movement is planned and executed before the cognitive processing of the current word is complete. It is therefore possible to observe effects of the critical word on the word or two immediately following it.

Eye-Tracking Data Cleaning

The raw eye-tracking data collected from 80 participants was cleaned prior to generating interest area reports for reading behavior. All 3,040 trials were cleaned first by the researcher and then via the software included in Eyelink Dataviewer. Fixations in each trial were examined in terms of their duration and location, with fixations that appeared to occur due to loss of eye-tracking being removed and drift corrections being applied to genuine fixations that appeared outside of the preset interest areas. Entire trials that contained no visible reading behavior were also removed from the dataset. In total, 344 trials were removed. Software controlled cleaning was run using default settings that merged nearby fixations and eliminated very short fixations (< 40 ms). This procedure resulted in the merging of two fixations and deletion of 307 fixations. Remaining data was analyzed based on interest area regions.

IV. RESULTS

Descriptive statistics for eye-tracking variables on critical words and spillover regions can be found in Table 1. Repeated measures ANOVAs with subject as the grouping factor were conducted to compare the effect of reading behavior on critical words and their spillover regions for both neutral and violent critical words. At the critical word, results showed that total time spent reading violent critical words was significantly faster ($M = 374.93$, $SD = 293.61$) than total time spent reading neutral critical words ($M = 404.52$, $SD = 362.99$), $F(1,79) = 9.645$, $p = 0.0026$.

Table 1

Mean and standard deviation for eye-tracking variables split by violent or neutral condition at the critical word and spillover regions

Condition, Region	First-pass Time	Regression Path Time	Total Time
neutral, critical	312.258 (217.975)	335.870 (235.968)	404.521 (362.990)
violent, critical	294.774 (150.654)	318.584 (182.229)	374.927 (293.605)
neutral, spillover	424.863 (251.849)	482.061 (299.408)	575.248 (397.188)
violent, spillover	426.432 (242.443)	473.661 (277.537)	577.896 (371.221)

Note: Mean (Standard Deviation)

Additional ANOVAs were conducted for the other two reading measures, with significant results for first-pass time and regression path time. At the critical word, participants had significantly shorter first-pass time reading of violent critical words ($M = 294.77$, $SD = 150.65$), than neutral critical words ($M = 312.26$, $SD = 217.98$), $F(1,79) = 5.848$, $p = 0.0179$. At the critical word, participants showed a significantly shorter

regression path time for violent critical words ($M = 318.58$, $SD = 182.23$) than for neutral critical words ($M = 335.87$, $SD = 235.97$), $F(1,79) = 6.558$, $p = 0.0123$. These findings suggest that participants processed violent words significantly faster than neutral words, and this was the case for early (first-pass), middle (regression-path time), and late (total time) processing measures. Repeated measures ANOVAs were conducted on these same measures for the spillover regions, and no differences were found to be significant (all p 's $> .05$).

Several media exposure scores were calculated based on self-report survey data collected from each participant via Qualtrics. For the four types of media (movies, video games, television, and reading materials), participants responded with the number of hours in an average month they consume of each type, as well as the percentage of that consumption they consider to be violent. The hours spent consuming a certain type of media was multiplied by the violence percentage to create a violent media score for each subtype of media. The average of these four scores was calculated to generate a violent media score, and the total number of hours spent watching each media type, regardless of violence was averaged to generate a total media score. Three participants did not indicate a percentage of violent content for one or more media types causing those scores and the overall violent media score for these participants to be considered missing data in the analysis.

Overall, the amount of variance within the violent media score measure was very low with most participants reporting a violent media score of five or less (see Figure 1). This low variance was present in all calculated scores of media consumption (see Figure 2 and Figure 3). Additionally, participant responses to the included social desirability

scale were scored and due to no participants answering all thirteen items in the most socially desirable manner, no data was removed due to social desirability bias.

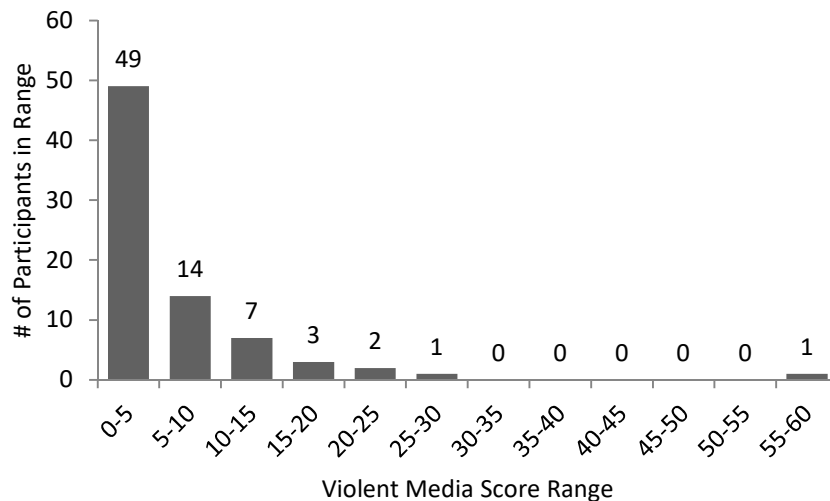


Figure 1. Frequency Distribution for Violent Media Scores. Participant variability to violent media was low, reducing ability to correlate individual exposure to reading measures.

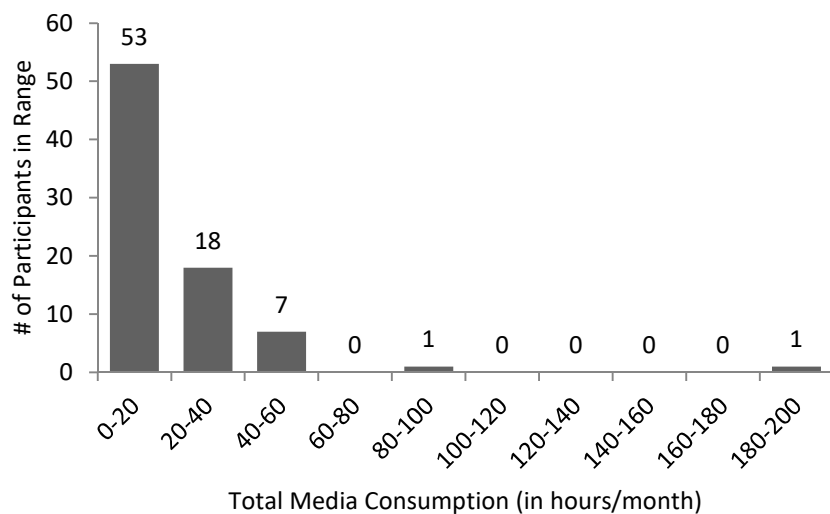


Figure 2. Frequency Distribution for Total Media Consumption. Participant variability in total consumption of media was low, reducing ability to correlate individual exposure to reading measures.

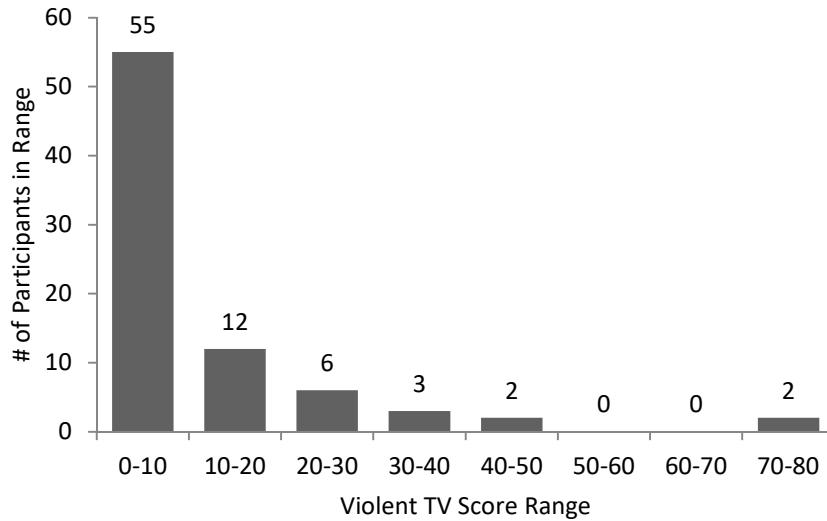


Figure 3. Frequency Distribution for Violent Television Scores. Participant variability in violent television scores was the most varied score but still low, reducing ability to correlate individual exposure to reading measures.

Difference scores for each participant were calculated for first-pass time, regression path time, and total time at the critical word region. These three measures were chosen because they showed significant differences between conditions in the repeated measures ANOVAs. To calculate these difference scores, the mean fixation time for the violent condition was subtracted from the mean fixation time for the neutral condition for each participant, over each measure. Positive values indicated less time, on average, spent fixating the violent condition (relative to the neutral condition), and negative values indicated more time fixating words in the violent condition (relative to the neutral condition).

Pearson's product-moment correlations were conducted to test for correlations between these difference scores and the violent media scores. A marginal correlation was found between difference scores on total time at the critical word region and the participant's violent media score: $r(75) = 0.211$, $p = 0.0655$ (see Figure 4). Non-

significant correlations were found between difference scores and violent media scores for first-pass time, $r(75) = 0.177$, $p = 0.124$, and regression path time, $r(75) = 0.140$, $p = 0.225$.

In order to rule out the possibility that this relationship is driven by greater exposure to media in general, rather than violent media specifically, the correlation between the total media score and the difference score for total time was also calculated and found to be non-significant: $r(78) = 0.0266$, $p = 0.815$ (see Figure 5). In this study, as a participant's exposure to violent media increased, the time they spent fixating the violent critical words also decreased (relative to the neutral critical words).

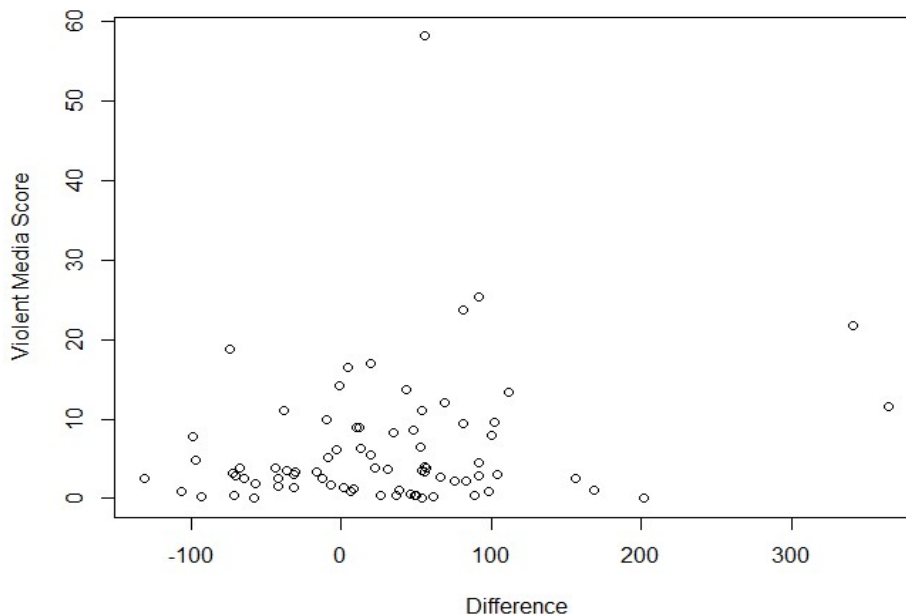


Figure 4. Scatterplot for Correlation between Difference and Violent Media Score. Participant difference score made by subtracting mean total time reading violent critical words from mean total time reading neutral critical words correlated with participant violent media score.

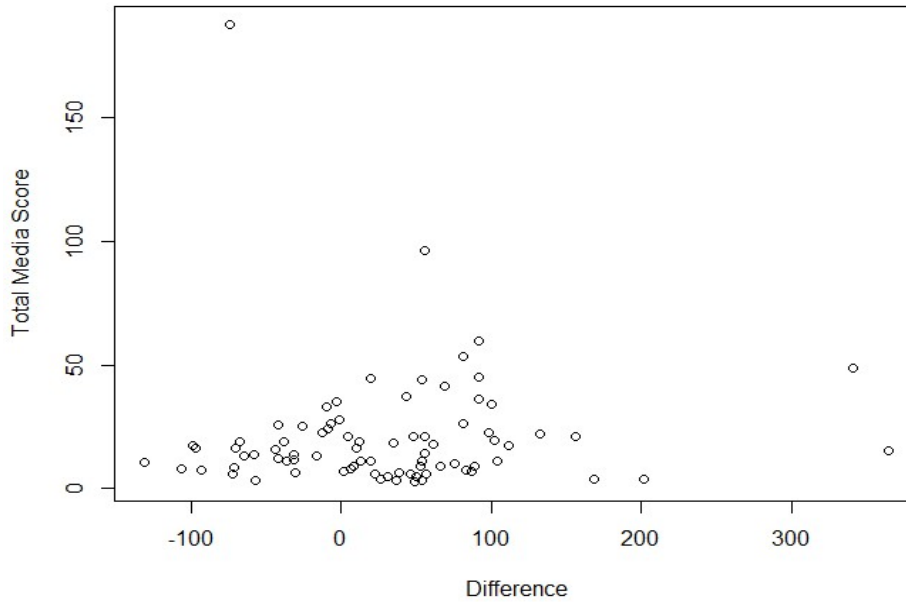


Figure 5. Scatterplot for Correlation between Difference and Total Media Score. Participant difference score made by subtracting mean total time reading violent critical words from mean total time reading neutral critical words correlated with participant total media score.

As mentioned previously, the violent media exposure score was an average of four sub scores with very low variability, so correlations between difference scores and each sub score was conducted to determine which (if any) of the types of media were most responsible for this correlation between violent media and total reading time.

The violent television sub score had a small but statistically significant correlation with difference scores for total time: $r(78) = 0.250, p = 0.0256$ (see Figure 6). The other three sub scores had no significant correlations with the total time difference score (all p 's > 0.05). Correlations were also conducted on the difference scores calculated for first-pass time and regression path time to determine if these eye-tracking measures were also associated with violent television scores. Difference scores for first-pass time had a small, significant correlation with the violent television score: $r(78) = 0.234, p = 0.0367$, while difference scores for regression path time had a smaller and marginally significant

correlation with the violent television scores: $r(78) = 0.197, p = 0.0792$. Overall, the difference between neutral and violent fixation times was positively correlated with time spent watching violent television. This means that time spent fixating the violent critical words (relative to the neutral critical words) decreased as exposure to violent television increased.

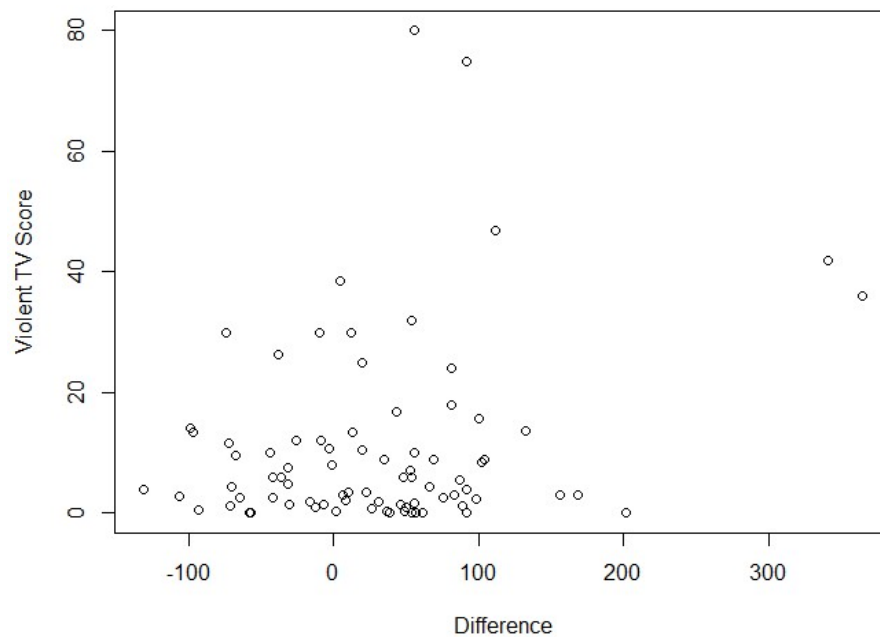


Figure 6. Scatterplot for Correlation between Difference and Violent TV Score. Participant difference score made by subtracting mean total time reading violent critical words from mean total time reading neutral critical words correlated with participant violent television score.

Finally, in order to ensure that the above noted correlations were not spurious, the total time spent reading all words up to the critical word was calculated as a difference score and then correlated to participants' scores of violent media exposure. Importantly, this region did not contain the critical word and therefore was identical between the two conditions. None of these correlations were significant (p 's > 0.05).

V. DISCUSSION

The goal of this study was to investigate a previously studied result regarding emotion word processing while reading words of different valence and to examine the potential association that previous exposure to violent media had on reading behavior of violent versus neutral words. The current study produced results that roughly replicate the previous research regarding word emotionality and how it affects reading time. The average reading time of violent critical words was significantly faster than the average reading time of neutral critical words, which is consistent with previous research regarding emotion and emotion-laden words (Knickerbocker, et al., 2015, Scott et al., 2012). These findings support the theory of emotion processing influencing reading times, as the more emotional violent words were read faster than neutral, non-emotional words.

Emotion words are theorized to be given priority over neutral words, and the valence of the emotion word dictates the reason for giving priority (Lopez, 2009). In the present study, the negatively valenced, violent words would be given priority due to their association with aversive outcomes. This rational was supported by studies using different methodologies including motoric responses (Chen & Bargh, 1999), SCL (Bradley et al., 2001), and ERP (Bartholow et al., 2006). Across these methodologies, it suggests that the valence and emotionality of stimuli influence the processing of the stimuli.

In examining the correlation between violent media exposure and reading times, results showed a positive, marginally significant correlation. In other words, the difference in total time between reading violent and neutral critical words was correlated

with a participant's previous exposure to violent media. While all participants read violent words faster than neutral words without considering violent media consumption, those with higher consumption of violent media showed even faster reading times of violent words. This difference in reading time was largest for participants with higher levels of exposure to violent television. This does not imply causation and this correlation did not reach significance for the violent media score, which was the sum of violent media exposure to each of the four types of violent media included in the survey. In examining these four scores individually however, it was found that the correlation reached significance when only considering violent television scores. Among the four scores, television had the most variability, and while still very limited did represent a significant correlation. This means that while the original hypothesis wasn't completely supported, there was a strong trend in the predicted manner which reached significance when only violent television, the score with most variance, was taken into account.

The results regarding correlations between exposure to violent media and reading time can be related to the desensitization theory. The desensitization theory suggests that repeated exposure to a strong stimulus will reduce the reaction being elicited (Carnagey et al., 2007). In the current study, this would imply that participants with a higher exposure to violent media would show slower reading times for the violent words compared to participants with less exposure. This would occur because these desensitized participants would not have the emotional reaction to the violent words and would therefore process them similarly to the neutral words. While the current study had a limited amount of participants with high exposure to violent media overall, those with a high exposure to violent television showed the opposite effect, reading violent words

faster than neutral words. While this finding could suggest flaws with the desensitization theory, there are alternative explanations for why these findings don't directly follow the desensitization theory.

Factors that influence reading time are the most logical explanation. As mentioned in the study by Juhasz and Rayner (2003), certain variables other than emotionality can influence reading time. For the present study, two of these variables possibly warrant discussion: word frequency and subjective familiarity. Word frequency directly impacts reading time, with more frequently used words being read faster than less frequently used words. The current study controlled for this by pairing words according to their frequency based on data by the English Lexicon Project (Balota et al., 2007). However, the examination of subjective familiarity suggests that even low frequency words could be read faster due to a participant's previous exposure to the word. Participants with higher consumption of violent media could potentially have more familiarity with violent words, and therefore have read the violent words more quickly than the neutral words due to this previous familiarity.

Additionally, it is possible that the participants with more exposure to violent media are those who experience more arousal from violent words, and so consume more violent media. This would account for the faster processing times for violent words in those with greater exposure to violent media. The current study didn't ask participants why they consumed different types of media but one could assume higher consumption of violent media is due to a preference or enjoyment of that type of media. This could then suggest that the violence aspect of certain media is stimulating or arousing to these participants. This would then require considering the findings regarding arousal and how

it impacts word processing. The previously cited study by Citron et al. (2014) suggests that high-arousal negative words were read faster than low-arousal positive words. This finding could tie into the present study which compared negative words to neutral words. Selected words were not controlled for any aspects of arousal, so it is possible participants with an affinity or preference for violent media experienced higher arousal to the negative words when compared to neutral words, thus suggesting arousal may have played a role in the faster reading times. However, Citron et al. (2014) compared the arousal level of words against both positive and negative words, while the present study only compared negative, specifically violent, words against neutral, nonviolent words.

Implications, Limitations, and Future Directions

The main implication of the present study is the novel observation that previous exposure to violent media appears to have a relationship with reading behavior. Despite the limited range of variability within the sample in terms of violent media consumption, a noticeable difference was found when comparing the correlations between violent media consumption and total media consumption. The correlation coefficient for violent media score and the difference in reading time between violent and neutral critical words was marginally significant, while the correlation coefficient for total media score and this difference was not significant and close to zero. This major difference between violent media score and the total media score suggests that violent media exposure does relate to the time spent reading violent critical words compared to neutral critical words. The present study is the first to demonstrate this relationship, and therefore further research is warranted in investigating other ways violent media exposure may relate to aspects of behavior.

The primary limitation of the present study was the limited variance in violent media exposure amongst participants. The mean scores for the four types of media examined were very low, with many participants not reporting any exposure to violent reading materials or video games on a monthly basis. This limitation reduces the current study's ability to examine how higher levels of exposure to various types of media correlate to participant reading behavior. Despite this issue, a significant correlation was found for one form of media, which suggests that there may be an even stronger correlation between violent media exposure and reading times.

Future research could take the basic methodology used in the current study and attempt to reexamine the hypotheses with a more diverse sample. Recruiting participants from more relevant locations such as movie theaters, media conventions, or other venues could increase the variability of exposure within the sample and therefore allow for more accurate examination of how exposure to violent media may relate to reading behavior. A small but significant finding was found with a very limited sample so there is potential for a more robust correlation given a more varied sample. Additionally, future research could attempt to broaden the survey used to gauge previous exposure to violent media, asking participants more in-depth questions about their preferences and history. The present study asked about current media consumption habits, which could have been impacted due to recruiting college students whose media consumption is limited by course work.

Despite decades of research on how violent media relates to behavior, the actual size of the field appears to be limited in scope to prioritize aggression and desensitization studies. The current study shows that there may be many other ways through which

violent media impacts behavior and further research is needed to truly understand what the increasing prevalence of violent media has on our behaviors. By examining specific behaviors, researchers may eventually be able to answer the bigger questions about violent media that are otherwise out of reach due to ethical and methodological issues.

APPENDIX SECTION

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APPENDIX A: CONSENT FORM

INFORMED CONSENT

Principal Investigator:
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Co-Investigator/Faculty Advisor:
Dr. Kristen Tooley
Assistance Professor of Psychology
ktooley@txstate.edu

This consent form will give you the information you will need to understand why this research study is being done and why you are being invited to participate. It will also describe what you will need to do to participate as well as any known risks, inconveniences or discomforts that you may have while participating. We encourage you to ask questions at any time. If you decide to participate, you will be asked to sign this form and it will be a record of your agreement to participate. You will be given a copy of this form to keep.

PURPOSE AND BACKGROUND

You are invited to participate in a research study to learn more about eye-movement during reading. The information gathered will be used to examine how previous exposure to different types of media influences the movements of the eye while reading sentences of varying content.

PROCEDURES

You will be asked to read a number of sentences while having your eye-movements tracked via an eye-tracking system. The eye-tracking system (EyeLink 1000 Plus, manufactured by SR Research) measures where, and how long you look at a particular part of the screen by shining a weak infrared light into one of your eyes. You will not be able to see this light (because infrared is below the visible spectrum of humans), and this light will in no way harm your eyes. The light from the eye tracker is comparable to what you would receive on a bright, sunny day. The eye tracker requires that your head remain as still as possible, so you will be asked to rest your head and chin on a headrest in front of the computer screen, while your eye movements are being recorded. Every effort will be made to ensure you are comfortable in the headrest initially, but you are encouraged to take breaks or ask that the headrest be readjusted, at any point, to prevent any unnecessary discomfort.

After this, you will fill out a survey detailing your consumption of media, such as television, film, books, and video games, as well the content of that media and a brief social desirability scale

TIME TO COMPLETE THE STUDY

This study session will last no more than 60 minutes.

RISKS/DISCOMFORTS

This study requires that you report aspects of your media consumption and read sentences on a computer screen. Therefore, there are no anticipated risks, beyond those encountered in daily life, associated with participating in this study. However, you may encounter eye fatigue from reading on a computer screen or discomfort from keeping your head in the headrest for extended periods. To prevent this from causing you unnecessary discomfort, you are free to take a break, at any point, by informing the researcher.

BENEFITS/ALTERNATIVES

There will be no direct benefit to you from participating in this study. However, the information that you provide insight in to the potential effects exposure to media has on the way people read sentences.

EXTENT OF CONFIDENTIALITY

Your participation in this study will remain confidential, and your identity will not be stored with your data. The only identifying information you will provide is your signature on this form, which will not be linked in any way to the data collected in this study. Any identifiable information obtained in connection with this study will remain confidential and will be disclosed only with your permission or as required by law. The members of the research team and the Texas State University Office of Research Compliance (ORC) may access the data. The ORC monitors research studies to protect the rights and welfare of research participants.

Your name will not be used in any written reports or publications which result from this research. Data will be kept for three years (per federal regulations) after the study is completed and then destroyed.

PAYMENT/COMPENSATION

You will receive 2 course participation credits for participating in this study. You are also able to complete a written assignment as an alternative to participation. The details of this assignment can be obtained from your course instructor.

PARTICIPATION IS VOLUNTARY

You do not have to be in this study if you do not want to. You may also refuse to answer any questions you do not want to answer. If you volunteer to be in this study, you may withdraw from it at any time without consequences of any kind or loss of benefits to which you are otherwise entitled.

QUESTIONS

If you have any questions or concerns about your participation in this study, you may contact the Principal Investigator, Max Helfrich via email at mrh179@txstate.edu

This project 2017728 was approved by the Texas State IRB on 05/21/17 Pertinent questions or concerns about the research, research participants' rights, and/or research-related injuries to participants should be directed to the IRB Chair, Dr. Jon Lasser 512-245-3413 – (lasser@txstate.edu) or to Monica Gonzales, IRB Regulatory Manager 512-245-2314 - (meg201@txstate.edu).

DOCUMENTATION OF CONSENT

I have read this form and decided that I will participate in the project described above. Its general purposes, the particulars of involvement and possible risks have been explained to my satisfaction. I understand I can withdraw at any time.

Printed Name of Study Participant

Signature of Study Participant

Date

Signature of Person Obtaining Consent

Date

APPENDIX B: EXPERIMENTAL SENTENCES

Experimental sentences used in the study (each participant randomly assigned to a single block)

Block 1

1. The local news reported that deadly storms were forming.
2. The man's response was viewed as angry by the professional evaluator.
3. Jessica says she often sees the bookworm hiding outside the library.
4. The previously unknown murderous organization became well known in the eighties.
5. Onlookers described the agents as mysterious and surprising.
6. The description of the Irish was not very flattering.
7. Becca was amazed to see the crime from her elevated position.
8. Information about the infamous fish was limited to speculation.
9. Katie witnessed the abusive man's attempts to get home.
10. The photo of the assassin appeared on the front page of the newspaper.
11. The blaze prevented the intruder from entering the building.
12. The entire performance was seen as entertaining to Amanda's friends and family.
13. The tools were used to slaughter the wounded animal.
14. The story being told by the salesmen didn't seem to hold true.
15. Fans of the series were hurt by the latest episode.
16. The song about the thug was played constantly on the radio.
17. Kerry's speech served to terrorize those who heard it.
18. The stories about the man's cruelty were legendary.
19. A plaque was installed to commemorate the formation of the army.
20. The presentation was meant to honor the veterans, according to David.
21. Feeling weary from the climb, Julie knelt on the ground.
22. It was during the speech that the fatal incident took place.
23. The crowd claimed that the vocalist jumped off the stage.
24. Claims made by the victim were proven to be false.
25. The old man carried his luggage with a sense of nobility.
26. According to the news, the romantic act was seen by everyone in attendance.
27. Mike was able to see the horrific creature first hand.
28. Those tasked with planning the burglary were meticulous in detail.
29. Steve was famous for his interesting feats of endurance and strength.
30. The very sight of the queen invoked strong feelings in the guards.
31. The mayor discussed the maneuvers by his opponents with his wife.
32. The doctors attempted to resurrect the patient's appearance.
33. People nearby viewed the jogger with suspicion and concern.
34. The rancher carried his find back to his barn.

Block 2

1. The local news reported that larger storms were forming.

2. The man's response was viewed as complete by the professional evaluator.
3. Jessica says she often sees the mugger hiding outside the library.
4. The previously unknown adolescent organization became well known in the eighties.
5. Onlookers described the assault as mysterious and surprising.
6. The description of the attacker was not very flattering.
7. Becca was amazed to see the plane from her elevated position.
8. Information about the infamous killer was limited to speculation.
9. Katie witnessed the misguided man's attempts to get home.
10. The photo of the orchestra appeared on the front page of the newspaper.
11. The blaze prevented the fireman from entering the building.
12. The entire performance was seen as humiliating to Amanda's friends and family.
13. The tools were used to restore the wounded animal.
14. The story being told by the kidnapper didn't seem to hold true.
15. Fans of the series were hooked by the latest episode.
16. The song about the fiddle was played constantly on the radio.
17. Kerry's speech served to astonish those who heard it.
18. The stories about the man's trumpet were legendary.
19. A plaque was installed to commemorate the massacre of the army.
20. The presentation was meant to attack the veterans, according to David.
21. Feeling weary from the poison, Julie knelt on the ground.
22. It was during the speech that the larger incident took place.
23. The crowd claimed that the vandal jumped off the stage.
24. Claims made by the client were proven to be false.
25. The old man carried his misery with a sense of nobility.
26. According to the news, the criminal act was seen by everyone in attendance.
27. Mike was able to see the colossal creature first hand.
28. Those tasked with planning the schedules were meticulous in detail.
29. Steve was famous for his dangerous feats of endurance and strength.
30. The very sight of the enemy invoked strong feelings in the guards.
31. The mayor discussed the vandalism by his opponents with his wife.
32. The doctors attempted to mutilate the patient's appearance.
33. People nearby viewed the invader with suspicion and concern.
34. The rancher carried his kill back to his barn.

APPENDIX C: FILLER SENTENCES

Filler sentences used in the study, mixed in with experimental sentences (each participant randomly assigned to a single block)

Block 1

1. The speaker selected by the group gave a presentation.
2. The architect selected by the firm had years of experience.
3. The junkie watched by the cop walked very slowly.
4. The mouse watched by the cat ate some delicious cheese.
5. The student graded by the professor received high marks relative to the rest of his peers.
6. The chef graded by the panel used lots of butter.
7. The teacher loved by the class smiled a lot and was a great listener.
8. The singer loved by the fan married a movie star.
9. The suspect identified by the driver fled the scene.
10. The victim identified by the doctor was in bad shape.
11. The teacher appreciated by the principal organized a fundraiser to support the new library.
12. The secretary appreciated by the accountant kept things very organized.
13. The protesters excited by the politician chanted loudly.
14. The governor excited by the liberals called a press conference.
15. The child stopped by the lifeguard was running near the side of the pool.
16. A driver stopped by the policeman was drinking and driving.
17. The voters convinced by the mayor reelected him by a very wide margin.
18. The consumer convinced by the salesman bought the new stove.
19. The bird located by the scientist was endangered due to habitat destruction and poaching.
20. The dog located by the hunter had an injured paw.
21. The child scolded by the babysitter went to bed.
22. The man scolded by the security guard was heavily intoxicated.
23. The child injured by the Labrador cried.
24. The passengers injured by the reckless driver needed medical attention.
25. A horse frightened by the coyote galloped away toward the safety of the barn.
26. The homeowner frightened by a loud noise called the police.
27. The imposter caught by the detective started to panic and asked to call his lawyer.
28. A spy caught by the FBI agent went to prison.
29. The countess offended by the duke told her husband.
30. The tutor offended by the delinquent refused to teach him.
31. The chipmunk stalked by the owl scurried away and hid under a large bush.
32. The campers stalked by the cougar were in grave danger.

33. The surgeons helped by the nurses operated all night.
34. The student helped by a counselor chose a new major.
35. The miners rescued by the paramedics recovered slowly from their harrowing experience.
36. The man rescued by the sailor was wet and cold.
37. The carpenter questioned by the inspector acted nervous.
38. The butler questioned by the widow lied about his actions.
39. The girl fascinated by the monkey giggled as she played games with him.
40. The toddler fascinated by the parrot fed him many peanuts.
41. The customers ignored by the salesman were impatient.
42. A hobo ignored by the conductor snuck aboard the train.
43. The employee accused by the supervisor got fired from his job at the credit union.
44. The juror accused by the judge was held in contempt.
45. The baby pleased by a puppy stopped crying.
46. The king pleased by the jester pardoned the accused thief.
47. The woman astounded by the magician applauded and whistled after each trick.
48. A man astounded by the astronaut read his new book.
49. The man lifted by the elephant held on tightly and yelled for someone to help him.
50. The monkey lifted by the trainer begged for a treat.
51. The player shoved by the referee missed the goal.
52. The woman shoved by the thief screamed for the police.
53. The mouse grabbed by an eagle squeaked.
54. A child grabbed by the guard had wandered into traffic.
55. The boy pulled by some playmates struggled and asked them to leave him alone.
56. The girl pulled by her father begged to play longer.
57. The dog startled by the intruder barked and gave a long, threatening growl.
58. The Girl Scout startled by the woman dropped her cookies.
59. The nerd rejected by the fraternity had no friends.
60. The man rejected by the woman bought himself a drink.
61. The actor replaced by the director filed a lawsuit.
62. The pitcher replaced by the coach got the big win.
63. The aide cheated by the employer lost his pay.
64. The victim cheated by the insurance agency had medical bills.
65. The player praised by the scout received a scholarship for tuition, room, and board.
66. The pupil praised by the academic counselor studied extra hard.
67. The swimmer tired by the coach hated the backstroke and long training sessions.
68. The woman tired by the children needed a short break.
69. The contestant fooled by the deejay received no prize.
70. The policeman fooled by the suspect released him from custody.

71. The passenger skipped by the stewardess got no peanuts or an in-flight beverage.
72. A first-grader skipped by the bus driver walked to school.
73. Based on the previous weather, Jerry expects it to rain tomorrow.

Block 2

1. The speaker selected by the group gave a wonderful presentation at the conference.
2. The architect selected by the firm had years of experience.
3. The junkie watched by the cop walked very slowly down the empty street.
4. The mouse watched by the cat ate some delicious cheese.
5. The student graded by the professor received high marks.
6. The chef graded by the panel used lots of butter.
7. The teacher loved by the class smiled a lot.
8. The singer loved by the fan married a movie star.
9. The suspect identified by the driver fled the scene before the police arrived.
10. The victim identified by the doctor was in bad shape.
11. The teacher appreciated by the principal organized a fundraiser.
12. The secretary appreciated by the accountant kept things very organized.
13. The protesters excited by the politician chanted loudly and cheered when the speech ended.
14. The governor excited by the liberals called a press conference.
15. The child stopped by the lifeguard was running.
16. A driver stopped by the policeman was drinking and driving.
17. The voters convinced by the mayor reelected him.
18. The consumer convinced by the salesman bought the new stove.
19. The bird located by the scientist was endangered.
20. The dog located by the hunter had an injured paw.
21. The child scolded by the babysitter went to bed early without having any dessert.
22. The man scolded by the security guard was heavily intoxicated.
23. The child injured by the Labrador cried loudly and called for his mother.
24. The passengers injured by the reckless driver needed medical attention.
25. A horse frightened by the coyote galloped away.
26. The homeowner frightened by a loud noise called the police.
27. The imposter caught by the detective started to panic.
28. A spy caught by the FBI agent went to prison.
29. The countess offended by the duke told her husband about the rude behavior.
30. The tutor offended by the delinquent refused to teach him.
31. The chipmunk stalked by the owl scurried away.
32. The campers stalked by the cougar were in grave danger.
33. The surgeons helped by the nurses operated all night on one critical patient.

34. The student helped by a counselor chose a new major.
35. The miners rescued by the paramedics recovered slowly.
36. The man rescued by the sailor was wet and cold.
37. The carpenter questioned by the inspector acted nervous and unsure about his answers.
38. The butler questioned by the widow lied about his actions.
39. The girl fascinated by the monkey giggled.
40. The toddler fascinated by the parrot fed him many peanuts.
41. The customers ignored by the salesman were impatient to the point of leaving the store.
42. A hobo ignored by the conductor snuck aboard the train.
43. The employee accused by the supervisor got fired.
44. The juror accused by the judge was held in contempt.
45. The baby pleased by a puppy stopped crying and reached out to touch it.
46. The king pleased by the jester pardoned the accused thief.
47. The woman astounded by the magician applauded.
48. A man astounded by the astronaut read his new book.
49. The man lifted by the elephant held on tightly.
50. The monkey lifted by the trainer begged for a treat.
51. The player shoved by the referee missed the goal and the game ended in a tie.
52. The woman shoved by the thief screamed for the police.
53. The mouse grabbed by an eagle squeaked and managed to squirm itself free.
54. A child grabbed by the guard had wandered into traffic.
55. The boy pulled by some playmates struggled.
56. The girl pulled by her father begged to play longer.
57. The dog startled by the intruder barked.
58. The Girl Scout startled by the woman dropped her cookies.
59. The nerd rejected by the fraternity had no friends to teach him the ropes.
60. The man rejected by the woman bought himself a drink.
61. The actor replaced by the director filed a lawsuit alleging unlawful termination.
62. The pitcher replaced by the coach got the big win.
63. The aide cheated by the employer lost his pay and had to borrow money.
64. The victim cheated by the insurance agency had medical bills.
65. The player praised by the scout received a scholarship.
66. The pupil praised by the academic counselor studied extra hard.
67. The swimmer tired by the coach hated the backstroke.
68. The woman tired by the children needed a short break.
69. The contestant fooled by the deejay received no prize for calling into the radio show.
70. The policeman fooled by the suspect released him from custody.

71. The passenger skipped by the stewardess got no peanuts.
72. A first-grader skipped by the bus driver walked to school.
73. Based on the previous weather, Jerry expects it to rain tomorrow.

APPENDIX D: SOCIAL DESIRABILITY SURVEY

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to you.

1.	It is sometimes hard for me to go on with my work if I am not encouraged.	TRUE	FALSE
2.	I sometimes feel resentful when I don't get my way.	TRUE	FALSE
3.	On a few occasions, I have given up doing something because I thought too little of my ability.	TRUE	FALSE
4.	There have been times when I felt like rebelling against people in authority even though I knew they were right.	TRUE	FALSE
5.	No matter who I'm talking to, I'm always a good listener.	TRUE	FALSE
6.	There have been occasions when I took advantage of someone.	TRUE	FALSE
7.	I'm always willing to admit it when I make a mistake.	TRUE	FALSE
8.	I sometimes try to get even rather than forgive and forget.	TRUE	FALSE
9.	I am always courteous, even to people who are disagreeable.	TRUE	FALSE
10.	I have never been irked when people expressed ideas very different from my own.	TRUE	FALSE
11.	There have been times when I was quite jealous of the good fortune of others.	TRUE	FALSE
12.	I am sometimes irritated by people who ask favors of me.	TRUE	FALSE
13.	I have never deliberately said something that hurt someone's feelings.	TRUE	FALSE

APPENDIX E: MEDIA CONSUMPTION SURVEY

Please record your answers to the following questions in the space provided:

During a typical month, how many hours do you spend watching television?

_____ Hours per month on average (Number in hours)

What proportion of the television you watch during a month do you consider to be violent?

_____ Percent (Number 0 – 100)

During a typical month, how many hours do you spend watching movies?

_____ Hours per month on average (Number in hours)

What proportion of the movies you watch during a month do you consider to be violent?

_____ Percent (Number 0 – 100)

During a typical month, how many hours do you spend playing video games?

_____ Hours per month on average (Number in hours)

What proportion of the video games you play during a month do you consider to be violent?

_____ Percent (Number 0 – 100)

During a typical month, how many hours do you spend consuming reading material?

_____ Hours per month on average (Number in hours)

What proportion of the reading material you consume during a month do you consider to be violent?

_____ Percent (Number 0 – 100)

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