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GRUESOME EVIDENCE: IS VERBAL OR VISUAL EVIDENCE MORE EFFECTIVE IN
ELICITING GUILTY VERDICTS?

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By

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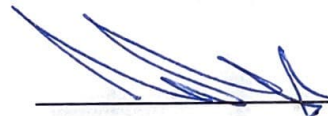
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Jackson College of Graduate Studies at the University of Central Oklahoma

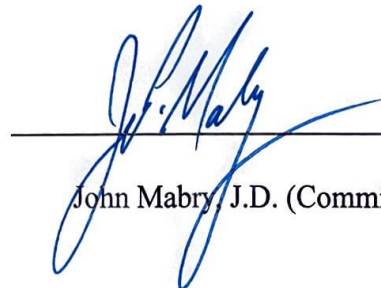
A THESIS APPROVED FOR
THE MASTER OF SCIENCE IN FORENSIC PSYCHOLOGY

 By

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Abstract

Previous research shows both visual and verbal gruesome evidence have a positive correlation with guilty verdicts. Although Bright and Goodman-Delahunty (2006) came closest, no previous research, to our knowledge, has directly compared the effectiveness of visual and verbal gruesome evidence on guilty verdicts. This study aimed to bridge that gap within literature. I hypothesized that participants exposed to either type of gruesome evidence will give higher guilt ratings than those exposed to nongruesome evidence. Additionally, I hypothesized that visual gruesome evidence would be more effective at increasing guilt ratings than verbal gruesome evidence and that this difference would be mediated by negative emotion. The study used a 2 x 2 experimental design manipulating photographic and written gruesomeness within a trial summary about a murder and used the modified PANAS to measure negative emotion. Results supported the second hypothesis, but not the first. Despite a successful manipulation based on our manipulation check, gruesome verbal descriptions did not increase guilt ratings or negative emotion. However, gruesome photographic evidence did, regardless of whether it was paired with gruesome or nongruesome verbal descriptions. This effect was mediated by disgust and sadness, but not by anger and anxiety. Implications are discussed. These results provide direction not only for academia, but for those acting as attorneys' and judges in trial when determining what evidence to submit and allow the jurors to be exposed too. Future research might manipulate verbal evidence auditorily, rather than through a written medium, or manipulate what legal party introduces gruesome evidence.

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Gruesome Evidence: Is Verbal or Visual Evidence More Effective in Eliciting Guilty Verdicts?

In many crimes, the presence of gruesome evidence is expected. From murder trials to civil lawsuits, verbal and visual depictions of gruesome and violent acts are presented to jurors, but the effect this evidence has on those viewing it is not fully understood. Through a number of studies, the connection between gruesome evidence and increased negative emotion in jurors and increased guilty verdicts is becoming more and more evident (Bright & Goodman-Delahunty, 2006; Douglas et al., 1997; Matsuo & Itoh, 2016; Salerno, 2017).

Several studies specifically examine gruesome photographic evidence and the effect of viewing this evidence on mock jurors (Bright & Goodman-Delahunty, 2006; Bright & Goodman-Delahunty, 2011; Douglas et al., 1997; Matsuo & Itoh, 2016; Salerno, 2017). Law is not free of emotion, as there is no way to erase emotion from reasoning (Banes, 1996), and these studies support the claim that emotion plays a role in courtrooms. Some studies have found that gruesome photographic evidence, as well as gruesome verbal evidence elicits negative emotions from mock jurors (Douglas et al., 1997; Bright & Goodman-Delahunty, 2006; Matsuo and Itoh, 2016; Salerno, 2017). The feeling of disgust and anger specifically are elicited by emotional testimony and gruesome photographs (Bright & Goodman-Delahunty, 2006; Salerno, 2017). Further, a positive correlation has been found between negative emotions and guilty verdicts given by mock jurors.

However, how this type of evidence affects emotions in jurors is not clear. There have been instances in which research has failed to find the correlation between gruesome evidence and increased negative emotion (Bright & Goodman-Delahunty, 2011). In addition to emotion, altering the perception of the jurors with gruesome photographs affects jury verdicts.

Specifically, in a study conducted by Bright & Goodman-Delahunty (2011) injury severity, as well as exposure to gruesome photographs, were manipulated in the context of a civil trial to study the impact these might have on perceptions of the defendant. Transcripts containing descriptions of different injury severity (moderate vs high) were paired with either gruesome or nongruesome photographs. Both the verbal and visual gruesome evidence caused the participants to view the defendant as more negligent than those exposed to the nongruesome photographs and the transcript describing only moderate injury of the plaintiff.

Numerous studies have discovered a positive correlation between negative emotions and guilty verdicts, yet the type of gruesome evidence that is more effective in eliciting negative emotions is still in question. Some studies find verbal evidence to be most effective (Bright & Goodman-Delahunty, 2004; Matsuo & Itoh, 2016), while others have found visual evidence to be more effective (Bright & Goodman-Delahunty, 2006). Despite the conflicting results, in some cases by the same authors, this discrepancy has not yet been reconciled. Therefore, research should be directed towards assessing the effectiveness of these gruesome evidence delivery systems.

Legal Relevance

Within the United States legal system, gruesome evidence is not introduced to the jury until it has been reviewed and approved by a judge (Epstein & Mannes, 2016; Grady et al., 2018). This approval depends on the prejudicial value of the evidence compared to the probative value. Meaning, if the judge determines the evidence to be too prejudicial (creating an unnecessary negative view of the defendant), they may require that piece of evidence to be withheld from trial. This is outlined in Rule 403, which allows for evidence to be excluded if it is

viewed as confusing, creating unnecessary or unfair prejudice, or appears misleading to the jury (Epstein & Mannes, 2016; law.cornell.edu).

While Rule 403 is protective against overly gruesome, prejudicial evidence, there are no actual guidelines for judges to follow and judges, while highly educated, are human. Judges could possibly be impacted by these photographs just as significantly as the lay person (Dolcos & McCarthy, 2006). Simply put, with no rubric to follow, one judge's ruling of evidence being overly gruesome can vary greatly from another's (Epstein & Mannes, 2016). This opens the door to a great degree of variation within the legal system. Further understanding of what is considered gruesome and how that impacts jury members could allow for general guidelines to be put into effect. Further, these guidelines could create a fairer environment for trials to take place within.

Evidence

The need for evidence in trials is obvious, but what constitutes usable, understandable, and fair evidence is less so. While a piece of evidence might inform the jury members, it can just as easily create unnecessary bias towards the defendant, creating an unfair trial (Bright & Goodman-Delahunty, 2004; Gold, 1984; Grady et al., 2018). Additional information the evidence might introduce might be seen as more prejudicial, outweighing the possible probative value it could have (Gold, 1984; Grady et al., 2018). Evidence considered overly prejudicial is required to be excluded from trial (Bright & Goodman-Delahunty, 2004).

Evidence may be given to jurors through several modalities including visually and verbally (Douglas et al., 1997; Edwards & Mottarella, 2014). In terms of visual evidence, gruesome photographs can be considered prejudicial due to the impact these images could possibly have on jury reasoning (Douglas et al., 1997; Grady et al., 2018; Salerno, 2017).

Specifically, some argue the emotions possibly elicited from jurors after being exposed to these photographs cloud jurors' reasoning, as strong emotions can hinder reasoning (Greene & Haidt, 2002), creating a biased environment negatively impacting the defendant in some cases (Bright & Goodman, 2006; Grady et al., 2018). Similarly, verbal evidence can induce emotions causing parallel problems, but the research surrounding the true effectiveness of this evidence delivery system is mixed (Bright & Goodman-Delahunty, 2004; Bright & Goodman-Delahunty, 2006).

Visual and Verbal Processing

The processing of pictures (visual) and words (verbal) information requires the use of different neural pathways. Research has found that negative picture processing occurs in areas of the brain such as the bilateral amygdala, fusiform gyri, left hippocampus, and right insula, while negative word processing occurs in different areas such as the dorsolateral and dorsomedial prefrontal cortex, and the fronto-parietal network (Feng et al., 2021). Meaning, when mock jurors are exposed to graphic photographic evidence, they process that differently than if they were given gruesome verbal evidence. An additional difference is the perceived engagement of those exposed to video in comparison to those exposed to text. Yadav et al. (2011) found that participants exposed to a video depicting fictional people diagnosed with HIV/AIDS showed more engagement and stronger emotional reaction than to those exposed only to a text explaining the story of the fictional characters.

Research has shown an increase in memory performance when participants study visuals instead of, or in addition to, verbal stimuli (McBride & Doshier, 2002), which is known as the picture superiority effect. An increased ability to recall due to more elaborate processing of the visual evidence could possibly allow for stronger emotions, as the memory is more easily accessible (Hockley, 2008; McBride & Doshier, 2002). The emotional processing for these two

stimuli (visual and verbal) requires the use of different pathways (Feng et al., 2021) and additionally, individual differences in preferred processing methods can further effect how different stimuli are processed and how well they are processed by different individuals (Childers et al., 1985). Childers et al. (1985) explain individuals vary in stimuli preferences and processing ability, which can cause one to favor either visual or verbal stimuli, influencing how deeply they process that information.

Emotions

Several studies have found that gruesome evidence elicits negative emotions from participants (Douglas et al., 1997; Bright & Goodman-Delahunty, 2004; Bright & Goodman-Delahunty, 2006; Matsuo & Itoh, 2016; Salerno, 2017). These negative emotions specifically include, but are not limited to, anger, sadness, and disgust (Bright & Goodman-Delahunty, 2004; Salerno, 2017). Generally, as more negative emotion is elicited, guilty judgments increase. (Douglas et al., 1997; Bright & Goodman-Delahunty, 2006). Despite the number of studies that found a correlation between emotions and decision making, the understanding that emotions impact reasoning and understanding was lost on the legal world for a time, but in more recent year's emotion has drawn more attention due to the impact it may have in the courtroom (Bandes, 1996; Bandes, 2012). A pre-existing emotion towards a target can cause a skew in judgement as observers want to keep pre-existing emotions and new evaluations congruent (Brosch et al., 2013; Forgas, 1995; Schwarz, 2000).

In simple terms, if one's pre-existing emotions towards a target are anger and disgust, they are already more likely to evaluate that target more negatively despite new information. This can be identified as affect infusion (Forgas, 1995). Affect infusion occurs when one's judgment of another is influenced by previously felt emotions, positive or negative (Forgas,

1995; Salerno, 2017). Jurors experiencing negative emotions due to the graphic, gruesome evidence could unconsciously and/or mistakenly attribute the negative emotions elicited from the evidence to how they feel about the defendant directly (Salerno, 2017). In addition, it has been found that cognition and emotion influence one another. Emotion can determine how the environment and/or information is received, as well as influence decisions, while cognitive processing needs to take place in order for emotion to be elicited (Brosch et al., 2013). Emotions have been found to influence decision making (Schwarz, 2000; Brosch et al., 2013; Salerno, 2017) and gruesome evidence was found to elicit emotions (Bright & Goodman-Delahunty, 2004; Bright & Goodman-Delahunty, 2006; Matsuo & Itoh, 2016; Salerno, 2017), yet an understanding of which type of gruesome evidence (verbal or visual) does so more significantly has not been found.

Existing Research

Researchers have studied the correlation between gruesome crime scene photographs and guilty verdicts in many ways. Salerno (2017), for example, compared the impact of colored gruesome photographs to black and white photographs on eliciting emotions from participants. It was found that colored photographs did elicit negative emotions, such as disgust, while black and white gruesome photographs did not.

In an earlier study, Douglas et al. (1997), found similar findings by comparing participants exposed to gruesome photographs (an autopsy photo), to participants lacking exposure to the gruesome photograph. Those exposed to the gruesome evidence had an increase in negative emotions and as these emotions increased, the more likely participants were to give a guilty verdict. In both studies, participants were exposed to gruesome photographic evidence and this exposure influenced their emotions as well as their verdicts. In addition to these two studies,

multiple others have compared the viewing of a graphic photograph, not only to viewing no photograph at all, but to viewing a non-gruesome photograph as well and the connection between gruesome photographs and guilty verdicts continues to be evident (Bright & Goodman-Delahunty, 2006; Bright & Goodman-Delahunty, 2011; Matsuo & Itoh, 2016; Salerno, 2017; Grady et al., 2018).

Similar to visual gruesome evidence, verbal evidence can elicit negative emotions and increase the likelihood of guilty verdicts (Bright & Goodman-Delahunty, 2004; Matsuo & Itoh, 2016). Although this correlation is seen in verbal evidence, it is still questioned as additional studies have failed to find a significant correlation between gruesome verbal evidence and an increase in negative emotion and guilty verdicts. For example, Bright and Goodman-Delahunty (2006) conducted a study in which participants either received neutral verbal stimuli through a trial transcript, or gruesome verbal stimuli. Verbal gruesome evidence had no significant effect on eliciting negative emotions. Despite the number of studies simultaneously examining both visual and verbal gruesome evidence, visual and verbal evidence have yet to be directly compared to one another.

Bright and Goodman-Delahunty (2006) came closest to comparing visual and verbal evidence. In this study 102 University of New South Wales undergraduate students were randomly assigned to one of five groups. These groups were: verbal gruesome, verbal non-gruesome, gruesome photographs, non-gruesome photographs, and no photographs. Those in the verbal conditions were given one of two trial transcripts. One included gruesome details, while the other kept gruesome information out of the written transcript. In the two photographs groups, participants saw actual crime scene photographs from a murder. These photographs included both pictures of the body and the scene surrounding it.

The participants started the study by completing the Juror Negative Affect Scale (JUNAS), an instrument created by Bright and Goodman-Delahunty to measure the participants' negative affect before being exposed to visual or verbal stimuli. Participants then read the trial transcripts (20 pages) and viewed photographs (depending on what condition they were given). After this they were asked to take the JUNAS once again and answer questions asking about how guilty they found the defendant and how confident they were in this verdict. Participants gave significantly more guilty ratings after viewing photographs (gruesome or non-gruesome) compared to those in the no photograph condition. It was found there was no significant relationship between gruesome verbal evidence and an increase in guilty verdicts. This study is informative on these two types of stimuli in general, and had the necessary design to compare verbal to visual evidence directly, but does not statistically do so. This direct comparison has yet to be conducted by anyone to our knowledge.

Current Research Study

This present study furthers the understanding of how effective gruesome evidence is on verdict decisions when delivered visually or verbally. Visual accounts of gruesome evidence (i.e., photographs) will evoke stronger negative emotion than verbal depictions from participants (i.e., trial transcripts) and, in turn, the participant will be more likely to give a higher guilt rating. Additionally, I expected that emotion would act as a mediator of the relationship between gruesome evidence and verdict decision.

Hypotheses

1. Those exposed to either type of gruesome evidence will be more likely to give a guilty verdict and render higher guilt ratings than those exposed to either type of non-gruesome evidence.

2. Those exposed to gruesome evidence will report more negative emotions than those exposed to non-gruesome evidence.
3. More negative emotions will predict higher guilt ratings and more guilty verdicts.
4. Those exposed to gruesome crime scene photographs will report higher negative emotions than those exposed to gruesome testimony.
5. Those exposed to gruesome crime scene photographs will report greater guilty verdicts than those exposed to gruesome testimony.
6. The effects of the gruesomeness manipulations on verdicts will be mediated by negative emotion.

Method

The present study was a post-test only 2 (Visual: gruesome photograph vs nongruesome photograph) x 2 (Verbal: gruesome trial transcript vs nongruesome trial transcript) between subject design. This research study investigated the impact of gruesome evidence, both verbal and visual, on negative emotions and investigated the possible mediating effects of these negative emotions on the decision of whether or not one is guilty.

Participants

Participants were recruited from the University of Central Oklahoma through SONA, an online research system. All participants were 18 years of age or older, United States citizens, and had no felony charges. Participants who completed the study were given class credit. Based on an a priori power analysis assuming between a small and medium effect size ($f^2 = .075$), 150 participants were needed to achieve a statistical power of .80. The actual number of participants obtained was 167. All participants were jury eligible United States citizens who were over 18 years of age. The sample was 77.8% female, 18% male, and 4.2% other or prefer not to say. The

sample was 61.7% White, 9.6% Black, 9% Latino, 6.6% Native American, 4.2% Asian, and 7.2% other¹, and had a mean age of 21.74 years.

Materials

There were five main materials for this study.

Demographics

Participants were asked about their age, race, gender, U.S. citizenship status, current education level (i.e. freshman, sophomore, graduate, etc.), religiosity, and political orientation.

Trial Summary and Verbal Gruesomeness

Participants read one of two possible trial summaries. The two trial transcripts varied only in the amount of gruesome detail they presented to the participant. The summary was originally created for and used in a previous thesis and generated close to an even split of guilty versus nonguilty verdicts (Hitchcock-Smith, 2018) in both a pilot test and the main study. The transcript describes a murder allegedly committed by an angry ex-boyfriend. Specifically, the transcript alleges the victim had broken off their relationship and the ex-boyfriend became angered and murdered the woman. If the participant was placed in the non-gruesome condition the trial transcript included non-gruesome descriptions of the crime in question. If placed in the gruesome condition participants viewed a trial transcript in which gruesome descriptions of the crime are included. The trial transcript also contains short instructions for mock jurors on how to consider evidence and ultimately reach a verdict. Both versions of the trial transcript are available in Appendix A.

Visual Gruesomeness

¹ The ethnicity question was an open ended response; these categorizations are based on my interpretation of participant responses, but complete data is available upon request.

Visual gruesomeness was manipulated by the type of photograph the participant was exposed to. If exposed to the non-gruesome visual condition, the participant was shown a photograph of the outside of the apartment in which the murder took place. If exposed to the gruesome visual condition, participants were exposed to photos of the murder victim and the area surrounding where the murder occurred. The photograph of the victim was found within a forensic textbook (Demirci & Dogan, 2011) and the photograph of the crime scene was found through a news outlet (aceshowbiz.com). It is important to note that while the trial transcript has been developed by a previous researcher and depicts a crime that did not truly happen, the photographs are of a true murder victim and a separate crime scene (see Appendix B for photographs).

Manipulation checks were included in the online survey (see Appendix C). This consisted of two questions which asked participants to rate how gruesome they found the transcript and photograph on a 5-point Likert-type scale. One represented “not at all gruesome” and 5 represented “extremely gruesome”.

Modified PANAS

Emotions were measured through self-report, using a modified Positive and Negative Affect Scale (PANAS) questionnaire. The original PANAS (Watson et al., 1988), consists of 20 questions split between two subsets: positive and negative. Ten questions are positively worded (i.e., interested) and 10 are negatively worded (i.e., distressed). Each question is rated on a five-point Likert-type scale ranging from “very slightly or not at all” to “extremely”. Those questions in the positive subset are rated by adding together the score from each question. The higher the sum, the more positive affect. Questions in the negative subset are summed together separately based on which emotion is being measured (i.e., anger, sadness, disgust, anxiety), with a lower

score indicating a lower negative affect. The scores for all subsets can vary from 10-50 and were analyzed separately. For this study, the original PANAS was modified by the addition of negative emotion affect questions taken from the JUNAS (Bright & Goodman-Delahunty, 2006). This allowed for a deeper, more involved understanding of the negative emotions brought forth by gruesomeness (see Appendix D). The negative affect questions taken from the JUNAS fall into 4 categories: fear/anxiety, anger, sadness, and disgust. The scoring of this modified PANAS was similar to the original scale. The positive and negative affect questions were summed together separately.

Dependent measures

There were six dependent measure questions. One question measured verdict on a dichotomous scale, asking participants to render a verdict of guilty or not guilty. One question measured the verdict on a continuous scale by asking participants to rate guilt on a 5-point Likert-type scale from “not at all” to “extremely.” The other four questions assessed confidence in their verdict, persuasiveness of each attorney, and strength of evidence on the same 5-point scale. These six questions are available in Appendix E.

Procedure

This study was completed fully online, hosted through Qualtrics. Participants were first shown a consent form which required them to click “Agree” before they were allowed to continue. They then answered demographic questions. Next, participants were randomly assigned to one of the conditions. After random assignment participants were given one of two versions of the trial transcript. While reading the transcript, participants had access to either a gruesome photograph or a non-gruesome photograph. Once the participants finished reading the transcripts and studying the photographs, they were first asked to complete the manipulation

check questions, then asked to complete the modified PANAS questionnaire. Once answered, participants were given the last section of the survey: the dependent measures. After finishing this final step, participants were debriefed and prompted to exit the survey. The study took on average 12.92 ($SD = 13.05$) minutes to complete.

Results

First, I assessed reliability of each emotion subscale. Next, I performed Levene's test for equal variances for all ANOVAs of interest as well as manipulation checks for both manipulations. Finally, I conduct mediation analyses using continuous verdict as the main dependent variable and the other continuous measures as supplementary analyses, and analyze the dichotomous verdict measure.

Reliability and Homogeneity of Variance

I conducted Cronbach's Alpha and Omega reliability analysis on the emotional subscales to confirm reliability. Specifically, the emotional subscales of the modified PANAS, disgust ($\alpha = .88$, $\omega = .88$), sadness ($\alpha = .84$, $\omega = .84$), anger ($\alpha = .87$, $\omega = .87$), anxiety ($\alpha = .79$, $\omega = .79$), and positive emotions ($\alpha = .78$, $\omega = .78$), were all found to be reliable. See Table 1 for reliability summary statistics. Next, Levene's test of equality of variance was conducted for each emotion subscale, in addition to the continuous dependent measures. Variance was unequal between all four experimental conditions for anxiety ($F(3,163) = 5.13$, $p < .01$), anger ($F(3,163) = 5.45$, $p < .01$), and sadness ($F(3,163) = 4.09$, $p < .01$). Equality of variance was found for disgust ($F(3,163) = .69$, $p = .56$), positive emotion ($F(3,163) = 1.97$, $p = .12$), continuous verdict ($F(3,160) = 2.44$, $p = .07$), persuasiveness of prosecution ($F(3,160) = .30$, $p = .82$), persuasiveness of defense ($F(3,160) = 1.24$, $p = .30$), and strength of evidence against the defendant ($F(3,160) = .31$, $p = .82$). See Table 2 for Levene's test results summary.

Gruesomeness Manipulation Checks

Independent samples *t*-tests indicated those given the gruesome transcript ($M = 3.70$, $SD = .94$) compared to those exposed to the nongruesome transcript ($M = 2.77$, $SD = 1.05$) perceived the transcript as significantly more gruesome, $t(162) = -5.97$, $p < .001$). Additionally, participants who viewed the gruesome photograph ($M = 4.43$, $SD = .78$) compared to those exposed to the nongruesome photograph ($M = 2.31$, $SD = .88$) perceived the photograph as significantly more gruesome ($t(159) = 16.23$, $p < .001$).

Main Analyses

A two-way analysis of variance showed a main effect of visual gruesomeness on continuous verdicts, such that the gruesome photograph produced significantly higher continuous verdicts than the nongruesome photograph ($F(1, 160) = 6.80$, $p = .01$). There was no significant effect of gruesome verbal testimony on continuous verdicts ($F(1, 160) = .96$, $p = .33$) or interaction ($F(1, 160) = .73$, $p = .39$). The same pattern of results followed for two-way ANOVAs on all four negative emotion subscales (See Table 3 for complete ANOVA breakdowns) as well as strength of evidence against the defendant and persuasiveness of the prosecution. In each case, there was a significant main effect of photographic evidence, with the gruesome photograph eliciting more negative emotions than the nongruesome photograph (See Table 4 for complete cell mean summary). There was no effect of any manipulation on positive emotions or persuasiveness of the defense. This pattern of results held even when performing Welch's *F*-test to adjust for unequal variances for positive emotion, anger, anxiety, and sadness due to failed Levene's tests.

Continuous Verdicts

To test for mediation of the effect of gruesome photographic evidence on continuous verdicts, I conducted 4 sets of regression models. In each regression model, I collapsed our 2 x 2 design into 1 variable with 4 levels (nongruesome photo with nongruesome transcript; gruesome photo with nongruesome transcript; nongruesome photo with gruesome transcript; and gruesome photo with gruesome transcript) to dummy code the gruesomeness manipulations. In model sets 1 and 2, I used this dummy coded variable to separately predict all 5 emotion subscales. Model set 1 uses the nongruesome photo with nongruesome transcript condition (double nongruesome) as the reference group that all other groups are compared to, and model set 2 set uses the gruesome photo with gruesome transcript condition (double gruesome) as the reference group that all other groups are compared to. Uniformly across both model set 1 and 2, gruesome photographic evidence significantly increased negative emotion, regardless of whether it was paired with gruesome written evidence. Also uniformly, gruesome written evidence only increased negative emotion when it was paired with gruesome photographic evidence as well (See Table 5 for complete regression breakdowns of model sets 1 and 2). There were no differences between any conditions for positive emotion, so positive emotion was dropped from model sets 3 and 4.

In model sets 3 and 4, I tested the mediating effects of negative emotion on the relationship between our collapsed gruesomeness variable and continuous verdicts using Baron and Kenny (1986) procedures. Similar to model sets 1 and 2, model sets 3 and 4 differ only on which group is used as the reference. In model set 3 (See Table 6), the nongruesome photo with nongruesome words is used as the reference group, and in model set 4 (See Table 7), the gruesome photo with gruesome testimony is used as the reference group. Model set 3 detects which gruesomeness manipulations created significantly greater guilt ratings than the condition

containing no gruesomeness, while model set 4 detects which conditions produced significantly less guilt ratings than the condition containing both gruesome testimony and photos.

In model set 3, the initial model testing the direct effects of our dummy coded gruesomeness variable on continuous verdicts was significant ($F(3,160) = 2.82, p = .047$). However, only the double gruesome condition differed significantly ($b = .91, t(160) = 2.51, p = .01$) from the reference group. The next four models (Table 6) in model set three tested for mediation of the gruesomeness manipulations by negative emotion using bootstrapping procedures in the Lavaan package from Rstudio (Rosseel, 2012). Each of the four models contained only one negative emotion at a time. The first mediation model in set 3 added anger ($b = .05, z = 1.88, p = .06$) as a predictor, which did not significantly predict verdicts and did not fully mediate the effect of the double gruesome condition ($b = .74, z = 2.02, p = .04$). There were no significant indirect effects in the anger model. The second mediation model in set 3 removed anger and added sadness as a predictor ($b = .07, z = 2.40, p = .02$), which was positively associated with guilt ratings and fully mediated the effect of the double gruesome condition ($b = .63, z = 1.71, p = .09$). The indirect effect of the double gruesome condition on guilt ratings through sadness was also significant ($b = .278, z = 2.12, p = .03$). The third mediation model in set 3 removed sadness and added disgust as a predictor ($b = .07, z = 2.97, p = .001$), which positively predicted guilt ratings and fully mediated the effect of the double gruesome condition ($b = .58, z = 1.64, p = .10$). The indirect effect of the double gruesome condition on verdict ratings through disgust was also significant ($b = .33, z = 2.39, p = .02$). The fourth mediation model in set 3 removed disgust and added anxiety ($b = .02, z = 1.61, p = .11$) which was not a significant predictor of guilt ratings, but did mediate the effect of the double gruesome condition ($b = .70, z = 1.85, p = .07$). There were no significant indirect effects in the anxiety model.

The fourth and final set of regression models repeat the procedures from model set 3, but using the double gruesome condition as the reference group instead of the double nongruesome condition. In model set 4, the initial model testing the direct effects of our dummy coded gruesomeness variable on continuous verdicts was significant ($F(3,160) = 2.82, p = .047$). Both the gruesome testimony and nongruesome photo ($b = -.88, t(160) = -2.47, p = .02$) and the double nongruesome ($b = -.91, t(160) = -2.51, p = .01$) conditions produced significantly lower guilt ratings than the double gruesome condition. The next four models (Table 7) in model set 4 tested for mediation of the gruesomeness manipulations by negative emotion using bootstrapping procedures in the Lavaan package from Rstudio (Rosseel, 2012). Each of the four models contained only one negative emotion at a time. The first mediation model in set 4 added anger ($b = .05, z = 1.88, p = .06$) as a predictor, which did not significantly predict guilt ratings and did not fully mediate the effect of the double nongruesome condition ($b = -.74, z = 2.02, p = .04$), but did fully mediate the effect of the gruesome testimony and nongruesome photo condition ($b = -.66, z = -1.87, p = .06$). There were no significant indirect effects in the anger model. The second mediation model in set 4 removed anger and added sadness as a predictor ($b = .07, z = 2.40, p = .02$), which was positively associated with guilt ratings and fully mediated the effect of the double nongruesome condition ($b = -.63, z = -1.71, p = .09$) and the gruesome testimony with nongruesome photo condition ($b = -.56, z = -1.51, p = .13$). The indirect effects of the double nongruesome condition ($b = -.278, z = -2.15, p = .03$) and the gruesome testimony with nongruesome photo condition ($b = -.321, z = -2.15, p = .03$) on guilt ratings through sadness were also significant. The third mediation model in set 4 removed sadness and added disgust as a predictor ($b = .07, z = 3.00, p = .001$), which positively predicted guilt ratings and fully mediated the effect of the double nongruesome ($b = -.58, z = -1.64, p = .10$) and the gruesome testimony

with nongruesome photo manipulation ($b = -.59, z = -1.73, p = .08$). The indirect effects of the double nongruesome condition ($b = -.33, z = -2.39, p = .02$) and the gruesome testimony with nongruesome photo condition ($b = -.29, z = -2.31, p = .03$) on guilt ratings through disgust were also significant. The fourth mediation model in set 4 removed disgust and added anxiety ($b = .02, z = 1.63, p = .10$) which was not a significant predictor of guilt ratings, but did fully mediate the effect of the double nongruesome condition ($b = -.70, z = -1.87, p = .06$) and the gruesome testimony with nongruesome photo condition ($b = -.64, z = -1.73, p = .08$). There were no significant indirect effects in the anxiety model.

Dichotomous Verdicts

I conducted logistic regression analyses to assess the possible mediating effect of negative emotion on dichotomous verdicts using the same dummy coded gruesomeness variable. However, regardless of which group was used as the reference group, there were no significant predictors of dichotomous verdicts, and therefore no direct effects to be mediated (all $ps > .50$). However, dichotomous verdicts were predicted by disgust ($OR = .91, z = -3.0, p = .003$), anger ($OR = .90, z = -2.45, p = .01$), and sadness ($OR = .88, z = -2.73, p = .006$), but not anxiety ($OR = .96, z = -1.65, p = .10$). In each case, increasing negative emotion made a verdict of “not guilty” less likely. Inversely, increasing negative emotion made a verdict of “guilty” more likely.

Summary of Main Analyses

Across all four sets of continuous verdict regression models, a clear pattern emerged. Gruesome photographic evidence increased negative emotion, regardless of whether it was paired with gruesome or nongruesome testimony. Gruesome testimony only increased negative emotion when it was paired with gruesome photographic evidence. Sadness and disgust both predicted higher guilt ratings and fully mediated the effects of gruesome photographic evidence,

while anxiety and anger only partially mediated the effects of gruesome photographic evidence and were not significant predictors themselves. A similar pattern emerged for dichotomous verdicts, although there were no direct effects of the manipulations likely due to the insensitive nature of dichotomous variables (Cohen, 1983; MacCallum et al., 2002). Increasing sadness, disgust and anger all decreased the likelihood of a “not guilty” verdict. See Figures 1 and 2 for graphical depictions of the results pattern.

Supplementary Analyses

Supplementary analyses were conducted using the three remaining dependent measure questions. The persuasiveness of the defense and strength of evidence variables were not affected by either manipulation (Tables 3 and 4) and were not predicted by any of the emotion subscales, so they are not included in further analyses. The confidence in verdict variable was affected by the photo manipulation in the same manner as the continuous guilt measure, but it was not predicted by any of the emotion subscales, so it is not included in further analyses either. Lastly, although it was not affected by either manipulation, the persuasiveness of prosecution variable was positively predicted by all four negative emotion subscales, so indirect effects are still possible. Upon repeating the mediation analyses procedure used for continuous verdict with persuasiveness of prosecution as the dependent variable, the same pattern emerged, in which the gruesome photo conditions produced greater prosecutor persuasion, and the effects were mediated by negative emotion. I do not present each of the models in text as with continuous verdicts for brevity of the results, but see Tables 8 and 9 for complete model statistics for persuasiveness of prosecution.

Discussion

Despite the abundance of previous research on the gruesomeness of evidence and negative emotion in jury contexts, a gap exists in the understanding of how gruesome crime scene evidence can affect jurors and their decision making depending on how the evidence is given. No studies, to my knowledge, have directly compared the effectiveness of visual gruesome evidence to the effectiveness of verbal gruesome evidence. The effectiveness of each have been studied separately, sometimes creating a mix of results, yet a direct comparison of the two has not occurred, hindering the full understanding of how jurors react and respond to these different modalities.

The present study began to bridge this gap by directly comparing visual and verbal gruesome evidence to one another. When directly compared, gruesome visual evidence was the only influential form of gruesome evidence, as verbal gruesome evidence had no significant impact on juror decision making. These results may be in line with the picture superiority effect, which refers to an increased ability to recall memories of visual evidence compared to verbal evidence (Hockley, 2008; McBride & Doshier, 2002) due to more elaborate processing of the visual stimuli. When exposed to an especially gruesome crime scene photograph, it is possible participants experienced deeper, more complex processing, potentially making the memory of the photograph and accompanying emotions more readily available compared to those aroused by verbal descriptions, even if those verbal descriptions are gruesome themselves. Emotions provoked by visual evidence then might have a greater impact than the emotions provoked from the verbal evidence as less complex processing was used, meaning the memory of the transcript is less readily available, as well as the accompanying emotions. Though, it is important to note that I did not measure recall itself, so this explanation is speculative. Future research should focus on measuring memory of previous emotions to test this possible explanation.

In conjunction with the picture superiority effect, it is plausible that affect infusion played a role. Previous studies like Salerno (2017) and Douglas et al. (1997) have shown that gruesome evidence has a positive correlation with greater negative emotion, which is supported by the present results. These negative emotions then act as a mediator between exposure to gruesome visual evidence and increased guilty verdicts. This correlates with research surrounding affect infusion, in which previously felt emotions can color one's judgment of another person or situation (Brosch et al., 2013; Salerno, 2017). In this study, the gruesome photograph shown might have led to a clearer recall of specific emotions from participants and these impacted their later judgement regarding the defendant's guilt.

Verbal gruesome evidence did significantly impact negative emotion when paired with visual gruesome evidence, but this is the only time any type of significant impact from verbal gruesome evidence is seen. Without the presence of gruesome visual evidence, gruesome verbal evidence was ineffective at influencing negative emotion or verdicts. These results contrast Bright & Goodman-Delahunty, (2004) and Matsuo & Itoh (2016) who found verbal evidence to have a significant positive impact on guilty verdicts even without the presence of gruesome visual evidence. This difference in findings may come from different wording within the transcripts from each study, however, our manipulation check did indicate the gruesome transcript was perceived as far more gruesome than the non-gruesome transcript. Further research surrounding verbiage used may be a fruitful line for future research to resolve this inconsistency.

In addition to furthering academic knowledge, these results hold helpful insight for those within the criminal justice system. Crime scene photography and the photographic evidence documented at scenes are used in a substantial number of criminal cases. There are specific

guidelines directing how photographs are to be taken and documented, including the requirement that multiple photographs (wide, mid-range, and close-up) of a singular piece of evidence are needed (Zahari et al., 2022). This may seem unnecessary, but taking multiple photographs not only allows for more in-depth processing of evidence, it also allows for the judge to have options in what is shown to jurors at trial. The judge acts as the gatekeeper of evidence in accordance with Rule 403, determining if a piece of evidence is too prejudicial to be submitted in court (Epstein & Mannes, 2016; law.cornell.edu). Giving judges multiple options from which to choose from might maximize their ability to allow informative, but not overly prejudicial evidence into trial.

Additionally, prosecutors might use this information in conjunction with the anchoring heuristic to get more gruesome evidence admitted. If the prosecution only submits a singular, close-up photograph of a gruesome wound, this may be found as prejudicial by the judge. But, if a mid-range is included in the photographic evidence submitted to the judge, the gruesome evidence (wound) may then be seen as more probative than prejudicial in the mid range shot, when compared to the especially gruesome close range. By understanding how gruesome photographic evidence impacts juror decision making (the more gruesomeness perceived the more guilty verdicts given), a judge is able to make a more educated determination of how prejudicial a gruesome photograph may be and which photographs to allow in court. Understanding the mediating effect of specific emotions such as anger and disgust is bound to be helpful as well, as it would aid in the judge's understanding of just how these photographs are impacting the jury. This study as well as past research has noted sadness and disgust are influential mediators of increased guilty verdicts (Bright & Goodman Delahunty, 2006; Salerno,

2017). This information informs as well as explains to a judge how and why gruesome visual evidence is impactful, allowing for more informed decisions to be made.

Although the gruesome photographic evidence directly and indirectly affected relevant trial variables, based on the supplementary analysis, it mainly seemed to affect perceptions of the prosecution. The gruesomeness manipulations were both contained in the prosecution's argument, and the supplementary analyses indicated that gruesome photographs seemed to make prosecution more persuasive, but did not affect the persuasiveness of the defense. It is possible gruesome evidence works by influencing perceptions of only one side of a case. Future research might examine whether manipulating the source introducing gruesome evidence into trial changes how gruesome evidence effects trial variables. In the current study, it was introduced by the prosecutors, but perhaps if it were introduced by an expert witness or a lay witness, the effects of gruesome evidence might be directed away from prosecuting attorneys.

Despite the photographs and trial transcript reflecting evidence that would be shown in a true trial, the mock jurors are aware they are in a study, possibly limiting how seriously they consider their possible verdict choice and hindering external validity. However, Bornstein (2017) found no significant difference between student and nonstudent samples acting as mock-jurors and that using students as mock-jurors is not in and of itself a limitation. In addition, the stress of being in an actual murder trial and all that entails cannot be replicated through this type of study. Possible emotional changes due to the stressful environment cannot be accounted for through this study. Another possible limitation is the reading of the transcript, instead of listening to the actual dialogue in trial. Similar to the previously stated limitation, this limits the ecological validity, as it is not fully analogous to how a true trial is conducted. However, prosecutors might

still provide handouts containing gruesome verbal and visual information in some cases (Grady, 2018; Matsuo & Itoh, 2016), which does closely match the methodology of this study.

In conclusion, the results of the current study directly compared the impact of visual gruesome evidence and verbal gruesome evidence. Visual gruesome evidence elicited higher guilt ratings and more prosecutorial persuasiveness through creating greater negative emotion, while verbal gruesome evidence had no significant impact.

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Table 1*Reliability of Composite Emotion Scores*

Affect	Cronbach's Alpha	Omega
Positive	0.78	0.78
Anxiety	0.79	0.79
Anger	0.87	0.87
Sadness	0.84	0.84
Disgust	0.88	0.88

Table 2

Levene's Test Results

Effect	Disgust	Anxiety	Anger	Sadness	Positive
Levene's Test for Equal Variances	0.69	5.13***	5.45***	4.09***	1.97
Effect	Continuous Verdict	Prosecution Persuasiveness	Defense Persuasiveness	Strength of Evidence Against Defendant	Verdict Confidence
Levene's Test for Equal Variances	2.44	0.30	1.24	1.83	0.26

Note: Numbers are *F* values, * $p < .05$, ** $p < .01$, *** $p < .001$; all $df \geq (3,160)$

Table 3

Individual ANOVA Effects for Each Dependent Variable

Effect	Disgust	Anxiety	Anger	Sadness	Positive
Photo	19.75***	27.75***	15.92***	21.23***	0.28
Words	0.143	0.6	0	0.83	0.41
Photo*Words	0.33	1.69	0.86	0.13	0.44
Effect	Continuous Verdict	Prosecution Persuasiveness	Defense Persuasiveness	Strength of Evidence Against Defendant	Verdict Confidence
Photo	6.96**	1.54	1.41	1.29	6.09*
Words	0.96	0.003	1.24	.0002	1.66
Photo*Words	0.73	0.32	1.46	0.18	0.73

Note: Numbers are F values, * $p < .05$, ** $p < .01$, *** $p < .001$; all $df \geq (1,160)$

Table 4

Group Means and Standard Deviations for Each Dependent Variable

<u>Effect</u>	<u>Photo</u> (<i>n</i> = 164)		<u>Words</u> (<i>n</i> = 164)	
	Nongruesome	Gruesome	Nongruesome	Gruesome
Positive	21.61 (6.70)	21.06 (7.00)	21.67 (7.41)	21.00 (6.20)
Anger	10.45* (4.14)	13.69 (6.11)	12.08 (5.39)	12.04 (5.53)
Disgust	11.18* (5.66)	15.04 (5.53)	12.96 (6.02)	13.23 (5.82)
Anxiety	17.95* (7.39)	25.11 (10.01)	20.05 (9.30)	21.96 (9.68)
Sadness	8.95* (3.87)	12.08 (4.90)	10.23 (4.16)	10.79 (5.14)
Continuous Verdict	4.57* (1.74)	5.22 (1.47)	4.78 (1.7)	5.0 (1.58)
Prosecution Persuasiveness	3.52 (.88)	3.18 (.98)	3.38 (.94)	3.31 (.95)
Defense Persuasiveness	2.32 (.92)	2.38 (2.39)	2.33 (.86)	2.37 (.94)
Evidence Strength against Defendant	3.62 (1.16)	3.25 (1.14)	3.46 (1.12)	3.40 (1.20)
Verdict Confidence	3.62* (1.16)	3.25 (1.14)	3.46 (1.12)	3.40 (1.20)

Note: formatted as *M* (*SD*), * indicates significant difference from column to the right

Table 5*Individual Regression Coefficients for All Models*

Effect	Positive Emotion	Anger	Sadness	Disgust	Anxiety
Set 1: Gruesome Words Nongruesome Photo	-1.39	-0.74	-0.43	0.83	-0.71
Set 1: Nongruesome Words Gruesome Photo	-1.27	2.48*	2.09*	4.36***	5.40**
Set 1: Gruesome Words and Gruesome Photo	-1.24	3.24**	3.76***	4.20***	8.21***
Set 2: Gruesome Words Nongruesome Photo	-0.14	-3.98***	-4.18***	-3.36**	-8.93***
Set 2: Nongruesome Words Gruesome Photo	-0.03	-0.76	-1.66+	0.17	-2.82
Set 2: Nongruesome Words and Nongruesome Photo	1.24	-3.24**	-3.76***	-4.20***	-8.22***
Overall $F(R^2)$ for models 1 & 2	.38 (.01)	5.61 (.09)***	8.11 (.13)***	6.71 (.11)***	9.99 (.16)***

Note: Numbers are b values, * $p < .05$, ** $p < .01$, *** $p < .001$; all b $df \geq 160$, all F $df \geq (3,163)$. In model set 1, the double nongruesome condition is the reference group.
In model set 2, the double gruesome condition is the reference group

Table 6

Summary of Model Set 3 Testing for Mediation by Negative Emotion Using Both Nongruesome Conditions (Double Nongruesome) as The Reference Group with Continuous Verdicts as the Dependent Variable

Effect	Overall Model F (R^2)	Continuous verdicts (no emotion added) b	Continuous Verdicts (Anger model) b	Continuous Verdicts (Sadness model) b	Continuous Verdicts (Disgust model) b	Continuous Verdicts (Anxiety model) b
Gruesome Words						
Nongruesome Photo		0.03	0.08	0.08	-0.01	0.06
Nongruesome Words						
Gruesome Photo		0.45	0.35	0.33	0.16	0.33
Double Gruesome	2.82 (.05)*	0.91*	0.74*	0.63+	0.58	0.70+
Anger b	3.01 (.07)*		0.05+			
Sadness b	3.33 (.08)*			0.07*		
Disgust b	4.48 (.10)**				0.07**	
Anxiety b	2.7 (.06)*					0.02

Note: Numbers in 3rd through 7th column are b values, + $p < .10$ * $p < .05$, ** $p < .01$; all F $df \geq (4,159)$

Table 7

Summary of Model Set 4 Testing for Mediation by Negative Emotion Using Both Gruesome Conditions (Double Gruesome) as The Reference Group with Continuous Verdicts as the Dependent Variable

Effect	Overall Model F (R^2)	Continuous verdicts (no emotion added) b	Continuous Verdicts (Anger model) b	Continuous Verdicts (Sadness model) b	Continuous Verdicts (Disgust model) b	Continuous Verdicts (Anxiety model) b
Gruesome Words						
Nongruesome Photo		-0.88*	-0.66 ⁺	-0.56	-0.59	-0.64 ⁺
Nongruesome Words						
Gruesome Photo		-0.46	-0.39	-0.31	-0.42	-0.36
Double Nongruesome	2.82 (.05)*	-0.91*	-0.74*	-0.63 ⁺	-0.58	-0.70 ⁺
Anger b	3.01 (.07)*		0.05 ⁺			
Sadness b	3.33 (.08)*			0.07*		
Disgust b	4.48 (.10)**				0.07**	
Anxiety b	2.7 (.06)*					0.02

Note: Numbers in 3rd through 7th column are b values, ⁺ $p < .10$ * $p < .05$, ** $p < .01$; all F $df \geq (4,159)$

Table 8

Summary of Model Set 3 Testing for Mediation by Negative Emotion Using Both Nongruesome Conditions (Double Nongruesome) as The Reference Group with Persuasiveness of Prosecution as the Dependent Variable

Effect	Overall Model F (R^2)	Prosecution Persuasion (no emotion added) b	Prosecution Persuasion (Anger model) b	Prosecution Persuasion (Sadness model) b	Prosecution Persuasion (Disgust model) b	Prosecution Persuasion (Anxiety model) b
Gruesome Words						
Nongruesome Photo		0.16	0.19	0.20	0.13	0.17
Nongruesome Words Gruesome Photo		0.42*	0.35 ⁺	0.33	0.22	0.36 ⁺
Double Gruesome	1.97 (.04)	0.41 ⁺	0.29	0.20	0.18	0.29
Anger b	2.80 (.07)*		0.03*			
Sadness b	3.74 (.09)**			0.07**		
Disgust b	4.97 (.11)**				0.05**	
Anxiety b	2.10 (.05) ⁺					0.01

Note: Numbers in 3rd through 7th column are b values, $+p < .10$ $*p \leq .05$, $**p < .01$; all F $df \geq (4,159)$

Table 9

Summary of Model Set 4 Testing for Mediation by Negative Emotion Using Both Gruesome Conditions (Double Gruesome) as The Reference Group with Persuasiveness of Prosecution as the Dependent Variable

Effect	Overall Model F (R^2)	Prosecution Persuasion (no emotion added) b	Prosecution Persuasion (Anger model) b	Prosecution Persuasion (Sadness model) b	Prosecution Persuasion (Disgust model) b	Prosecution Persuasion (Anxiety model) b
Gruesome Words Nongruesome Photo		-0.26	-0.10	-0.01	-0.05	-0.11
Nongruesome Words Gruesome Photo		0.01	0.06	0.13	0.04	0.07
Double Nongruesome	1.97 (.04)	-0.41 ⁺	-0.29	-0.20	-0.18	-0.29
Anger b	2.80 (.07)*		0.03 ⁺			
Sadness b	3.74 (.09)**			0.05**		
Disgust b	4.97 (.11)**				0.05**	
Anxiety b	2.10 (.05) ⁺					0.01

Note: Numbers in 3rd through 7th column are b values, ⁺ $p < .10$ * $p < .05$, ** $p < .01$; all F $df \geq (4,159)$

Figure 1

Figure depicts model set 3, in which both nongruesome conditions were used as the reference group. Only the gruesome testimony with gruesome photo condition significantly increased negative emotions and guilt ratings. The direct effect on guilt ratings was fully mediated by sadness and disgust, but not by anger or anxiety.

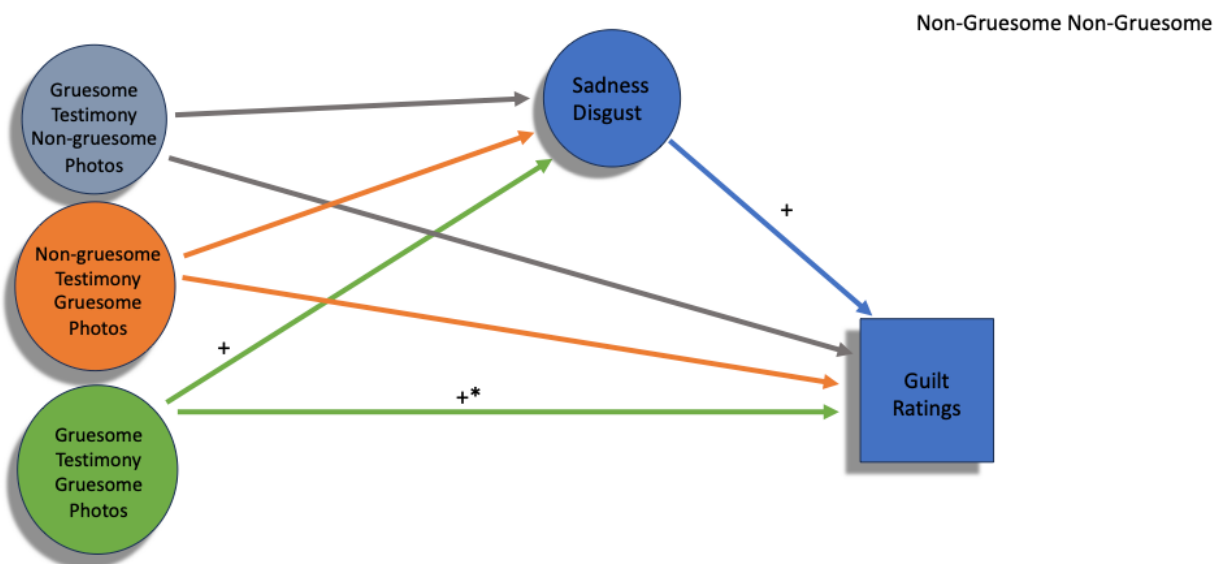
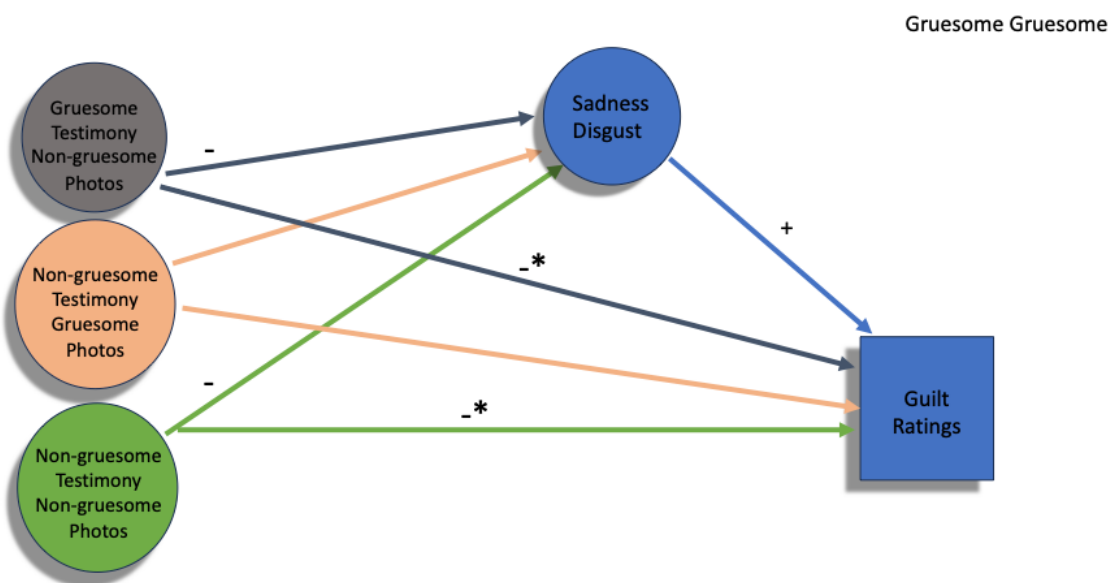


Figure 2

Figure depicts model set 4, in which both gruesome conditions are used as the reference group.

The nongruesome photo with gruesome testimony and the nongruesome photo with nongruesome testimony conditions produced significantly lower negative emotion and guilt ratings. The direct effects on guilt ratings were fully mediated by sadness and disgust, but not by anger or anxiety.



Appendix A Trial Transcript

Frank Johnson, age 36, of Fort Smith, Arkansas is charged with murder in the first degree. First degree murder consists of an unlawful killing that is premeditated and willful.

On June 17, 2023, Frank Johnson is accused of murdering his ex-girlfriend, 31-year-old, Helen Thompson. He allegedly broke into her home and stabbed her repeatedly on the night of June 16th. She was found shortly after by police. Her coworker was on the phone with Helen when the attack occurred and made the 911 call.

During the trial, the victim's coworker, Catherine Jones, testifies about the night of the murder. She claims the victim called her after Frank had left, and she seemed anxious. The victim told her that Frank had tried to kiss her even after she had said she just wanted to remain friends. She told him to leave, and he seemed very unhappy by this, to a point it made her uncomfortable and concerned he would come back. They continued the phone conversation up until the victim heard a noise, at which point the phone call ends.

The only eyewitness that connects Frank Johnson to the crime is Lisa Williams, Helen's neighbor. During the trial, the prosecution called Helen's neighbor to the stand to testify. She claimed that she saw Frank Johnson leaving Helen's house around 10:15pm, seeming troubled.

The prosecution claims that Frank Johnson was still in love with Helen Thompson, and misunderstood Helen's motives. Although it was just a friendly dinner, Frank Johnson considered it a second chance to make the relationship work. After dinner, Johnson attempted to seduce Helen, which she rejected, and told him to leave. Frank Johnson was embarrassed by this rejection and left the house, at 10:15pm. The prosecution holds the position that Frank Johnson left the house but came back with the cold intent to kill Helen Thompson.

[Insert Verbal Gruesomeness Manipulations]

The defense claims Frank is innocent and is being targeted due to his past connection with the victim. The defense says Johnson was at Helen's home the night of the murder to have dinner only.

Frank also claims he is innocent. He admits that he had a relationship with Helen previously, but that it ended months ago on good terms. He also admits to seeing her the night of the alleged murder. However, he says it was only to have dinner and catch up. He left after dinner was over, returned home, and went to sleep.

The prosecution calls the defendant, Frank Johnson, to the stand for questioning and questions Frank about how his fingerprints ended up on the knife used to commit the murder. Frank then explained that he and Helen had eaten dinner, and he used the knife during

dinner. Therefore, he isn't surprised that his fingerprints are on the knife.

The prosecution then moves on to present text message records to the jury and questions Frank about the nature of the messages. Frank had sent the victim text messages over the past week leading up to the night of the murder. Only a few of them had replies, including the reply with the victim agreeing to see Frank the night of the murder so they could talk. The other text messages sent were ignored by the victim. Text messages such as "Do you miss me? I miss you" and outbursts such as "Why won't you respond?!" Frank responds to this presentation by simply saying "I just wanted to talk to her. There is nothing wrong with texting someone I know."

The prosecutor closes his questioning by stating these text messages support the argument that Frank was still in love with Helen and was already acting in an aggressive manner through texts. It is obvious by the victim's response that she only agreed to meet with Frank to stop his advancements.

The defense closes by making the argument that given nearly an hour passed after the suspect was seen leaving the scene, it is possible that another individual could have broken into the house during that time. He claims the neighborhood has been known to have frequent robberies, and the victim may have startled a potential thief who, in turn, killed her.

After closing statements, the judge tells you, the jury that all the relevant facts are in and it is your duty to reach a verdict. He then provides you with the following instructions. The instructions are as follows:

The burden is on the prosecution to prove beyond a reasonable doubt that the defendant is guilty. What is proof beyond a reasonable doubt? Proof beyond a reasonable doubt does not mean proof beyond all possible doubt, for everything in the lives of human beings is open to some possible or imaginary doubt. A charge is proved beyond a reasonable doubt if, after you have compared and considered all evidence, you have in your minds an abiding conviction, to a moral certainty, that the charge is true.

When we refer to moral certainty, we mean the highest degree of certainty possible based solely on the evidence that has been put before you in this case. Every person is presumed to be innocent until he or she is proven guilty. If you evaluate all the evidence and you still have a reasonable doubt remaining, the defendant is entitled to the benefit of that doubt and must be acquitted.

Gruesome verbal: The prosecution argues that Frank Johnson used a knife to stab Helen in the back, causing bone and tendon cutting wounds, and finished her off by slicing an enormous gash in her throat, from which she either quickly hemorrhaged blood and died, or more slowly suffocated from blood spilling into her lungs. It also appears Helen attempted to struggle and hide in the bathroom after she was stabbed in the back, as there are wide bloody streaks in the kitchen that make it look like the two struggled on the ground before she attempted to lock herself in the bathroom where her throat was finally slashed and her body ultimately discovered after a few days of decay.

Nongruesome verbal: The prosecution argues that Frank Johnson entered Helen's home a second time after their dinner and initially attacked her in the kitchen using a knife. Based on the crime scene, it appears the two struggled for a short time in the kitchen before Helen temporarily escaped and attempted to lock herself in the bathroom. However, she was unsuccessful, and her body was eventually discovered in the bathroom doorway a few days later.

Appendix B

Non-Gruesome Photograph:



Gruesome Photograph:



Appendix C

How gruesome were the photos you saw?

1) Not at all. 2) Slightly. 3) Moderately. 4) Very. 5) Extremely.

How gruesome was the description you saw?

1) Not at all. 2) Slightly. 3) Moderately. 4) Very. 5) Extremely.

Appendix D

Positive and Negative Affect Schedule (PANAS-SF) modified. Indicate the extent you have felt this way over the past week.

1) Very slightly or not at all. 2) A little. 3) Moderately. 4) Quite a bit. 5) Extremely.

PANAS (Modified)

1) Interested	1	2	3	4	5
2) Tense	1	2	3	4	5
3) Excited	1	2	3	4	5
4) Shaky	1	2	3	4	5
5) Strong	1	2	3	4	5
6) On Edge	1	2	3	4	5
7) Panicky	1	2	3	4	5
8) Uneasy	1	2	3	4	5
9) Enthusiastic	1	2	3	4	5
10) Proud	1	2	3	4	5
11) Restless	1	2	3	4	5
12) Alert	1	2	3	4	5
13) Anxious	1	2	3	4	5
14) Inspired	1	2	3	4	5
15) Distressed	1	2	3	4	5
16) Determined	1	2	3	4	5
17) Attentive	1	2	3	4	5

18) Upset	1	2	3	4	5
19) Active	1	2	3	4	5
20) Afraid	1	2	3	4	5
21) Angry	1	2	3	4	5
22) Annoyed	1	2	3	4	5
23) Resentful	1	2	3	4	5
24) Bitter	1	2	3	4	5
25) Furious	1	2	3	4	5
26) Bad Tempered	1	2	3	4	5
27) Hostile	1	2	3	4	5
28) Irritable	1	2	3	4	5
29) Unhappy	1	2	3	4	5
30) Sad	1	2	3	4	5
31) Discouraged	1	2	3	4	5
32) Miserable	1	2	3	4	5
33) Gloomy	1	2	3	4	5
34) Helpless	1	2	3	4	5
35) Disgusted	1	2	3	4	5
36) Repulsed	1	2	3	4	5
37) Disturbed	1	2	3	4	5
38) Revolted	1	2	3	4	5
39) Shocked	1	2	3	4	5
40) Nervous	1	2	3	4	5

Appendix E**Dependent Measures**

How persuasive did you find the prosecuting attorney?

1) Not at all. 2) Slightly. 3) Moderately. 4) Very. 5) Extremely.

How persuasive did you find the defending attorney?

1) Not at all. 2) Slightly. 3) Moderately 4) Very. 5) Extremely.

How strong was the evidence against the defendant?

1) Not at all. 2) Slightly. 3) Moderately. 4) Very. 5) Extremely.

Render a final verdict for this case.

1) Guilty 2) Not Guilty.

How confident are you in the verdict you chose?

1) Not at all. 2) Slightly. 3) Moderately. 4) Very. 5) Extremely.

How guilty did you find the defendant?

1) Not at all. 2) Slightly 3) Moderately. 4) Very. 5) Extremely.