The Impact of Gruesome Photographs on Forensic Judgments of Competency and Legal Insanity

by

Hannah Phalen

A Thesis Presented in Partial Fulfillment
of the Requirements for the Degree
Master of Science

Approved July 2018 by the
Graduate Supervisory Committee:

Jessica Salerno, Chair
Nicholas Schweitzer
Michael Saks

ARIZONA STATE UNIVERSITY

August 2018

ABSTRACT

The legal system relies heavily on the contribution of forensic psychologists. These psychologists give opinions on a defendant's ability to stand trial, their legal sanity at the time of the crime, their future dangerousness, and their competency to be executed. However, we know little about what extrinsic factors bias these experts. I assessed the influence of gruesome photographs on forensic psychologists' evaluations of competency and legal sanity. Previous research has demonstrated that these photographs influence lay judgments of guilt. I predicted that gruesome color photographs (versus the same photographs in black-and-white or a textual description of the photographs) would influence forensic psychologists to judge the defendant competent and sane (decisions that might ultimately lead to punishment). I also predicted that this effect would be greater for sanity judgments than for competency judgments. I asked laypeople to make the same decisions in order to compare expert and lay judgments. I predicted that impact of photograph type seen in experts would be greater in the lay sample. No differences in judgments of competence, sanity, or mental illness emerged as a function of the type of visual information, for either expert or lay participants. Experts relied on competency evidence to make competency judgments and insanity evidence to make insanity judgments. In contrast, lay people relied on various types of evidence to make their ultimate judgments. This research suggests that people making competency and sanity judgments might not be biased by gruesome photographs.

ACKNOWLEDGMENTS

I would like to thank my mentor and thesis committee chair, Dr. Jessica Salerno, as well as Dr. Nicholas Schweitzer and Dr. Michael Saks for their time and contributions. I am also grateful to Dr. Tess Neal for her advice, assistance, and access to her subject database. I am grateful to Arizona State University for providing resources in Legal Psychology and to the Arizona State Mailing Center.

I would also like to thank: Rosa Reyes, Madison Adamoli, Alyssa Hoyt, Austin Rizer, Valerie Gutierrez, Chalsee Bulmer, Brianna Lyne, Matthew Stowers, Olivia Miske, Daisy Ornelas, and Prachi Solanki for their help compiling the materials and entering data.

Finally, I would like to thank the American Psychology and Law Society, the Arizona State University Graduate and Professional Student Association, and the New College of Interdisciplinary Arts and Sciences for their financial support of this project.

Table of Contents

Page

Page

Page

LIST OF TABLES

Table Page

LIST OF FIGURES

Introduction

In recent years, the reliability of many areas of forensic science have fallen under intense scrutiny (National Research Council, Committee on Identifying the Needs of the Forensic Science Community, 2009; President's Council of Advisors on Science and Technology, 2016). The reliability of forensic psychological judgment and its use in court has also been called into question publicly (Childress, 2013), in the courts (*United States v. Roland*), and in the scientific community (Acklin, 2016). Yet the reliability of forensic psychology has received relatively less attention than other areas of forensic science.

Psychologists are often hired in the legal setting to advise judges and lawyers on psychological issues regarding capacity (the ability to make informed legal decisions), defendants' competency (the ability to assist to carry out legal decisions) and/or sanity, custody evaluations, etc. (Neal, 2018). These forensic judgments help legal actors make important decisions, such as whether a defendant is competent to understand the legal proceedings well enough to stand trial, whether the defendant was sane at the time of the crime, and whether a prisoner should be paroled. Guarnera and Murrie (2017) conducted a thorough examination of the field reliability of forensic evaluators' judgments and found disagreement in 15% to 30% of competency decisions, 25%-35% of sanity decisions, and approximately half of conditional release (i.e. parole) decisions. Similarly, Acklin (2016) examined the field reliability of forensic judgments in Hawaii's state court and found adequate interrater agreement in competency decisions, marginal agreement in criminal responsibility decisions, and poor agreement in conditional release decisions.

Ideally, if two experts reviewed the same case and made the same judgment they would reach a similar conclusion; that is, that the judgments would be reliable. Yet,

experts often disagree—what is the source of this disagreement? Research suggests that some of the disagreement might result from forensic psychologists being biased by extra-legal factors (i.e., legally irrelevant factors, for review, see Wells, 1978). However, we know little about what specific factors might bias them. The current research investigates one such factor that is very common in any case that involves a violent transgression: whether or not the expert has been exposed to emotionally disturbing evidence. First, I review current research on potential biases in forensic judgment. Second, I will propose a novel potentially biasing factor in forensic psychological judgment: emotionally evocative case evidence by drawing from the literature on the impact of emotional evidence on jurors' judgments. Third, I will review research comparing experts versus lay judgments in forensic settings to hypothesize whether the effect of emotional evidence on jurors is likely to generalize to forensic psychologists. Finally, I will describe two experiments designed to be the first test of the causal impact of being exposed to emotionally disturbing photographic evidence on forensic judgments of competency and insanity by a lay sample (Study 1) and an expert sample (Study 2).

Review of the Literature

Forensic Judgments

In the legal system, forensic psychologists advise lawyers, judges, and juries about legal questions involving psychology (Neal, 2018). They provide a service, often interviewing or assessing someone, with the purpose of informing the legal system. Forensic psychologists are often used in cases involving child custody, estate plan validity, legal competency, and legal sanity. All the conclusions made by forensic psychologists have serious practical implications on people's lives. For example, a

forensic psychologist's conclusion on custody might impact a child's contact with his parents; a forensic psychologist's conclusion about competency to make a will might impact a spouse's inheritance, and decisions in criminal competency and insanity might impact whether the state is able to prosecute and punish a defendant.

Because forensic judgments have a direct impact on many lives, it is important that these judgments are as reliable as possible. That is, if several experts all reviewed a case and made a judgment, ideally they would all reach similar conclusions so that the legal system can feel confident about relying on their opinions. If the conclusions change depending on characteristics of the expert who happened to be hired or extralegal biasing factors, there is a risk that two similar cases might be treated drastically different by the legal system based on which expert happened to be hired or contextual factors that might have given rise to extralegal bias. Additionally, if forensic judgments are not reliable, the public and the courts might begin to doubt the validity of these judgments in general, making it difficult for forensic psychologists to assist these people in making their decisions. One way to ensure reliability in forensic psychological judgment is to identify and control variables that might bias these judgments.

There are two types of variables that might bias forensic experts: estimator variables and system variables (Wells, 1978). Estimator variables are factors that might affect forensic experts' evaluations that are not under the control of the legal system. Researchers have identified two key estimator variables that might contribute to evaluators' different decisions: evaluator personality and evaluator attitudes. Regarding personality, forensic evaluators who scored higher in agreeableness rated offenders as less psychopathic than those who scored lower in agreeableness (Miller, Rufino,

Boccaccini, Jackson, & Murrie, 2011). Regarding attitudes, forensic examiners with more favorable attitudes toward the insanity defense were significantly more likely to conclude a defendant was insane (Homant & Kennedy, 1987). Additionally, forensic examiners with pro-death-penalty attitudes were more likely to find a defendant competent for execution (Palker-Corell, 2007) and more likely to accept referrals in death penalty cases in the first place (Deitchman, Kennedy, & Beckham, 1991; Neal, 2016). Forensic judgments are also biased in ways that are consistent with the examiners' criminal stereotypes (Smalarz, Madon, Yang, Guyll, & Buck, 2016). These studies identify extralegal factors that can bias forensic examiners' evaluations and lead to less reliable judgments, but unfortunately those attitudes are not something that can be easily controlled by the legal system.

In contrast to estimator variables, system variables that might influence forensic examiners' conclusions are relatively more under the legal system's control. Whereas estimator variables relate to specific characteristics of an examiner that cannot be changed (e.g. their personality traits and attitudes), system variables relate to environmental and situational factors that the legal system could, in theory, control if it had the opportunity and resources, such controlling what evidence the forensic psychologist sees and how they see it.

One example of a system variable that has received attention from researchers is the concept of a "hiring bias", which relates to a well-established psychological phenomenon: confirmation bias. Psychological research suggests that when someone is motivated to reach a specific conclusion, the person will selectively review evidence in a

way that confirms their hypothesis (e.g., Mynatt, Doherty, & Tweney, 1977; Wason & Johnson-Laird, 1972; for review, see, Kunda, 1990).

Similarly, when forensic psychologists are hired by one side (e.g., hired by the prosecution or defense, rather than being court appointed) that expert might be—consciously or unconsciously—motivated to reach the conclusion that favors that side. Indeed, forensic psychologists produced opinions that were more favorable to the side that hired them in both civil and criminal trials in correlational studies (Murrie et al., 2009; Otto, 1989; Zusman & Simon,1983). This is also true when forensic psychologists were randomly assigned to believe they were working for the prosecution or the defense on a case consultation (Murrie, Boccaccini, Guarnera, & Rufino, 2013). Forensic evaluators' decisions were again significantly more favorable to the side by whom they believed they were retained—highlighting the causal role and eliminating potential confounds and selection effects in the correlational studies. Thus, psychologists are susceptible to confirmation bias when they are motivated to reach a certain result due to extralegal biasing information. However, addressing this hiring bias would be relatively difficult to change—it would mean changing the system such that experts are hired by the court rather than one party or are blinded to the hiring party. Additionally, calling the experts' awareness to this bias might not be effective as many suffer from a "bias-blindspot." That is, while experts might acknowledge that their colleagues are susceptible to bias, they believe that they are immune from bias. (Neal & Brodsky, 2016; Neal & Brodsky, 2014).

A more controllable system variable is thinking about what types of evidence the experts are exposed to. Being exposed to evidence that is not necessarily relevant to the

specific forensic judgment they are tasked with (e.g., competency) but is highly suggestive of guilt or innocence might bias the expert's judgment in a confirmatory direction. For example, being exposed to other evidence, such as confessions (Kassin, Bogart, & Kerner, 2011) and eyewitness identifications, (Charman, Gregory, & Carlucci, 2009) can instigate a motivated analysis of forensic evidence that significantly increases the chance that the forensic evaluator's conclusion is consistent with that unrelated evidence. These motivated interpretations of forensic evidence, in turn, reduce the accuracy of the forensic evaluator's conclusion (for review, see, Kassin, Dror, & Kukucka, 2013). Biasing information can influence an expert in different directions, depending on the valence of the other evidence. For example, a fingerprint examiner is more likely to conclude that a suspect's fingerprint does not match the crime scene fingerprint if they learn that the suspect has an alibi and more likely to conclude there is a match if they learn that the suspect confessed (Dror & Charlton, 2006). This suggests that forensic judgment is not always independent from other evidence and that this process can create a "snowball effect" (Dror, 2012; Kassin et al., 2013), wherein forensic psychologists' judgments can become biased in the same direction as other experts' opinions in the case.

The current research focuses on another variable that might create confirmation bias in forensic psychologists' judgment: motivation to see a defendant punished in court due to seeing emotionally disturbing photographs of a murder victim. If impactful, this variable suggests a relatively simple intervention of either not including such evidence or presenting it in a manner that would reduce its emotional impact. Despite the vast research on why forensic examiners reach differing conclusions, there is very little

research on the way that being exposed to different types of evidence influence forensic *psychologists'* decisions, specifically, nor the impact that their emotional responses to a case might have on their decisions.

Emotional Evidence

Although there has been no research on how being exposed to gruesome photographs influences forensic psychologists' judgments, research regarding the impact of gruesome photographs on jurors' decisions can provide insight their potential impact on forensic psychologists. A growing number of studies have demonstrated that viewing gruesome photographs can make mock jurors render more pro-prosecution and pro-plaintiff judgments relative to reading verbal descriptions of the victim's injuries (for review, see Grady, Reiser, Garcia, Koeu, & Scurich, 2018). Specifically, seeing gruesome photographs increases guilty verdicts (Bright & Goodman-Delahunty, 2006; Douglas, Lyon & Ogloff, 1997; Edwards & Mottarella, 2014; Matsuo & Itoh, 2015; Salerno, 2017) and the severity of sentences (Finkelstein & Batounis, 2010) in criminal trials. In the civil realm, viewing gruesome photographs also results in more liable verdicts (Bright & Goodman-Delahunty, 2006) and higher damage awards (Oliver & Griffit, 1976; Whalen & Blanchard, 1982). A recent meta-analysis has demonstrated that gruesome photographs have a small, but significant, effect on guilty and liability judgments (Grady et al., 2018).

Three studies have demonstrated that this effect was mediated, or explained by, the anger (Bright & Goodman-Delahunty, 2006) and disgust (Salerno, 2017) the photographs elicited. The impact of gruesome photographs on verdicts is eliminated, however, when they are presented in black-and-white instead of color because they elicit

less disgust (Salerno, 2017). It is possible that gruesome photographs might have a similar impact on forensic psychologists: motivating them to reach evaluations that are more likely to result in the defendant being convicted and punished (i.e., "pro-punishment" judgments) when they are confronted with gruesome photographs, such as concluding that the defendant is competent to stand trial and legally sane.

Theoretical Framework: How Emotion Affects Legal Judgments

Gruesome photographs increase negative emotions (Bright & Goodman-Delahunty, 2006; Cush & Goodman-Delahunty, 2006; Douglas et al., 1997; Edwards & Montarella, 2004; Salerno, 2017), which can impact legal judgments directly and indirectly (Feigenson & Park, 2006; Feigenson, 2015; Salerno & Bottoms, 2009). Several psychological theories describe how emotion can affect judgments via direct and indirect routes (Affect Infusion Model, Forgas, 1995; Culpable Control Model, 2000).

First, feeling anger and disgust can affect judgments *directly* because they create a need to blame and punish someone (e.g., Ask & Pina, 2011; Keltner et al., 1993; Molho et al., 2017). For example, anger and disgust elicited by a case creates an emotion-based need to punish, which in turn motivates mock jurors to be more confident in a guilty verdict (Salerno & Peter-Hagene, 2013). Second, feeling negative emotions can affect judgments *indirectly* by instigating a biased and motivated processing of other evidence to support blaming someone (Forgas, 1995; Alicke, 2000). For example, mock jurors who see gruesome photographs that rile anger and disgust might be motivated to pay more attention to prosecution evidence and less attention to defense evidence, which in turn might increase pro-prosecution judgments. In support, mock jurors who see gruesome photographs rate the prosecution's overall case as stronger (Bright & Goodman-

Delahunty, 2006), are less likely to take the defendant's difficult childhood (i.e., mitigating pro-defense evidence) into account (Nunez, Schweitzer, Chai, & Myers, 2015), and render verdicts less sensitive to strong (versus weak) defense evidence (Salerno, 2017).

I will test whether these emotion theories of decision-making demonstrated in jurors will generalize to forensic psychologists. Much like being hired by the prosecution, seeing gruesome photographs of a murder victim might create a motivation to see the defendant prosecuted and punished might instigate a biased processing of the evidence they review to make their judgments. When the experts review the gruesome photographs of a murder victim, they might similarly feel anger and disgust, which might create a similar emotion-based need to punish seen in jurors, and in turn, lead to judgments that will make punishment more likely (i.e., concluding the defendant is competent to stand trial and legally sane). The photographs might also influence judgments by causing the experts to pay more attention to or place more weight on evidence that supports competency and sanity and less on evidence that does not.

Although no studies have investigated the impact of emotionally disturbing evidence on forensic psychologists' judgments, rare studies testing its impact on other types of forensic judgments provides mixed support. Psychology students were more likely to make a positive fingerprint identification when presented with a high-emotional (compared to low-emotional) fact scenario—but only when the prints were ambiguous (as opposed to clear) (Dror, Peron, Hind, & Charlton, 2005). One study found no impact of emotional case information on fingerprint identification (Hall & Player, 2008), but 19% of the experts included in the analysis did not read the crime scenario. Although

they did not exhibit a bias, 52% of the experts in the high-emotion condition reported being impacted by the crime description, compared to only 6% of experts in the low-emotion condition. These studies suggest that emotional information has potential to bias the psychological process of making fingerprint judgments, but that experts might show this bias to a lesser degree than lay people.

The impact of emotionally disturbing photographs on fingerprint judgments might generalize to forensic psychologists. One the one hand, research has indicated that psychologists are not immune to the influence of biasing information (*see, e.g.*, Murrie, et al., 2013; Murrie et al., 2009; Otto, 1989; Zusman & Simon,1983). Forensic psychologists might have an emotion-based need to punish after seeing the photographs that might motivate them to find the defendant competent and sane because those judgments are likely to lead to conviction and harsher punishment—much like finding that a defendant's fingerprint matches the fingerprint found at a crime scene is likely to lead to conviction and punishment. On the other hand, forensic psychologists might be buffered against the impact of emotional evidence on their judgments because judgments of legally incompetent and insane would not necessarily absolve the defendant from punishment. When a person is found incompetent or insane, they are not immediately released. A mentally incompetent person is held in a secure psychiatric facility until he is adjudicated competent to stand trial (*see, e.g.*, Ariz. Rev. Stat. §13-4510(B). Similarly, a person who is found insane is typically held in a psychiatric facility until he is no longer "dangerous to himself or others" (CO. Rev. Stat. §16-8-120) or for the duration of the sentence he would have received had he been sane (Ariz. Rev. Stat. §13-502). Therefore,

psychologists' emotional need for punishment might not necessitate finding the defendant competent and sane to satisfy their need for the defendant to be punished.

Comparing Expert and Lay Judgments

An important difference exists between the literature regarding laypeople's emotions and judgments and forensic examiners. Forensic examiners are experts and their expertise might protect them from this bias. On the one hand, people assume that experts might be less vulnerable to emotional influences because of their expertise and training (e.g., judges, Maroney & Gross, 2014). Some research does indicate that biases found in laypeople do not generalize to experts, such as police officers (Correll et al., 2007; Mann, Vrij, & Bull, 2004), fingerprint examiners (Langenburg, et. al, 2009), and judges (Wessel, et al., 2006). One study looked at the impact of emotional testimony on judges versus laypeople (Wessell, et al., 2006) and found that when a rape victim displayed negative emotion congruent with their expectations for how a rape victim should act, laypeople rated them as more credible and were more likely to vote guilty relative to neutral emotion and positive emotion incongruent with their expectations. Judges, however, were buffered against the impact of the victim's emotion; their judgments were unaffected.

On the other hand, experts, such as judges and police, often exhibit similar biases to laypeople (e.g., Guthrie, Rachlinski, & Wistrich, 2000; Lassiter, et al., 2007). For example, Guthrie and colleagues (2000) assessed the influence of five cognitive biases (anchoring, framing, hindsight bias, the representative heuristic, and egocentric biases) on judicial decision making. This study demonstrated that the judicial decisions were significantly impacted by each of the five illusions. Although the research comparing the

influence of emotion on judgments by lay people and experts is scarce, Maroney and Gross (2014) argue that, rather than assuming judges are dispassionate, judges have to be trained to properly regulate their emotions.

Given that judges exhibit some of the same biases as laypeople, but not others (Guthrie, Rachlinski, & Wistrich, 2002), it is important to compare experts' and laypeople's reactions to potentially biasing gruesome photographs. Given that forensic psychologists are, of course, human and might exhibit similar emotional influences on their judgments, as well as the mixed nature of the literature, I propose competing hypotheses about whether emotional biases will generalize to forensic psychologists below.

Research Overview and Hypothesis

In the current research, I test the effect of viewing gruesome photographs of a murder victim on forensic judgments, as well as the relatively simple intervention of exposing forensic psychologists to B&W photographs rather than color. Additionally, I compared the responses of experts and laypeople to the same stimuli. In two experiments, participants read about a criminal case in which the defendant was evaluated for legal competency and insanity. All participants saw a summary of case information from a police report and observations from a clinical mental health evaluation. Participants were randomly assigned to view either photographs of the victim in (a) color, (b) black–and–white, or (c) no photographs. I included written descriptions of the victim's injuries depicted in the photograph to make sure participants in the control condition got as much of the information that the photographs provided as possible. Although photographs of the victim are relevant to the case in general, these photographs are not relevant to

decisions on legal competency, given that competency relates to the defendant's current state of mind, not his state of mind at the time of the crime. Although crime scene photographs might provide information about legal sanity by providing probative information about insanity, the photographs still provide no more information than the verbal descriptions of the photographs. Additionally, I selected photographs that do not contain any probative information about insanity. Experts (Study 1) and laypeople (Study 2) responded to measures designed to assess the defendant's general mental health, competency, and insanity.

Hypotheses. Because color gruesome photographs can instigate a biased processing of the evidence to support blaming and punishing someone, they might motivate forensic judgments that will lead to the defendant being blamed and punished harshly (i.e., concluding he is competent to stand trial and legally sane). First, I hypothesized that seeing color gruesome photographs (versus B&W photographs or no photographs) will significantly increase competency and legal sanity judgments among lay people. Second, I tested competing hypotheses regarding experts. On the one hand, they might exhibit the same bias as laypeople given evidence that experts exhibit similar biases to lay people. On the other hand, experts' expertise and experience might protect them against being affected by the photographs. Third, I predict that the effect of gruesome photographs will be significantly stronger on sanity decisions than competency decisions. The impact might be stronger for sanity decisions because forensic psychologists might believe that the information conveyed in the photographs is relevant to insanity judgments because insanity relates to the mental state at the time of the crime.

Therefore, a forensic psychologist might rely on the photographs to gather information about the defendant's mental state.

I utilized an online format to collect a lay sample in Study 2, which enabled me to collect additional measures of potential mediators of my hypothesized effects, including the participants' emotional response to reviewing the case evidence about the defendant's injury. If the photographs significantly impact laypeople's decision-making, I hypothesized a mediation process to explain this effect through negative emotion. Specifically, I predicted an indirect effect of gruesome color (versus black-and-white or no) photographs on decisions about competency and insanity through participants' disgust (Salerno, 2017) and anger (Bright & Goodman-Delahunty, 2006). I predicted that gruesome photographs will increase disgust and anger, which will lead to judgments that the defendant is competent to stand trial and legally sane. I predicted that black-and-white photographs will not increase judgments of competency and legal sanity indirectly through anger and disgust, based on research that indicates that black-and-white photographs do not impact judgments in the same manner as color photographs (Salerno, 2017).

Study 1 Method

Participants and Procedure

Participants were 48 forensic psychologists who responded to a paper survey. Six participants (12.5%) were excluded because they were in one of the photograph conditions, but reported that they did not look at the photographs. The remaining 42 participants were 35% female, had a mean age of 63 (*SD* = 10.19), and was 95% White, 2% Hispanic, and 2% Native American. The majority of participants had experience

conducting competency (78%) and insanity evaluations (57%). On average, participants had performed 319 competency evaluations (*SD* = 1576.51) and 283 sanity evaluations (*SD* = 1578.38). Participants also had experience testifying about competency (73%) and insanity (47%). On average, participants have testified about competency 22 times (*SD* = 68.28) and about insanity 11 times (*SD* = 35.55).

Experimental packets were mailed to 996 forensic psychologists using a database of forensic psychologists' contact information. Dr. Tess Neal has a database of forensic psychologists' contact information. The database was developed by going to every state database of psychologists, finding every psychologist registered as a forensic psychologist, and finding their addresses on the Internet. The database is a population database that contains 2,229 psychologists. No valid address information was available for 241 of the psychologists. The database contains psychologists from every state; 22% of the database from the Northeast, 17% from the Midwest, 30% from the South, and 31% from the West. After eliminating psychologists with no valid address, I randomly selected 996 forensic psychologists from the database using a random number generator. The sample contained participants from every state except for Oklahoma; 20.7% were from the Northeast, 15.6% were from the Midwest; 32.4% were from the South, and 31.3% were from the West.

Based on a previous study utilizing this database and resulting in a 43% response rate, I had anticipated a sample of 430 participants. I reasoned that even a 15% response rate would provide the recommended 50 participants per cell (Simmons et al., 2013) for our primary three-cell comparison (color/B&W/no photos). The current study, however, resulted in a 5% response rate.

Those who chose to participate read consent information, a case summary, and a mental health evaluation. They completed all measures and returned the materials in a postage-paid envelope.

Materials

Case stimulus. The materials were based on a real case and were reviewed by a licensed clinical psychologist with forensic evaluator experience for ecological validity. The case summary included information about the crime, the crime scene, and a verbal description of the victim's injuries depicted in the photographs. The summary reported that the defendant is accused of killing a woman with a knife after the defendant broke into the victim's house. The mental health evaluation included information typically present in a mental health report according to the licensed forensic psychologist who reviewed our materials, including information about the defendant's current behavior, diagnostic information, and information about the defendant's behavior at the time of the crime. To make competency ambiguous, the report includes both indicators of (a) incompetency (e.g., the belief that his attorneys are agents of the government) and (b) competency (e.g., occasional willingness to speak to his attorneys). Regarding sanity, the report includes both indicators of (a) legal insanity (e.g., statements that that the murder was necessary to protect his family from being killed by the government), and (b) legal sanity (e.g., the defendant's attempt to avoid the police after he committed the murder, an indicator of legal sanity [Cunningham v. State, 1982]) The materials are included in Appendix A.

Manipulations. The case materials included either 2 4X6 color photographs of the murder victim, B&W versions of the same photographs, or no photographs. If a

participant received photographs, the photographs came in a separate 4x6 envelope with a warning that read "Contains Crime Scene and Autopsy Photographs." This was done to ensure that participants did not view the photographs until after they read the informed consent. The photographs are from an actual case and depict highly gruesome knife injuries to the victim's throat. I modified the case to include information that put the defendant's sanity and competency at issue. Type of judgment (i.e., competency, sanity) was a within-subjects factor, so all participants made both competency and legal insanity judgments. Participants' experience level did not differ between the photo conditions, $F(2, 36) = .91$, $p = .41$.

Measures. A general perceived mental health scale comprised nine items (e.g. "the defendant describes persecutory delusions"; $M = 5.74$, $SD = .57$, Cronbach's alpha = .69), a competency scale comprised seven items (e.g., "the defendant's symptoms will negatively affect his ability to assist counsel"; $M = 5.45$, $SD = .89$, Cronbach's alpha = .78), and a legal sanity scale comprised six items (e.g., "the present offense was likely motivated by the delusions"; ($M = 5.14$, $SD = 1.03$, Cronbach's alpha = .70). All items were assessed on 7-point scales ranging from *Strongly Disagree* to *Strongly Agree*.

There were two ultimate judgment outcomes ("the defendant is competent to stand trial" [reverse coded] and "the defendant is legally insane"). All items were assessed on 7-point scales ranging from *Strongly Disagree* to *Strongly Agree*. Lower numbers therefore indicated an outcome that was more likely to result in the defendant being tried and punished for the crime.

Manipulation checks. Participants were asked how much they relied on the summary of the case materials, the mental health evaluation, and (in the conditions in

which photographs were included) the crime scene photographs on 5-point-scales ranging from *Not at all* to *Very Much*. Participants were also given an option to indicate that they did not look at the information. This question was meant to screen out people who indicated that they did not look at the photographs given that they were in an envelope that they might have chosen not to open. I excluded participants who reported that they did not look at the information.

Demographics. Demographics included age, gender, and ethnicity. Years of experience was measured by a set of dichotomous yes/no questions assessing whether participants had conducted competency and sanity evaluations and whether participants had testified regarding competency and sanity. If participants answered yes to any of the experience measures, they were asked to report how many times. These measures were potential covariates or moderators that were not ultimately explored given the unexpected low power. All measures are included in Appendix A.

Study 1 Results

To test the effect of gruesome photographs on competency and legal sanity judgments, I conducted two mixed Repeated-Measures ANOVAs with the photograph manipulation varying between subjects and (1) the ultimate competency versus sanity judgment and (2) judgments of mental health, competency, and sanity varying within subjects. See Table 1 for descriptive statistics of all dependent measures for both studies.

Table 1.

Descriptive statistics of all dependent measures as a function of photograph manipulation.

	Total	No Photographs	B&W Photographs	Color Photographs
Study 1	*N* = 42	*n* = 18	*n* = 11	*n* = 13
Experience	170.74 (854.07)	27.67 (67.65)	57.30 (87.09)	441.65 (1485.24)
General Mental Health Scale	5.74 (.57)	5.66 (.49)	5.84 (.78)	5.77 (.48)
Competency Scale	5.45 (.89)	5.25 (.78)	5.81 (.85)	5.44 (1.03)
Insanity Scale	5.14 (1.03)	5.16 (.96)	5.28 (.91)	5.01 (1.26)
Competency	5.05 (1.79)	5.00 (1.70)	5.00 (1.95)	5.15 (1.91)
Insanity	5.21 (1.68)	5.33 (1.64)	5.45 (1.51)	4.84 (1.91)
Study 2	*N* = 275	*n* = 98	*n* = 89	*n* = 88
Experience	.44 (.50)	.43 (.50)	.46 (.50)	.44 (.50)
General Mental Health Scale	5.45 (.81)	5.51 (.84)	5.37 (.77)	5.49 (.80)
Competency Scale	5.35 (1.24)	5.30 (1.32)	5.47 (1.18)	5.27 (1.21)
Insanity Scale	4.92 (1.08)	4.86 (1.16)	5.02 (.96)	4.89 (1.10)
Competency	4.41 (1.88)	4.31 (1.84)	4.31 (1.90)	4.63 (1.90)
Insanity	5.24 (1.62)	5.24 (1.55)	5.26 (1.63)	5.23 (1.69)
Bodily Awareness	2.15 (1.03)	2.15 (1.13)	2.17 (.91)	2.15 (1.05)
Anger	2.86 (1.36)	2.96 (1.45)	2.73 (1.34)	2.89 (1.29)
Disgust	3.33 (1.39)	3.35 (1.47)	3.28 (1.38)	3.34 (1.33)

Note: Study 1 Experience is an average of how many times an expert evaluated a defendant for competency and sanity and how many times an expert testified regarding the same.

Ultimate competency and sanity judgments

I hypothesized a significant interaction, such that seeing gruesome photographs (versus B&W photographs or no photographs) would significantly increase competency

and legal sanity judgments. I also predicted that this effect would be greater for sanity judgments than competency judgments because the photographs are somewhat more relevant to sanity judgments.

I conducted a mixed two-way Repeated-Measures ANOVA with photograph condition manipulated between subjects and decision type varying within subjects. There was no significant main effect of photograph type, $F(2, 38) = .08$, $p = .93$, $\eta_p^2 = .004$ on either insanity or competency. There was also no significant interaction between photograph type and decision type, $F(2, 38) = .51$, $p = .61$, $\eta_p^2 = .03$ or decision type, $F(1, 38) = .21$, $p = .65$, $\eta_p^2 = .006$ (See Figure 1).

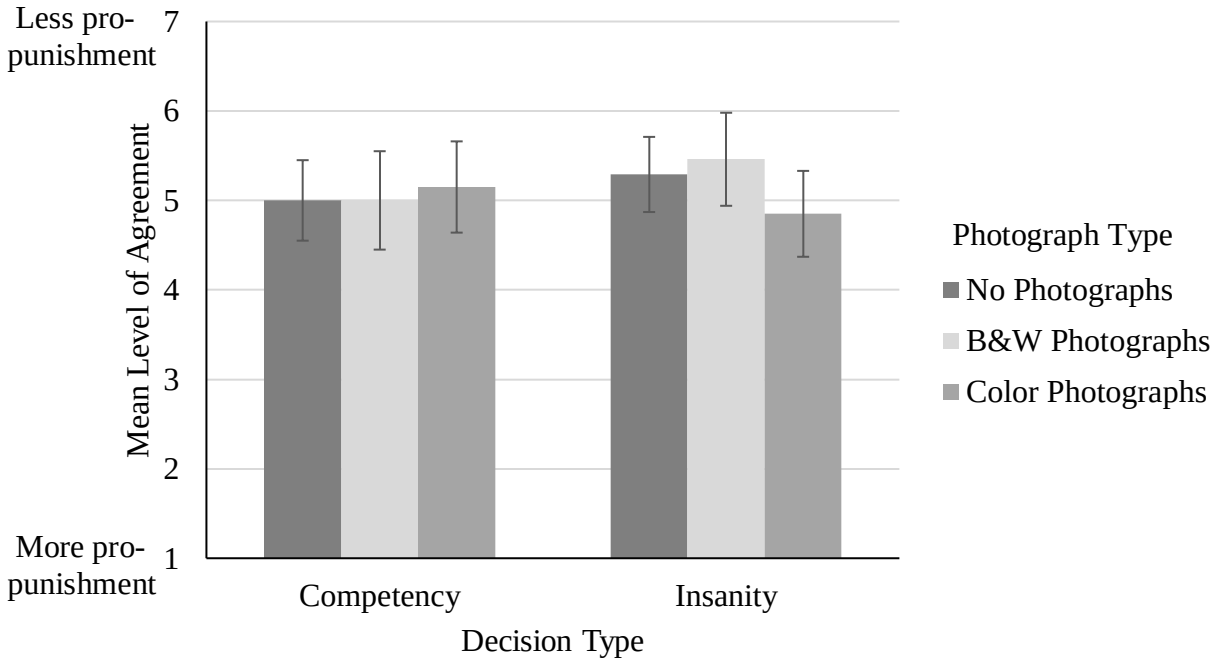


Figure 1. The effect of photograph type on competency and sanity decisions.
Note. Higher levels of agreement mean the participant rated the defendant as more incompetent and insane. Lower numbers indicate a judgment that is more likely to lead to the defendant being tried and punished for the crime.

Mental health, competency, and sanity perception scales

I tested the same interactive effect of photograph type and decision type on scales of perceptions of competency, sanity, and general mental health evidence. There was no

significant main effect of photograph type, $F(2, 39) = .61$, $p = .55$, $\eta_p^2 = .03$. nor a significant interaction between photograph type and decision type, $F(3.71, 72.34) = .68$, $p = .60$, $\eta_p^2 = .03$.

There was, however, a significant main effect of decision type, $F(1.86, 72.34) = 9.62$, $p < .001$, $\eta_p^2 = .20$. I ran post hoc comparisons on decision type with a Bonferroni correction. Participants rated the defendant as significantly more mentally ill than insane, $p < .001$. There were no significant differences between the (a) general mental health scale and the competency scale, $p = .10$, and (b) competency scale and the sanity scale, $p = .08$. The results of this analysis are displayed in Figure 2.

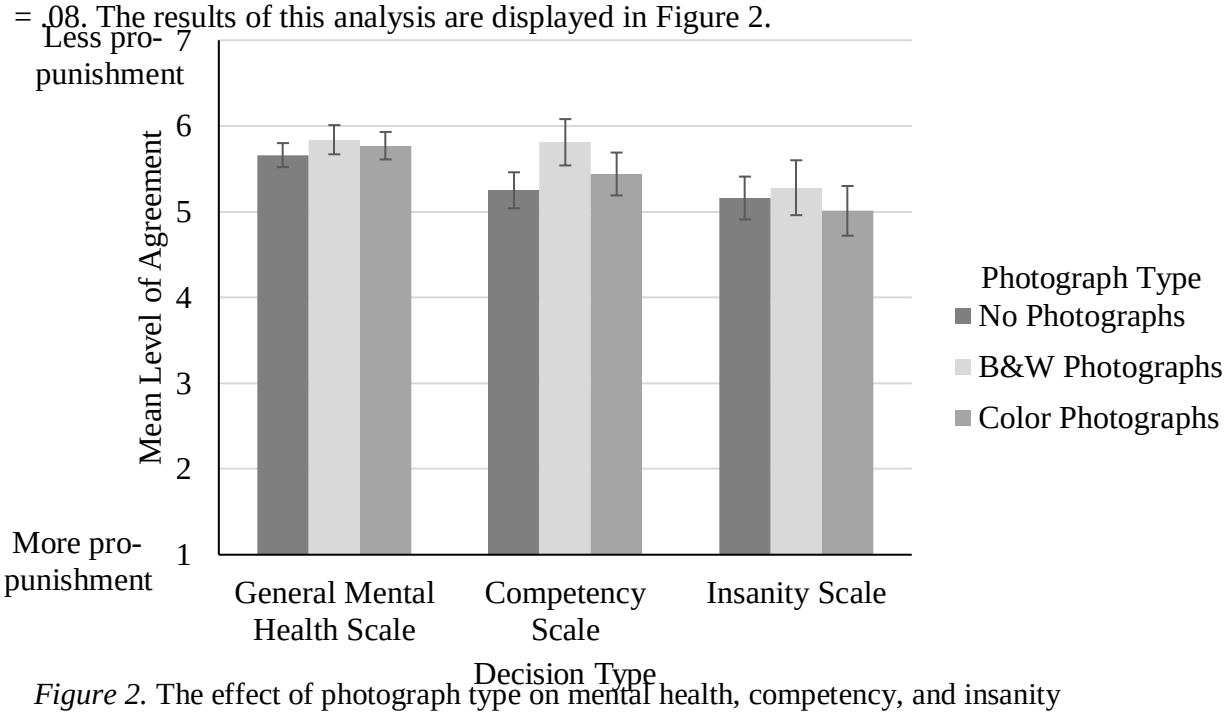


Figure 2. The effect of photograph type on mental health, competency, and insanity scales.
Note. Higher levels of agreement mean the participant rated the defendant as more mentally ill, incompetent and insane. Lower numbers indicate a judgment that is more likely to lead to the defendant being tried and punished for the crime.

Exploratory mediation analyses

Although I did not find the hypothesized total effects of the manipulation on ultimate forensic judgment outcomes, I conducted post hoc exploratory additional

mediation analyses to see if I could learn anything about the indirect processes of the photographs' effect on the ultimate judgments through the experts' perceptions of the evidence regarding mental health, competency, and sanity. None of the indirect effects of our manipulation on ultimate judgments were significant through the mental health, competency, and insanity perceptions scales. I also conducted a moderated mediation model to see if those indirect effects were significantly moderated by expertise, such that the photographs only affect judgments among experts with relatively less experience but not among experts with relatively more experience (potentially obscuring the effect when not taking experience into account). This was, however, not the case—all indirect effects were non-significant at all levels of expert experience. Given that (a) none of the indirect or conditional indirect effects were significant, and (b) my sample size did not justify these more complex models I do not report them here, but have included them in Appendix C.

Perceptions of evidence predicting ultimate judgments

I conducted two multiple regressions with the three scales assessing perceptions of the evidence predicting ultimate judgments of sanity and then competency. Ideally, experts would be relying on the type of evidence specific to the judgment: their perceptions of the competency evidence should predict the ultimate competency judgment and their perceptions of the insanity evidence should predict the ultimate sanity judgment. I had no hypothesis regarding the impact of general mental health evidence on the ultimate competency and sanity judgments as this was an exploratory analysis.

As one would hope of experts, their perceptions of the competency evidence significantly predicted their ultimate competency judgment, $B = 1.35$, $SE = .30$, $p < .001$.

The more they agreed with the pieces of evidence supporting the components that render someone competent, the more that they ultimately agreed he was competent to stand trial. Also, their ultimate competency judgments were not significantly predicted by their perceptions of the general mental health evidence, $B = –.16$, $SE = .48$, $p = .74$ or the insanity evidence, $B = .06$, $SE = .25$, $p = .81$.

Similarly, experts' perceptions of the insanity scale significantly predicted their ultimate sanity judgments, $B = 1.03$, $SE = .23$, $p < .001$. The more they agreed with the pieces of evidence supporting the components that render someone insane, the more that they ultimately agreed that he was insane. Also, their ultimate sanity judgments were not significantly predicted by responses on the general mental health scale, $B = –.14$, $SE = .43$, $p = .75$ or the competency scale, $B = .29$, $SE = .27$, $p = .30$. See Table 2 for the bivariate correlations between all measures.

Table 2.

Person correlation matrix for all continuous variables, Study 1.

	1	2	3	4	5
1. Incompetency					
2. Insanity	.35*				
3. General Mental Health Scale	.34*	.35*			
4. Incompetency Scale	.67**	.45**	.55**		
5. Insanity Scale	.35*	.69**	.50**	.51**	

* $p < .05$ ** $p < .01$

Study 1 Discussion

I proposed competing hypotheses regarding expert judgments. On the one hand, I predicted that seeing color gruesome photographs might increase pro-punishment judgments in both experts and laypeople, based on research suggesting that experts have similar cognitive biases as laypeople. On the other hand, I predicted that experts might be protected against the impact of gruesome photographs because of their expertise. These results suggest the latter: experts were not impacted by photograph type. I also predicted that the effect of photographs would be greater in sanity judgments than competency judgments. This hypothesis was not supported—photograph type had no effect across all types of judgments. Further, these results did not significantly differ across level of expertise. These results might indicate that expert judgments are not impacted by emotionally evocative photographs in the same way as lay judgments.

Despite finding none of the predicted effects, there were two findings suggesting that experts are making forensic judgments in appropriate ways. First, experts rated the defendant significantly more mentally ill than insane. This suggests that experts are not conflating insanity judgments with mental illness. Experts seem to understand that the test for legal insanity requires more than just diagnosing mental illness. Second, multiple regression models demonstrated that experts are correctly using their assessment of the sanity evidence to inform their ultimate legal sanity judgment and their assessment of competency evidence to inform their ultimate legal competency judgments. Thus, experts appear to be correctly distinguishing between the two types of evidence without one type of evidence having a spill-over or tainting effect on the other type of judgment. It is

important to note, however, that these analyses were post-hoc in nature and therefore require more research before drawing strong conclusions from this finding.

This study has several limitations that weaken my ability to conclude that experts are not impacted by gruesome photographs. A post-hoc power analysis revealed that, if the true population interaction effect size was $\eta_p^2 = .03$, this study would have only a 39% chance of detecting the interaction given a sample of 42. Thus, the study was very underpowered. Support for my hypotheses might have materialized if I had obtained the expected response rate.

Another limitation is that an unmeasured third variable might moderate the effect of photographs on judgments. Salerno (2017) suggested that gruesome color photographs (compared to black and white and no photographs) increase guilty verdicts through disgust but only among participants with relatively higher levels of bodily awareness. I did not include this measure because the nature of the paper survey prevented me from being able to control the order of measures; including the scale might have made experts aware that the study was about their emotional response and changed earlier answers. Including measures of bodily awareness and having enough power to include experience as a moderator might have revealed an interaction, such that the effect of the photographs manifest at higher levels of bodily awareness and/or lower levels of experience, which were obscured by my analyses that did not take these factors into account.

Finally, this study is limited in that it did not include laypeople. Therefore, it is not clear whether (a) experts are buffered against the impact of gruesome photographs that I assumed laypeople would exhibit, or (b) laypeople might not be impacted by gruesome photographs when they make forensic judgments rather than juror judgments.

That is, gruesome photos might not impact forensic judgments for anyone—experts or laypeople. I addressed these three limitations in Study 2.

Study 2 Introduction

In Study 2, I attempted to address three limitation of Study 1 by (a) recruiting a lay sample to tease apart whether gruesome photographs do not affect experts making forensic judgments or do not affect forensic judgments in general—regardless of whether the participant is an expert or layperson, (b) recruiting a large, well-powered sample, and (c) including additional mediators (i.e., measures of anger and disgust) and moderators (i.e., bodily awareness and experience/expertise).

Emotional Mediators

Based on previous research, I included measures of participants' anger and disgust reactions to the case evidence. Previous research suggests that photographs indirectly influence guilt judgments through disgust (Salerno, 2017) and anger (Bright & Goodman-Delahunty, 2006). I, therefore, expected that seeing color gruesome photographs (versus black-and-white and no photographs) would increase anger and disgust responses, which would in turn lead to pro-punishment decisions that the defendant was competent and sane.

Bodily Awareness Moderation

I also included a measure of bodily awareness, which is an individual difference variable reflecting the extent to which a person is chronically aware of their bodily sensations (Porges, 1993). The negative emotional response to the photographs might be infused into participants' ultimate judgments, or indirectly affect them by biasing how they process and interpret case evidence (Forgas, 1995; Alicke, 2000). This should only

occur, however, to the degree that the participants notice and experience their emotional response. Salerno (2017) demonstrated this effect in mock jurors: the indirect effect of gruesome color photographs on verdicts through disgust occurs only among participants with relatively high and moderate levels of bodily awareness.

Experience

Although I recruited laypeople, these people might have experience with mental health and gruesome photographs because of their occupations. I included a thorough set of measures of experience to see if experience moderated the effect of gruesome photographs on forensic psychological judgments. Specifically, consistent with Study 1, I predicted that viewing color photographs would increase judgments of competency and sanity, but only for participants with relatively less relevant experience.

Study 2 Method

Participants and Procedure

To obtain a lay sample, I recruited 329 community members on Amazon's Mechanical Turk. Mechanical Turk is a crowdsourcing website that connects experimenters with participants throughout the United States and is often more representative than other convenience samples (Paolacci, Chandler, & Ipeirotis, 2010). Mechanical Turk is become a popular and valid tool in jury research (Irvine, Hoffman, & Wilkinson-Ryan, 2018). Fifty-four (16.41%) participants were excluded for failing a photograph manipulation check or for taking less than five minutes to complete the study. The remaining 270 participants were 43% male, had a mean age of 38 (*SD* = 11.63), and were 84% White, 7% Hispanic, 9% Black, 9% Asian/Pacific Islander, 3% Native American Indian, and 2% Other.

Participants had a range of education and experience that might be relevant to their competency and insanity forensic judgments. Regarding experience in the law: 16% had served on a jury (of those 16%, 44% served on a criminal jury), 24% had been a victim of a violent crime, and reported being, on average, "moderately knowledgeable" about the law (M = 3.43, SD = .79 on 5-point scale). Participants were less experienced when it came to experience with mental health and the law: 2% of participants had performed legal competency evaluations, 2% of participants had performed legal sanity evaluations, and less than one percent had testified about competency and insanity. They reported being, on average, "knowledgeable" (M = 3.77, SD = .96 on a 5-point scale) with mental health more broadly. Overall, 43% of participants reported experience in at least one of the following relevant contexts: mental health, the law, law enforcement, medicine, insurance, social work, counseling, or jobs that required the participant to conduct psychological assessments, diagnostic evaluations, or interviewing. On average, participants who reported any experience had experience with 1.31 of the fields (SD = .91).

Participants read consent information, read the same reports given to the experts in Study 1, and completed all Study 1 measures (along with additional new measures). Participants were paid $1.75 for their time.

Materials

Participants read the same case summary and completed the same measures as the experts in Study 1. I tried to keep the formatting and process as similar as possible, despite the materials being presented in an online format and sample differences. A few modifications and differences, however, were necessary or unavoidable. First, the

instructions were slightly modified because participants were not forensic psychologists and likely unfamiliar with the task, and to encourage them to do their best to envision themselves in the role of a forensic psychologist (See Appendix C). Second, I attempted to keep the online survey formatting as parallel as possible. The study had page breaks at the same places as the paper survey, and I set the survey to allow participants to go forward and backward among the pages, as the paper respondents could. Similarly, the survey questions were all on one page so they could navigate freely, as the paper respondents were able. Additionally, rather than embed the photographs in the survey pages, I designed the survey to better parallel the paper respondents who had photographs separately accompanying the survey that could be revisited at any time. To achieve this effect, participants had to choose to view the autopsy photographs by clicking a link that read "Contains Crime Scene and Autopsy Photographs" (similar to how paper respondents had to open the envelope), which opened the photographs in a separate tab on their browser. They were instructed to leave that tab open so that they could revisit the photographs whenever they wanted and provided links throughout the survey so that they could revisit the photos if they accidentally closed the initial tab. After participants completed the measures from Study 1, they advanced to a separate section of the survey that included additional measures. Once they completed the original measures and advanced to the new measure sections, however, they were no longer able to move backward and revisit the original questions.

Measures. Similar to Study 1, I created a general mental health scale (M = 5.47, SD = .80, Cronbach's alpha = .77), competency scale (M = 5.35, SD = 1.24, Cronbach's alpha = .90), and insanity scale (M = 4.92, SD = 1.08, Cronbach's alpha = .72).

I added additional measures to assess potential mediators and moderators of my hypothesized effect. First, I assessed participants' emotional reactions to the crime by asking them to rate their anger and disgust about the victim's injuries simultaneously on a grid measure. The grid is designed to discourage people from conflating their level of anger and disgust (Salerno & Peter-Hagene, 2013; Appendix 1). Past research demonstrates that when measured via single parallel items the terms "anger" and "disgust" are often used interchangeably (Nabi, 2002; Olatunji et al., 2012), when using the grid measure they are correlated but not redundant (Salerno & Peter-Hagene, 2013; Salerno, 2017). The current research confirms the finding that the measures are correlated but not redundant ($r = .62$, $p < .01$). These measures were included as potential mediators of the effect of gruesome photographs on forensic judgments.

Participants then completed a bodily awareness scale. Participants were asked about how often they are aware of ten bodily sensations in their day-to-day life on a scale from *Never* to *Always* (e.g., their heart racing, their palms sweating, and their breathing, $M = 2.17$, $SD = 1.04$, Cronbach's alpha = .95). The scale was adopted from Porges (1993,) and similar scales have been used as a measure of internal reactions relating to experiencing emotion (e.g., Salerno, 2017; Critchley, Wiens, Rotshtein, Ohman, & Dolan, 2004; Terasawa, Shibata, Moriguchi, & Umeda, 2013; Wiebking, de Greck, Duncan, Heinzel, Tempelmann, & Northoff, 2011; Terasawa, Fukushima & Umeda, 2013). Bodily awareness did not vary across photograph type, $F(2, 267) = .03$, $p = .97$.

Participants reported if they worked in mental health, the law, law enforcement, medicine, insurance, social work, counseling, and/or jobs that required them to conduct psychological assessments, diagnostic evaluations, or interviewing. Participants selected

each field in which they had worked. Of participants with experience, 9% had experience in mental health, 5% had experience in law, 3% had experience in law enforcement, 25% had experience in medicine, 21% had experience in insurance, 9% had experience in social work, 7% had experience in counseling, 6% had experience conducing psychological assessments, 5% had experience conducing psychological diagnostic evaluations, and 41% had experience interviewing (outside the hiring process). I created a dichotomous variable representing whether the participant indicated that he or she worked in at least one of the fields (coded as 1), or if she did not work in any of the fields (coded 0). I also calculated a sum of how many fields the participant had experience with, but the majority of participants (83%) had experience only in one field. Given so few had experience in more than one field I utilized the dichotomous variable in analyses. Experience did not vary across photograph type, X^2 (2, N = 270) = .12, p = .94.

Study 2 Results

Ultimate competency and sanity judgments

I conducted a similar mixed two-way Repeated-Measures ANOVA to test the interactive effect of the gruesome photograph manipulation and decision type on ratings of competency and sanity as in Study 1. Consistent with Study 1, no significant main effect of photograph type, $F(2, 272) = .29$, $p = .75$, $\eta_p^2 = .002$ and there was no significant interaction between photograph type and decision type, $F(2, 471.72) = .99$, $p = .37$, $\eta_p^2 = .007$. Unlike with Study 1, there was, however, a significant main effect of decision type, $F(1, 471.72) = 94.11$, $p < .001$, $\eta_p^2 = .16$. Participants rated the defendant as significantly more insane than incompetent, $p < .001$ (See Figure 3).

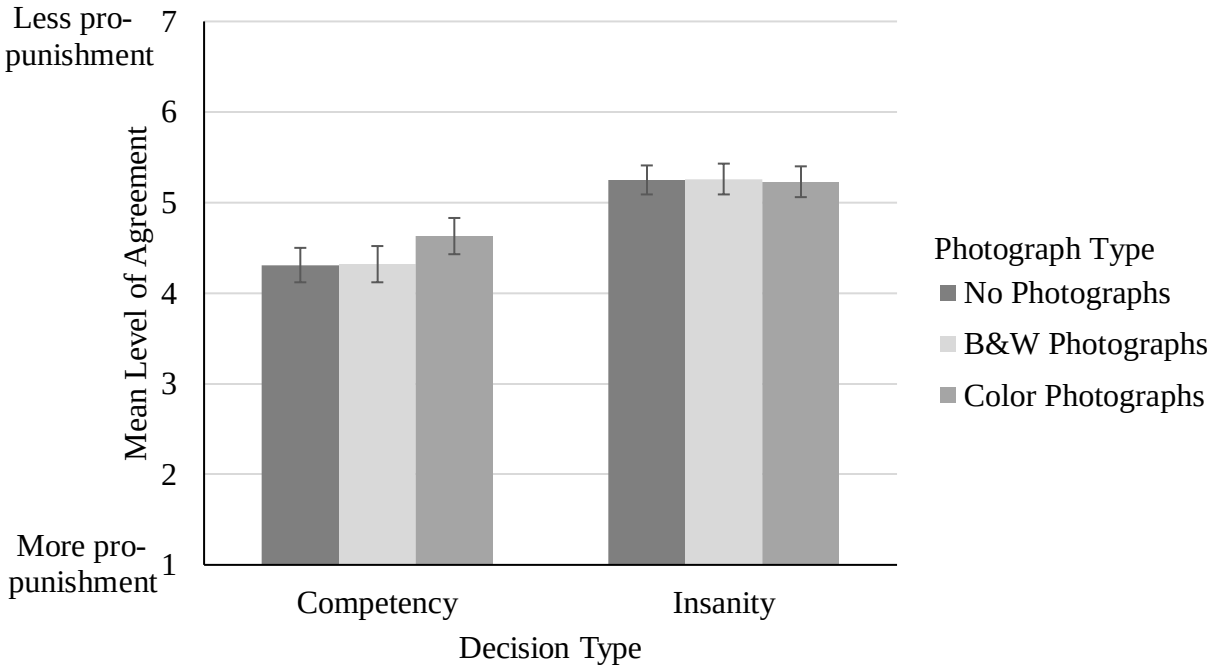


Figure 3. The effect of photograph type on competency and sanity decisions. *Note.* Higher levels of agreement mean the participant rated the defendant as more incompetent and insane. Lower numbers indicate a judgment that is more likely to lead to the defendant being tried and punished for the crime.

Mental health, competency, and sanity perception scales

I tested the same interactive effect of photograph type and decision type on scales of competency, sanity, and general mental health. Consistent with Study 1, there was not a significant main effect of Photograph Type, $F(2, 272) = .18$, $p = .84$, $\eta_p^2 = .001$.There was also no significant interaction between Photograph Type and Decision Type, $F(3.84, 522.59) = 1.68$, $p = .16$, $\eta_p^2 = .01$.

Consistent with Study 1, there was a significant main effect of decision type, $F(1.92, 522.59) = 41.03$, $p < .001$, $\eta_p^2 = .13$. I ran post hoc comparisons on decision type with a Bonferroni correction. This revealed a different pattern, however, relative to experts (who rated the defendant as significant more mentally ill than incompetent and legally insane, which did not differ from each other). Consistent with Study 1, participants rated the defendant significantly more mentally ill than insane, $p < .001$. In contrast to Study 1, participants rated the defendant as significantly more incompetent than insane, $p < .001$. There was no difference in ratings on the general mental health scale and the competency scale, $p = .37$. This means that participants rated the defendant as significantly more incompetent and mentally ill than insane (See Figure 4).

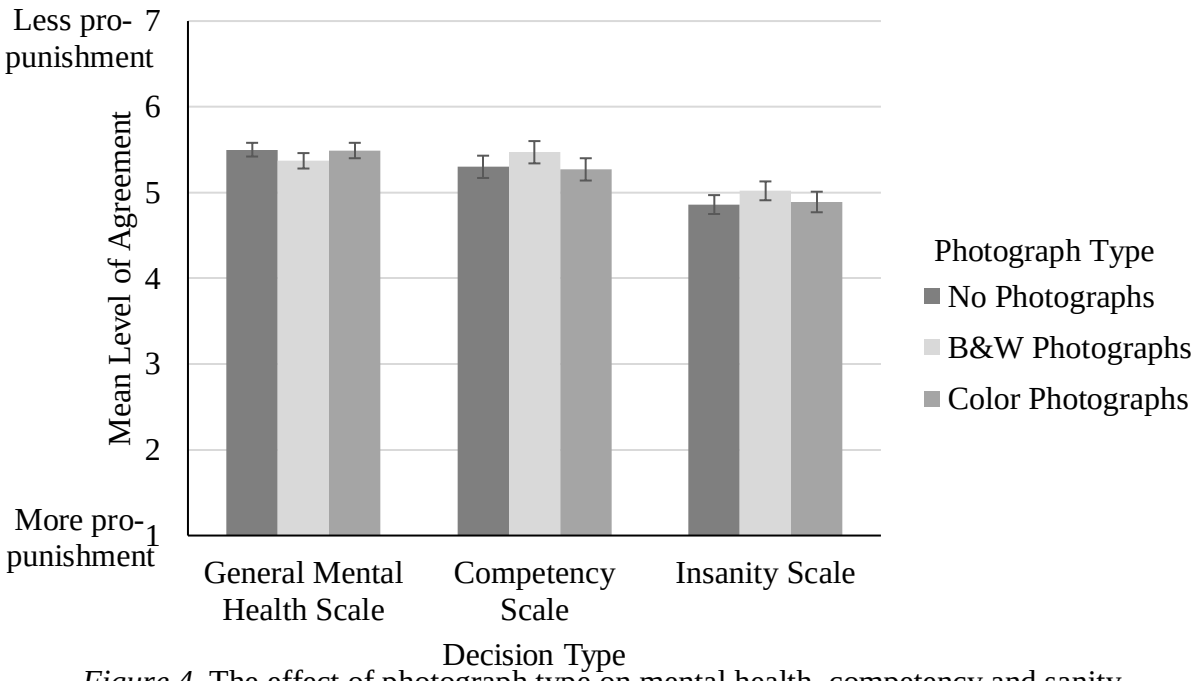


Figure 4. The effect of photograph type on mental health, competency and sanity scales.

Note. Higher levels of agreement mean the participant rated the defendant as more mentally ill, incompetent and insane. Lower numbers indicate a judgment that is more likely to lead to the defendant being tried and punished for the crime

Moderated mediation: Participant experience

Because Study 2 had more power, I was able to conduct moderated mediation models to test whether (a) the gruesome photographs affected participants' ultimate competency and sanity judgments through their perceptions of the mental health, competency, and insanity evidence as well as their emotional responses and (b) these indirect effects were weaker for participants with relatively more experience with related issues (e.g., the law, mental health evaluations). Specifically, I tested a model examining the indirect effect of photograph type on competency and sanity judgments through emotional responses (i.e., anger, disgust), and their assessment of the different types of evidence (i.e., perceptions of mental health, competency, and sanity evidence scales) as

parallel mediators, with participant expertise as a dichotomous moderator of the *a* path and *b* paths. Expertise might moderate the *a* path by moderating the effect of photographs on (a) their emotional responses (i.e., participants with experience might have less strong emotional reactions to gruesome photographs given they have been exposed to similar things before), and/or (b) their assessment of the evidence (i.e., participants with experience who are less affected by the photographs might not engage in as much biased processing of the evidence). Expertise might also moderate the *b* path by buffering the effect of the mediators on judgment. That is, participants might be better at correcting for the biasing effect of the gruesome photographs and adjust their responses on their ultimate forensic judgment measures. See Figure 5 for a diagram of the model.

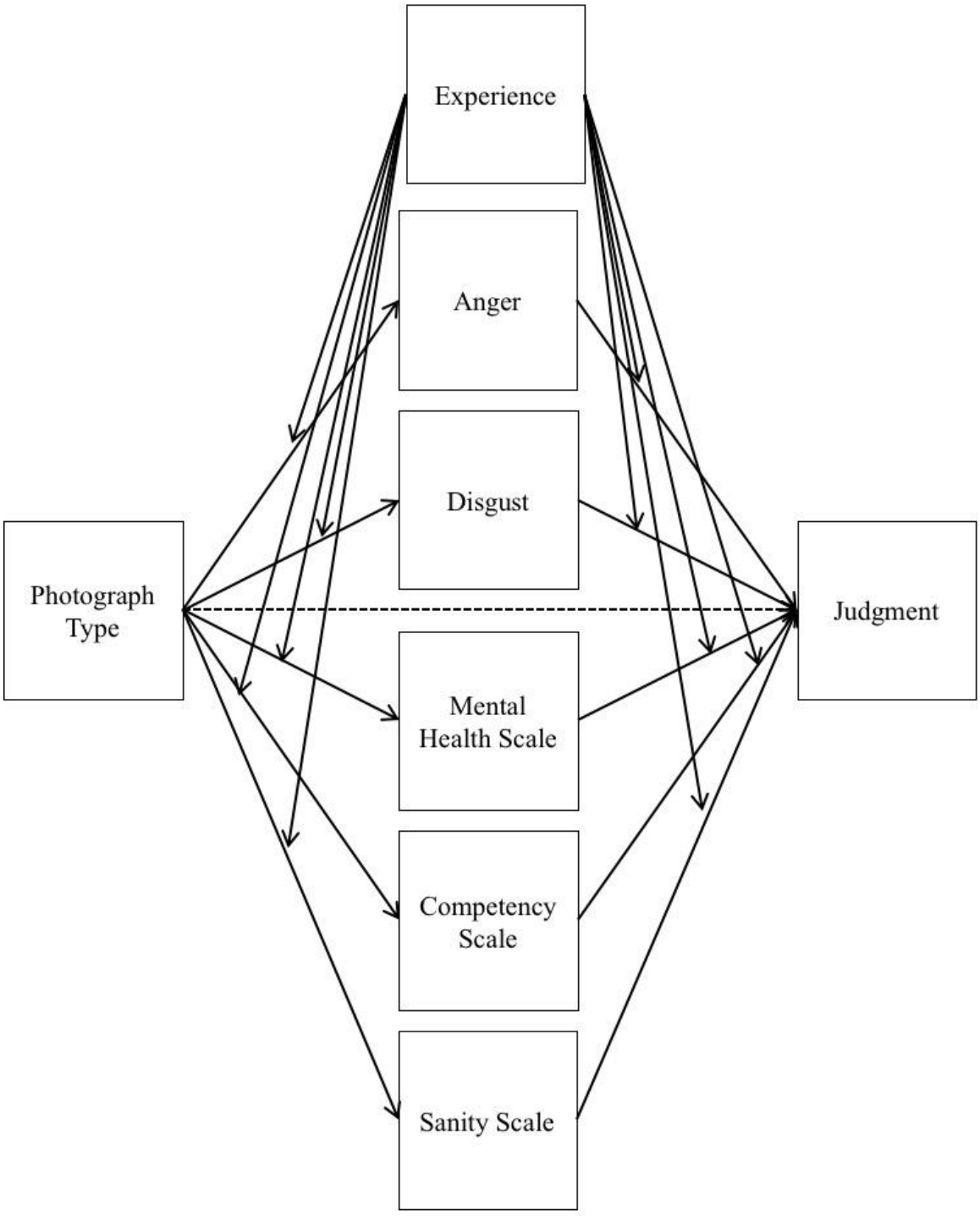


Figure 5. The indirect effect of photograph type on ultimate forensic judgments through anger, disgust, and mental health, competency, and sanity scales, moderated by experience. I tested the model twice, once with ultimate competency judgments and the other with ultimate sanity judgments.

I hypothesized that there would be an indirect effect of photograph type on competency and sanity ratings through disgust (Salerno; 2017) and anger (Bright & Goodman-Delahunty; 2006). Specifically, I predicted that when a participant saw color photographs (versus black and white or no photographs), the participant would feel greater disgust and greater anger, which would in turn would lead the participant to render more pro-punishment judgments. I also hypothesized that the color (versus B&W, or no) photographs would increase competency and insanity judgments by influencing how they interpreted the evidence (i.e., competency, sanity, mental health perceptions scales). Due to the overall null findings of Study 1 among experts, I hypothesized that the indirect effects of the photograph manipulation would have a greater impact when participants reported no experience then when they reported experience.

Ultimate competency judgments. None of the indices of moderated mediation were significant. That is, none of the indirect effects of the gruesome photographs on ultimate competency judgments depended on participants' experience. All indices of moderated mediation are listed in Table 3.

Further, the moderated mediation analysis on ultimate competency judgments revealed no significant indirect effect of photographs on ultimate competency judgments through anger; disgust; or perceptions of mental health, competency, or sanity regardless of participants' experience level. All conditional indirect effects are listed in Table 4.

Table 3.

Indices of moderated mediation for the indirect effect of gruesome photographs on ultimate competency judgments depending on participants' experience.

	Index	SE	CI
Anger			
B&W v. No Photos	–0.08	0.11	–0.37, 0.08
Color v. No Photos	–0.007	0.07	–0.15, 0.12
Disgust			
B&W v. No Photos	0.03	0.10	–0.12, 0.32
Color v. No Photos	–0.008	0.04	–0.12, 0.68
Mental Health Scale			
B&W v. No Photos	0.03	0.17	–0.27, 0.40
Color v. No Photos	0.02	0.07	–0.09, 0.19
Competency Scale			
B&W v. No Photos	–0.24	0.22	–0.76, 0.16
Color v. No Photos	–0.005	0.10	–0.20, 0.20
Sanity Scale			
B&W v. No Photos	–0.17	0.16	–0.61, 0.05
Color v. No Photos	–0.03	0.11	–0.27, 0.18

Note. Significant effects are indicated by bolded fonts and an asterisk.

Table 4.

Conditional indirect effects of photograph manipulation on competency as a function of experience.

	Anger Mediator			Disgust Mediator			Mental Health Scale Mediator			Competency Scale Mediator			Sanity Scale Mediator		
	B	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*
B&W (vs. No) Gruesome Photographs															
No Experience	0.07	0.09	–0.04, 0.33	–0.02	0.07	–0.28, 0.06	–0.02	0.05	–0.23, 0.03	0.17	0.13	–0.01, 0.56	0.15	0.13	–0.01, 0.54
Experience	–0.004	0.06	–0.19, 0.08	0.007	0.07	–0.08, 0.25	0.01	0.16	–0.27, 0.39	–0.06	0.18	–0.47, 0.26	–0.02	0.10	–0.37, 0.09
Color (vs. No) Gruesome Photographs															
No Experience	0.003	0.02	–0.02, 0.07	0.006	0.03	–0.03, 0.11	–0.004	0.03	–0.08, 0.03	–0.006	0.08	–0.18, 0.15	0.009	0.06	–0.1, 0.15
Experience	–0.004	0.06	–0.14, 0.12	–0.001	0.03	–0.09, 0.04	0.02	0.06	–0.08, 0.19	–0.01	0.06	–0.14, 0.11	–0.02	0.09	–0.23, 0.15

Note. Significant effects are indicated by bolded fonts and an asterisk.

Ultimate sanity judgments. Only one of the indices of moderated mediation was significant regarding sanity judgments. Experience significantly moderated the indirect effect of black and white gruesome photographs (compared to no photographs) on sanity evaluations through the mental health scale, *Index* = –0.43, *SE* = 0.20, *95% CI* = [–0.92, –0.12]. All other indices of moderated mediation were not significant. All indices of moderated mediation are listed in Table 5.

Regarding the one significant moderated mediation index, examination of the conditional indirect effects (See Table 6) revealed that when participants had relevant experience, there was a significant indirect effect of viewing black and white (versus no) gruesome photographs on ratings of sanity through the mental health scale—but this indirect effect was not significant when participants did not have experience. More specifically, when participants with expertise saw black-and-white gruesome photographs (versus no photographs), participants rated the defendant as less mentally ill, *B* = –.42, *SE* = .18, *p* = .02, *95% CI* [–.77, –.06], which in turn reduced their agreement that the defendant was insane, *B* = .84, *SE* = .21, *p* = .001, *95% CI* [.42, 1.26]. In contrast, when participants without expertise saw black-and-white gruesome photographs (versus no photographs) their perceptions of the defendant's mental health were not affected, *B* = .14, *SE* = .16, *p* = .39, *95% CI* [–.17, .45]—although those perceptions were still related to ultimate sanity judgments, *B* = .54, *SE* = .16, *p* = .008, *95% CI* [.23, .85].

In summary, when participants had relevant experience being exposed to B&W photographs perceived the defendant as less mentally ill, which in turn reduced their agreement that the defendant was insane; whereas when participants had no relevant

experience, being exposed to B&W photographs had no significant effect on their perceptions of the defendant's general mental health. Surprisingly, color photographs had no indirect effects on sanity judgments.

Table 5.

Indices of moderated mediation for the indirect effect of gruesome photographs on ultimate sanity judgments depending on participants' experience.

	Index	SE	CI
Anger			
B&W v. No Photos	0.02	0.08	–0.12, 0.19
Color v. No Photos	0.005	0.05	–0.09, 0.11
Disgust			
B&W v. No Photos	0.03	0.07	–0.08, 0.22
Color v. No Photos	0.008	0.04	–0.06, 0.12
Mental Health Scale			
B&W v. No Photos	**–0.43**	**0.20**	**–0.92, –0.12***
Color v. No Photos	–0.01	0.04	–0.12, 0.05
Competency Scale			
B&W v. No Photos	–0.14	0.10	–0.38, 0.01
Color v. No Photos	0.007	0.06	–0.10, 0.14
Sanity Scale			
B&W v. No Photos	–0.27	0.18	–0.65, 0.06
Color v. No Photos	–0.04	0.15	–0.34, 0.24

Note. Significant effects are indicated by bolded fonts and an asterisk.

Table 6.

Conditional indirect effects of photograph manipulation on sanity as a function of experience.

	Anger Mediator			Disgust Mediator			Mental Health Scale Mediator			Competency Scale Mediator			Sanity Scale Mediator		
	B	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*
B&W (vs. No) Gruesome Photographs															
No Experience	–0.03	0.06	–0.2, 0.05	–0.02	0.04	–0.14, 0.02	0.07	0.09	–0.09, 0.3	**0.13**	**0.08**	**0.004, 0.34***	**0.21**	**0.12**	**0.01, 0.5***
Experience	–0.006	0.05	–0.14, 0.08	0.0001	0.01	–0.02, 0.03	**–0.35**	**0.17**	**–0.8, –0.09***	–0.009	0.05	–0.19, 0.06	–0.06	0.13	–0.37, 0.17
Color (vs. No) Gruesome Photographs															
No Experience	–0.008	0.02	–0.07, 0.03	0.006	0.03	–0.03, 0.11	0.005	0.03	–0.03, 0.09	–0.004	0.05	–0.12, 0.09	0.01	0.08	–0.14, 0.18
Experience	–0.003	0.04	–0.09, 0.08	–0.001	0.03	–0.09, 0.04	–0.007	0.03	–0.11, 0.03	0.003	0.03	–0.03, 0.1	–0.02	0.12	–0.28, 0.2

Note. Significant effects are indicated by bolded fonts and an asterisk.

Moderated mediation: Bodily awareness

I next tested bodily awareness as a moderator of the relationship between gruesome photographs and ultimate forensic judgment given that it has been found to be a moderator of the effect of gruesome photographs on juror judgments (Salerno, 2017). I hypothesized that the indirect effect of photograph type on ultimate competency and sanity judgments through anger, disgust, and perceptions of the mental health, competency, and sanity evidence scales would increase as participants' bodily awareness increased. See Figure 6 for a diagram of the models.

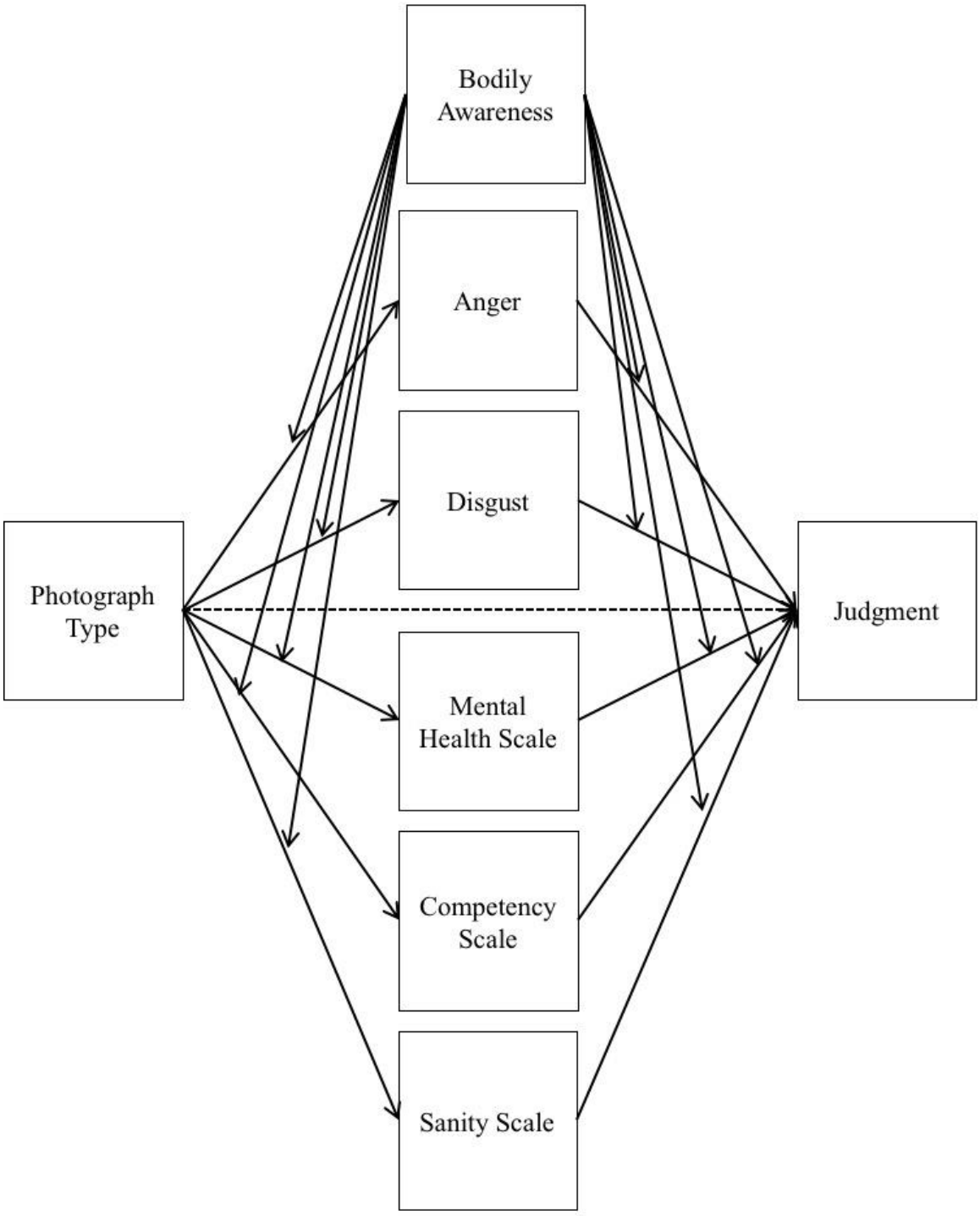


Figure 6. The indirect effect of photograph type on competency through anger, disgust, and mental health, competency, and sanity scales, moderated by bodily awareness. I tested the model twice, once with ultimate competency judgments and the other with ultimate sanity judgments.

Because the moderator was continuous, I was not able to obtain moderated mediation indices from Hayes' PROCESS macro. Examination of the conditional indirect effects revealed, however, that there were no significant indirect effects of photograph type on competency or sanity evaluations through anger, disgust, mental health, competency, or sanity—regardless of participants' level of bodily awareness. All indirect effects are listed in Table 7 (competency) and 8 (sanity).

Table 7.

Conditional indirect effects of photograph manipulation on competency as a function of bodily awareness.

		Anger Mediator			Disgust Mediator			Mental Health Scale Mediator			Competency Scale Mediator			Sanity Scale Mediator		
	BA Value	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*
B&W (vs. No) Gruesome Photographs																
Low BA	1.13	–0.002	0.03	–0.09, 0.06	0.05	0.07	–0.04, 0.29	–0.06	0.08	–0.27, 0.04	0.10	0.17	–0.15, 0.52	–0.02	0.15	–0.32, 0.28
Moderate BA	2.15	0.003	0.02	–0.03, 0.07	–0.007	0.03	–0.09, 0.04	–0.07	0.08	–0.24, 0.08	0.04	0.10	–0.05, 0.35	0.10	0.10	–0.08, 0.32
High BA	3.16	0.02	0.07	–0.06, 0.25	–0.07	0.08	–0.33, 0.03	–0.03	0.18	–0.34, 0.38	–0.006	0.14	–0.09, 0.55	0.19	0.16	–0.04, 0.61
Color (vs. No) Gruesome Photographs																
Low BA	1.06	–0.002	0.02	–0.06, 0.02	–0.002	0.02	–0.05, 0.02	–0.004	0.02	–0.07, 0.02	–0.02	0.07	–0.17, 0.11	–0.10	0.11	–0.36, 0.08
Moderate BA	2.14	0.001	0.007	–0.009, 0.03	–0.001	0.01	–0.03, 0.02	0.0001	0.02	–0.04, 0.04	–0.004	0.02	–0.06, 0.04	0.0001	0.07	–0.13, 0.14
High BA	3.22	0.004	0.02	–0.03, 0.08	–0.01	0.04	–0.12, 0.06	–0.02	0.07	–0.17, 0.14	0.000	0.03	–0.05, 0.06	0.08	0.10	–0.08, 0.31

Note. Significant effects are indicated by bolded fonts and an asterisk.

Table 8.

Conditional indirect effects of photograph manipulation on sanity as a function of bodily awareness.

		Anger Mediator			Disgust Mediator			Mental Health Scale Mediator			Competency Scale Mediator			Sanity Scale Mediator		
	BA Value	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*
B&W (vs. No) Gruesome Photographs																
Low BA	1.13	0.008	0.07	–0.11, 0.21	0.09	0.12	–0.06, 0.48	0.003	0.06	–0.1, 0.14	0.15	0.17	–0.15, 0.52	–0.005	0.07	–0.2, 0.10
Moderate BA	2.15	0.03	0.05	–0.02, 0.20	–0.006	0.04	–0.13, 0.04	0.005	0.03	–0.04, 0.1	0.09	0.10	–0.05, 0.35	0.05	0.07	–0.03, 0.25
High BA	3.16	0.05	0.12	–0.08, 0.41	0.004	0.15	–0.28, 0.36	0.003	0.07	–0.11, 0.18	0.05	0.14	–0.09, 0.55	0.18	0.20	–0.06, 0.71
Color (vs. No) Gruesome Photographs																
Low BA	1.06	0.003	0.03	–0.03, 0.08	–0.002	0.03	–0.07, 0.03	–0.007	0.04	–0.1, 0.05	–0.02	0.09	–0.23, 0.14	–0.07	0.08	–0.27, 0.05
Moderate BA	2.14	0.005	0.02	–0.03, 0.06	0.001	0.02	–0.03, 0.06	–0.0001	0.02	–0.04, 0.05	–0.009	0.05	–0.11, 0.09	0.00	0.05	–0.1, 0.1
High BA	3.22	0.008	0.04	–0.06, 0.13	0.008	0.04	–0.04, 0.151	0.006	0.04	–0.05, 0.15	–0.0001	0.08	–0.15, 0.16	0.06	0.08	–0.04, 0.31

Note. Significant effects are indicated by bolded fonts and an asterisk.

Perceptions of evidence predicting ultimate judgments

Next I conducted two similar multiple regressions as the regressions I conducted for Study 1. Unlike experts, who relied on only competency evidence when making competency judgments and insanity evidence when making insanity judgments, non-experts forensic judgments were driven by several types of evidence.

Ultimate competency judgments. As with the experts, lay perceptions of competency evidence significantly predicted their ultimate competency judgment, B = .48, SE = .32, $p < .001$. The more they agreed with the pieces of evidence supporting the components that render someone competent, the more that they ultimately agreed he was competent to stand trial. Unlike with the experts, lay perceptions of insanity evidence also significantly predicted their ultimate competency judgment, B = .44, SE = .13, p = .001. The more they agreed with the pieces of evidence supporting the components that render someone sane, the more that they ultimately agreed he was competent to stand trial. Responses on the ultimate competency judgment were not significantly predicted by responses on the general mental health scale, B = –.17, SE = .15, p = .26, participant anger, B = –.15, SE = .09, p = .11, or participant disgust, B = .04, SE = .09, p = .69.

Ultimate insanity judgments. Again, as with the experts, lay perceptions of the insanity scale significantly predicted their ultimate sanity judgment, B = .71, SE = .09, $p < .001$. The more they agreed with the pieces of evidence supporting the components that render someone insane, the more that they ultimately agreed that he was insane. Unlike with the experts, lay participants' ultimate sanity judgments were also significantly

predicted by their perception of the general mental health evidence, $B = .44$, $SE = .10$, $p < .001$ and their perception of competency evidence, $B = .20$, $SE = .07$, $p = .006$. The more they agreed with the pieces of evidence supporting the components that render someone mentally ill or incompetent, the more that they ultimately agreed that he was insane. Participant anger, $B = –.02$, $SE = .06$, $p = .76$, and participant disgust, $B = .10$, $SE = .06$, $p = .10$, did not predict ultimate sanity judgments. See Table 9 for the bivariate correlations between all measures.

Table 9.

Person correlation matrix for all continuous variables, Study 2.

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Incompetency									
2. Insanity	.45**								
3. General Mental Health Scale	.21**	.54**							
4. Incompetency Scale	.46**	.56**	.47**						
5. Insanity Scale	.41**	.69**	.53**	.62**					
6. Anger	–.12*	.02	.03	–.07	–.02				
7. Disgust	–.04	.04	–.05	.04	–.07	.56**			
8. BA	.08	.03	–.04	–.01	.002	.05	.06		
9. Experience	–.003	.01	.02	–.02	–.006	.06	–.06	.13*	

* $p < .05$ ** $p < .01$

Study 2 Discussion

I predicted that seeing color gruesome photographs (rather than black and white photographs or no photographs) would significantly increase lay judgments of competency and sanity (pro-punishment judgments). This hypothesis was not confirmed. Consistent with the expert sample in Study 1, there was no main effect of photograph on forensic judgments and also no significant interaction between photograph type and decision type. Participants rated the defendant significantly more legally insane than legally incompetent in their ultimate judgments but participants agreed with evidence that the defendant was insane *less* than evidence indicating he was incompetent or mentally ill. This inconsistency suggests the laysample was not relying on their assessment of the relevant evidence appropriately when making their ultimate judgments.

The consistency between the null findings among experts in Study 1 and a larger lay sample provides support for the argument that gruesome photographs do not affect forensic judgments. Of note, the effect size for the interaction was smaller in this study (η_p^2 = .007) than in Study 1 (η_p^2 = .03). Because the interaction was smaller than expected based on the Study 1 effect size, this study was still relatively underpowered A post-hoc power analysis revealed that, if the true population interaction effect size was η_p^2 = .007, this study would have only a 65% chance of detecting the interaction given a sample of 275. An a priori power analysis based on the Study 2 effect size suggests that I would need 606 participants to detect the effect. Thus, I cannot completely rule out the possibility that the null findings are due to low power.

I also hypothesized that there would be an indirect effect of photograph type on ultimate competency and sanity judgments through disgust (Salerno, 2017) and anger (Bright & Goodman-Delahunty; 2006). I predicted that this indirect effect would occur only when the participant had no experience because there was no significant effect of photograph type on judgments in the expert sample. This hypothesis was not confirmed. There were no significant indirect effects of photograph type on judgments through anger and disgust regardless of expertise.

There was a significant indirect effect of black and white photographs (compared to no photographs) on sanity evaluations through the mental health scale when participants had expertise and significant indirect effects of black and white photographs (compared to no photographs) on sanity evaluations through the competency and insanity scales when participants had no expertise. This means that when participants had the relevant experience, exposure to black and white photographs led them to perceive the defendant was less mentally ill, which in turn led them to perceive the defendant as less insane. This finding was unexpected and difficult to interpret and could be a Type 1 error given the number of conditional indirect effects that were tested. Thus, I will not draw conclusions from this finding unless replicated in the future.

I also hypothesized that when participants had relatively higher levels of bodily awareness, their judgments would be indirectly influenced by the photographs through anger and disgust. This hypothesis was also not supported. In fact, anger and disgust were not correlated with any assessments of the evidence or ultimate forensic judgments with only one exception (i.e., the more angry participants felt, the less they agreed he was

legally incompetent, which would make him more likely to be tried and punished). The null effect of color gruesome photographs and lack of correlations among emotional responses and legal judgments are in stark contrast to previous work with lay people posing as jurors. This suggests that the null findings from Study 1 might be indicative of emotional responses to evidence playing less of a role in forensic judgments relative to the stronger role demonstrated on juror judgments.

Finally, I conducted the same multiple regressions as I did with the expert sample and found that lay participants do not only rely on sanity information to make sanity judgments and competency information to make competency judgments. Rather, lay participants rely on multiple sources of information when making their judgments. This is potentially a demonstration of an expertise effect: the experts might be better at applying appropriate evidence to their judgments better than lay people without training.

General Discussion

Two studies were designed to test the effect of gruesome crime scene photographs on forensic psychological judgments of competency and legal insanity. These two studies tested three primary hypotheses, all of which were largely unsupported. First, viewing color gruesome photographs (compared to black-and-white or no photographs) did not impact expert judgments about competency or legal sanity. Second, only viewing gruesome photographs in black-and-white (compared to no photographs) influenced lay judgments on sanity and it did so indirectly in ways that were difficult to interpret. Third, across both studies, gruesome photographs did not have a greater impact on either insanity or competency judgments. These results suggest that gruesome photographs do

not have an impact on judgments of competency and legal sanity. However, these are just two studies and more research is needed before I support this null conclusion confidently.

I did find some evidence of a potential expertise effect. Experts appropriately relied on sanity facts to make sanity decisions and competency facts to make competency decisions. Their pattern of judgments also demonstrated recognition that evidence of a mental illness is necessary, but not sufficient to consider someone legally insane. Lay participants did not successfully differentiate between evidence relevant to competency versus sanity. Further, the pattern of their assessment of sanity and competency evidence did not correspond to their ultimate sanity and competency judgments. This lends support to the idea of an expertise effect: experts were more appropriately applying relevant evidence to make forensic judgments regarding competency and legal sanity than were laypeople. Although this finding was a secondary analysis that was not hypothesized a priori, it suggests that our null findings regarding the gruesome photographs might be a true null effect, rather than a problem with our methodology or sample.

Relation to Previous Research on Gruesome Photographs

This research is inconsistent with previous research demonstrating that gruesome photographs increase pro-prosecution/plaintiff judgments (i.e., judgments that directly or indirectly make punishment more likely; Bright & Goodman-Delahunty, 2006, 2011; Douglas et al., 1997; Edwards & Mottarella, 2014; Finkelstein & Bastounis, 2010; Matsuo & Itoh, 2015; Oliver & Griffit, 1976; Salerno, 2017; Whalen & Blanchard, 1982). This research is also inconsistent with two previous mediation analyses indicating that gruesome photographs increase pro-punishment decisions by increasing negative

emotions (Bright & Goodman-Delahunty, 2006; Salerno, 2017). This is particularly noteworthy given that my current studies used the same gruesome photographs as three previous studies demonstrating they do have an effect on juror judgments (Bright and Goodman-Delahunty, 2006; Salerno, 2017). Thus, it is unlikely that my null results are due to a less successful manipulation.

There are, however, several methodological differences that might explain why my findings are different from previous gruesome photograph studies. First, in one of my studies, participants were selected from a different population: forensic psychologists. These experts might have more experience with gruesome photographs than members of the general population and might therefore be less influenced by them. However, this explanation does not address why the participants in Study 2 were not influenced by the photographs.

Second, participants in this study were asked to fill a different role than participants in the previous studies—that of a forensic psychologist. It could be that placing participants in that mindset, as opposed to the mindset of a juror, reduced the need to punish the defendant. Jurors are charged with deciding a defendant's guilt or innocence; in contrast, my participants were charged with evaluating the defendant's mental state. It is possible that they did not feel the same need to punish as they would have if they were acting as jurors. It is also possible that it is not appropriate to have classified competency and sanity as "pro-punishment" judgments. Participants might be aware that people who are found incompetent and insane are still punished in some way. However, if this was the case, one might expect that to depend on experience. That is,

participants with relevant experience (i.e., experts in Study 1, laypeople in Study 2 with experience in the legal system or mental health profession) should have been more likely to know that incompetent and insane defendants are still punished and been less likely to show the effect—but more naïve participants should have shown the effect. Given that relevant experience did not moderate the indirect effect of photograph type on judgment through emotion and reveal an effect among naïve participants, it might be the case that nobody considers these judgments to be related to punishment. Replication would be required, however, before significant conclusions can be drawn about these null findings. Further, in addition to potential differences in participants' perceived role, the judgments they are making are very different. My study did not include guilt, liability, or punishment decisions (as all previous studies have), but rather a decision that is one step removed from the guilt determination—in fact, in the current study guilt was not even contested.

Third, cases that include competency and sanity issues might be fundamentally different than cases where guilt is in question that might be relevant to the question of whether gruesome photographs create an emotion-based need to punish. A judgment of incompetency or insanity does not necessarily clear the defendant from all punishment and therefore might not be related to participants' need to punish. Further, the very fact of insanity might lessen the need to punish a defendant. A plea of insanity is considered an excuse defense. Excuse defenses are available in situations where society has determined that "conduct is nondeterrable, so that punishment would be so much unnecessary evil" (Kadish, 1987). Further, excuse defenses stand for the principle that "a person may be

properly blamed for her conduct 'if, but only if, [s]he had the capacity and fair opportunity…freely to choose whether to violate the moral/legal norms of society'" (Dressler, 2012). A defendant's insanity might function as an excuse that lessen the moral culpability of the defendant and therefore lessens the need to punish the defendant.

This explanation has been hinted at by the Courts. In *United States v. Freeman,* for example, the Court argued that "the law has, for centuries, regarded [insane] wrong-doers as improper subjects for punishment…". Similarly, in *Holloway v. United States,* the Court argues that "to punish a man who lacks the power to reason is as undignified and unworthy as punishing an inanimate object or an animal. A man who cannot reason cannot be subject to blame." An important step for future research would be to test what impact gruesome photographs might have on jurors' judgments in cases when the defendant is pleading insanity to see if (a) the gruesome photographs would still increase guilty verdicts (i.e., the case involving an insanity issue is not the explanation for our null effects), or (b) the gruesome photographs would *not* increase guilty verdicts in this context (i.e., our null findings might be due to the insanity issue decreasing the need to punish the defendant). Alternatively, future research could replicate this research and include a measure of how much the defendant deserves to be convicted or punished.

Relation to Research on Bias in Experts

The finding that forensic psychologists are not impacted by the emotional nature of gruesome photographs is in line with other research that indicates that experts are immune to some biasing information, such as the finding that judges were not impacted by emotional testimony (Wessell, et al., 2006). This finding could suggest that gruesome

photographs might not increase the emotion felt by experts given that the experts might see gruesome photographs routinely as part of their everyday work and therefore might have become accustomed to the photographs.

Alternatively, experts might understand that findings of incompetency and insanity do not lead to a lack of punishment. Incompetent defendants are typically detained until their competency is restored (*see, e.g.*, Ariz. Rev. Stat. §13-4510(B)). Similarly, defendants who are found insane are not immediately released. Rather, the person is incarcerated in a psychiatric facility until either he is no longer a danger (CO. Rev. Stat. §16-8-120) or for the duration of the sentence he would have received (Ariz. Rev. Stat. §13-502). Although the specific response to an incompetent or insane defendant depends on the state, there is no state where incompetent or insane defendants are released without some form of incarceration and treatment. A forensic psychologist might understand that incompetency and insanity are not "get-out-of-jail-free" cards and that even when a defendant is found incompetent or insane, he is still subjected to punishment.

These potential explanations are called into question, however, by the fact that I did not find a biasing effect of the photographs on laypeople's forensic judgments. The lay sample is unlikely to have (a) become accustomed to gruesome photographs in their work, or (b) be aware of the specifics of what happens to a defendant when rendered legally insane—yet they also were not impacted by the photographs. Thus, it would not be appropriate to characterize the null finding among experts as an expertise buffering effect because there was no bias to be buffered against. Instead, a more likely explanation

is that the impact of gruesome photographs on juror judgments do not generalize to forensic competency and sanity judgments.

Theoretical Contributions

This research expands past research on emotionally evocative evidence and legal judgments by demonstrating that previous research focusing on juror judgments might not generalize to expert forensic judgments of competency and legal sanity. To my knowledge, this is the first study that explores how gruesome photographs influence expert competency and sanity judgments and revealed that they might not be susceptible to emotion-based biases. These studies highlight the need for future research to test the novel theory that emotional evidence might only affect legal judgments that have a more direct impact on how harshly a defendant will be punished for the transgression that aroused the emotion.

This research lends support to the legal theory that insane defendants are less worthy of punishment (Kadish, 1987; Dressler, 2012). Participants in previous studies made decisions of guilt without considering issues like insanity, which might mitigate blame. In the current context, participants might not have felt the same need to punish because the defendant might be less blameworthy, because they were not in a juror role, and/or because the judgment was not directly connected to whether the defendant would be punished.

Legal Implications

These results suggest that gruesome photographs might not have an impact on experts' forensic judgments in cases involving insanity and competency. Based on these

results, relevant photographs could be included in case packets given to forensic psychologists without limitation. However, because these results contradict previous research, more replication is necessary before relying on these results.

Limitations

Experts and laypeople might respond to biasing information differently. This study used both an expert and a lay sample to detect differences between expert and lay decision-making. This study is the first to my knowledge that studied the biasing impact of gruesome photographs in a competency and insanity case. This study used photographs from a real case to increase the ecological validity. Additionally, the stimulus provided participants with information that they would receive in a real case.

This study also had limitations. First, there is no direct comparison between the lay sample and the expert sample because the vastly different sample sizes prevented a direct comparison. Descriptively speaking, experts might have been more likely to find the defendant incompetent (M = 5.05, SD = 1.79) than laypeople (M = 4.41, SD = 1.88) and less likely to find the defendant insane (M = 5.21, SD = 1.68) than laypeople (M = 5.24, SD = 1.62). However, without an inferential direct comparison, I cannot draw any conclusions from this pattern.

Second, both studies were underpowered. The expert study in particular was severely underpowered. Before any strong conclusions are drawn from this research, I need to collect a larger expert sample. I also need a larger lay sample before I draw strong conclusions given the very small effect size in Study 2.

Third, unfortunately, because I did not include dichotomous questions about sanity and competency, it is difficult to judge whether a ceiling effect occurred. Examining the frequency of responses, however, suggests this is not a great concern. In the expert sample, 61.9% (*n* = 28) of participants reported moderate to strong agreement with the statement "the defendant is insane," but a substantial proportion (28.5%, *n* = 12) reported being unsure (i.e. slight agreement, slight disagreement, or neutral), and 9.5% (*n* = 4) of the sample reported moderate to strong disagreement with the same statement. In the lay sample, 49.6% (134) participants moderately or strongly agreed that the defendant was insane, 44% (n = 118) reported being unsure, and 6.7% (18) participants moderately or strongly disagreed with the same statement. The competency judgments exhibited a similar pattern: 55% (*n* = 23) of experts reported moderate to strong disagreement with the statement "the defendant is competent," 32.8% (n = 14) reported being unsure, and 9.8% (4) reported moderate to strong agreement with the same statement. In the lay sample, 36.3% (98) of participants moderately or strongly agreed that the defendant was incompetent, 44% (n = 119) reported being unsure, and 19% (53) participants moderately or strongly disagreed with the same statement. Therefore, the case facts appear to have resulted in a relative ambiguous judgment, which tend to make biasing effects more evident than would a very strong or weak case.

Fourth, the information given to participants was significantly less information than a forensic psychologist usually receives. Because I was limited practically and because I wanted to tightly control the stimulus, participants did not interview the defendant or review a lengthy interview transcript or report, at least one of which is

typically done in real life. Instead, participants had to rely on a one-page report from another psychologist. When conducting real evaluations, if a psychologist does not interview the defendant, she is usually able to review extensive documentation from another psychologist. The lack of information makes these results less ecologically valid.

Fifth, regarding the expert sample, a limitation inherent to paper surveys is that I had no way of controlling when participants saw the photographs (if at all) and how long they looked at the photographs. Although I attempted to control for this by asking participants to state if they did not look at the photographs (and removing participants who admitted that they did not look at the photographs), it is possible that some participants did not look at the photographs until after they read the other materials and began forming judgments. In fact, in addition to the 20% (6) of participants who stated that they did not look at the photographs (including one person who wrote a comment next to the question stating that he did not even see the photograph envelope until he came to that question), 43% (13) of participants stated that they did not rely on the photographs. Although it is possible that these participants did view the photographs and simply thought the photographs did not influence their judgments, it is also possible that some of these participants did not actually look at the photographs before making judgments. Likewise, to replicate the expert sample, lay participants in the two photographs conditions in the online survey were given the opportunity to look at the photographs but they were not required to look. Although I eliminated participants who reported that they did not look at the photographs and those who failed a photograph manipulation check, it is possible that participants who reported looking at the

photographs either did not look at them or did not look at them for longer than a few seconds. Because I kept the two experiments parallel, I have no way of knowing how long participants spent looking at the gruesome photographs. It is possible that a participant's judgment would have been impacted by the photographs if they participant spent more time looking at the photograph. Although this might have weakened our manipulation, one could argue that this represents how forensic examiners typically receive photographs and can choose to look at them or not.

Future Directions

Future research is needed to replicate these findings. This study is inconsistent with a growing body of research demonstrating an impact of gruesome photographs on jurors' judgments. Future research could also test whether gruesome photographs affects jurors' judgments in cases that involve an insanity defense.

Additional research should test the interactive effect of gruesome photographs and hiring party on forensic judgments. While there was no effect of gruesome photographs on forensic judgments here, it is possible that the photographs might have an effect when the psychologist thinks they are being hired by the prosecution. That is, when the psychologist thinks they are being hired by the prosecution, the psychologist might be motivated to find the defendant competent and sane, and therefore the psychologist might selectively rely on the photographs as justification for that conclusion.

Research should also examine whether framing a participant's role as that of a juror or an expert changes their judgments. Here, one key difference between this research and other research is that other research focused on participants as jurors and

this research focused on participants as experts. The change in the framing of the participants' roles might have influenced their response to the evidence. That is, the very act of making a forensic judgment, compared to a guilt judgment, might influence a participant's response to the evidence or the role itself might influence the participant's response to the evidence. Future research should manipulate the type of judgment made (i.e. guilt judgments versus forensic judgments) and the role that the participant plays (i.e. juror or forensic expert).

Finally, research should examine the differences in how experts and laypeople interact with information about the defendant to draw their conclusions. This research suggested that experts can differentiate between information relevant to competency and information relevant to insanity. In contrast, laypeople conflated the two issues and relied on competency information to make sanity decisions and vice versa. This finding has potential implications in the courtroom: if a defendant acts mentally ill or incompetent at trial, perhaps a jury would be more willing to find him insane. This finding also has potential implications for experts: an expert is likely capable of rendering an opinion on both competency and insanity without the two conclusions biasing each other. In this research, however, these findings were the result of a post-hoc, exploratory analysis. Therefore, more research is needed before I draw strong conclusions from these results.

Conclusion

Social psychological theory about emotion and decision making, as well as research on juror decision making, suggest that viewing crime scene photographs might bias forensic psychologists' judgments. However, the current studies did not support this

theory. Although replication with well-powered studies is needed, the current research suggests that viewing gruesome photographs does not influence the judgments made by forensic psychologists. This null result is not necessarily due to their expertise buffering them against this bias, because there was also no evidence of a bias in lay judgments. Thus, the biasing effect of gruesome photographs might not affect forensic judgments like it affects decisions that have more direct implications for punishment (e.g., juror verdict and punishment decisions). This preliminary finding does not support allocating resources toward putting a system in place that ensures attorneys or courts avoid exposing forensic psychologists emotionally disturbing evidence, such as gruesome photographs.

Reference List

Acklin M. W. & Fuger K. (2016) Assessing field reliability of forensic decision making in criminal court, *Journal of Forensic Psychology Practice, 16,* 74–93, DOI: 10.1080/15228932.2016.1148452.

Alicke, M. D. (2000). Culpable control and the psychology of blame. *Psychological Bulletin, 126*(4), 556.

Ariz. Rev. Stat. §13-4510B

Ariz. Rev. Stat. §13-502

Ariz. Rev. Stat. §13-502

Ask, K., & Pina, A. (2011). On being angry and punitive: How anger alters perception of criminal intent. *Social Psychological and Personality Science, 2*(5), 494-499.

Bright, D. A., & Goodman-Delahunty, J. (2006). Gruesome evidence and emotion: Anger, blame, and jury decision-making. *Law and Human Behavior, 30*(2), 183.

Charman, S. D., Gregory, A. H., & Carlucci, M. (2009). Exploring the diagnostic utility of facial composites: Beliefs of guilt can bias perceived similarity between composite and suspect. *Journal of Experimental Psychology: Applied, 15*(1), 76.

Childress, S. (2013). Can Juries Rely on Forensic Experts? *Frontline*. https://www.pbs.org/wgbh/frontline/article/can-juries-rely-on-forensic-experts/

CO. Rev. Stat. §16-8-120

Correll, J., Park, B., Judd, C. M., Wittenbrink, B., Sadler, M. S., & Keesee, T. (2007). Across the thin blue line: police officers and racial bias in the decision to shoot. Journal of Personality and Social Psychology, 92(6), 1006.

Critchley, H. D., Wiens, S., Rotshtein, P., Öhman, A., & Dolan, R. J. (2004). Neural systems supporting interoceptive awareness. *Nature Neuroscience, 7*(2), 189.

Cunningham v. State, 426 So. 2d 484, 490 (Ala. Crim. App. 1982)

Cush, R. K., & Delahunty, J. G. (2006). The influence of limiting instructions on processing and judgments of emotionally evocative evidence. *Psychiatry, Psychology and Law, 13*(1), 110-123.

Deitchman, M. A., Kennedy, W. A., & Bekham, J. C. (1991). Self-selection factors in the participation of mental health professionals in competency for execution evaluations. *Law and Human Behavior, 15*(3), 287-303.

Douglas, K. S., Lyon, D. R., & Ogloff, J. R. P. (1997). The impact of graphic photographic evidence on mock jurors' decisions in a murder trial: Probative or prejudicial? *Law and Human Behavior, 21*, 485-501. DOI: http://dx.doi.org/10.1023/A:1024823706560

Dressler, J. Underlying theories of excuse. In Dressler, J. (Ed.) *Understanding Criminal Law* (211–215). LexisNexis

Dror, I. E., & Charlton, D. (2006). Why experts make errors. *Journal of Forensic Identification, 56*, 600-616.

Dror, I. E. (2012). Cognitive bias in forensic science. In *The 2012 Yearbook of Science and Technology*. New York: McGraw-Hill., pp. 43–45.

Dror, I. E., Péron, A. [E.], Hind, S., & Charlton, D. (2005). When emotions get the better of us: The effect of contextual top-down processing on matching fingerprints. *Applied Cognitive Psychology, 19*, 799-809.

Edwards, E. R., & Mottarella, K. E. (2014). Preserving the right to a fair trial: An examination of prejudicial value of visual and auditory evidence. *North American Journal of Psychology, 16*, 397.

Feigenson, N. R., & Park, J. (2006). Emotions and attributions of legal responsibility and blame: A research review. *Law and Human Behavior, 30*, 143-161. DOI: http://dx.doi.org/10.1007/s10979-006-9026-z

Feigenson, N. (2015). Jurors' emotions and judgments of legal responsibility and blame: What does the experimental research tell us?. *Emotion Review, 8*, 26-31. DOI : 10.1177/1754073915601223

Finkelstein, R., & Bastounis, M. (2010). The effect of the deliberation process and jurors' prior legal knowledge on the sentence: the role of psychological expertise and crime scene photo. *Behavioral Sciences & the Law, 28*, 426-441. DOI: 10.1002/bsl.914

Forgas, J. P. (1995). Mood and judgment: The affect infusion model (AIM). *Psychological Bulletin, 117*, 39-66.DOI: http://dx.doi.org/10.1037/0033-2909.117.1.39

Grady, R. H., Reiser, L., Garcia, R. J., Koeu, C., & Scurich, N. (2018). Impact of Gruesome Photographic Evidence on Legal Decisions: A Meta-Analysis. *Psychiatry, Psychology and Law*, 1-19.

Guarnera, L. A., Murrie, D. C., & Boccaccini, M. T. (2017). Why do forensic experts disagree? Sources of unreliability and bias in forensic psychology evaluations. *Translational Issues in Psychological Science, 3*(2), 143.

Guthrie, C., Rachlinski, J. J., & Wistrich, A. J. (2002). Judging by Heuristic-Cognitive Illusions in Judicial Decision Making. *Judicature, 86*, 44.

Guthrie, C., Rachlinski, J. J., & Wistrich, A. J. (2000). Inside the judicial mind. *Cornell L. Rev., 86*, 777.

Hall, L. J., & Player, E. (2008). Will the introduction of an emotional context affect fingerprint analysis and decision-making?. *Forensic Science International, 181*(1-3), 36-39.

Holloway v. United States, 148 F.2d 665, 665 (D.C. Cir. 1945)

Homant, R. J., & Kennedy, D. B. (1987). Subjective factors in the judgment of insanity. *Criminal Justice and Behavior, 14*(1), 38-61.

Irvine, K., Hoffman, D. A., & Wilkinson-Ryan, T. (2018). Law and Psychology Grows Up, Goes Online, and Replicates. *Journal of Empirical Legal Studies, 15*(2), 320-355.

Kadish, S.H. (1987). Excusing crime. *California Law Review*, 75.

Kassin, S. M., Bogart, D., & Kerner, J. (2012). Confessions that corrupt: Evidence from the DNA exoneration case files. *Psychological Science, 23*(1), 41-45.

Kassin, S. M., Dror, I. E., & Kukucka, J. (2013). The forensic confirmation bias: Problems, perspectives, and proposed solutions. *Journal of Applied Research in Memory and Cognition, 2*(1), 42-52.

Keltner, D., Ellsworth, P. C., & Edwards, K. (1993). Beyond simple pessimism: effects of sadness and anger on social perception. *Journal of Personality and Social Psychology, 64*(5), 740.

Kunda, Z. (1990). The case for motivated reasoning. *Psychological Bulletin, 108*(3), 480.

Langenburg, G., Champod, C., & Wertheim, P. (2009). Testing for potential contextual bias effects during the verification stage of the ACE-V methodology when

conducting fingerprint comparisons. *Journal of Forensic Sciences, 54*(3), 571-582.

Daniel Lassiter, G., Diamond, S. S., Schmidt, H. C., & Elek, J. K. (2007). Evaluating videotaped confessions: Expertise provides no defense against the camera-perspective effect. *Psychological Science, 18*(3), 224-226.

Mann, S., Vrij, A., & Bull, R. (2004). Detecting true lies: police officers' ability to detect suspects' lies. *Journal of Applied Psychology, 89*(1), 137.

Maroney, T. A., & Gross, J. J. (2014). The ideal of the dispassionate judge: An emotion regulation perspective. *Emotion Review, 6*(2), 142-151.

Matsuo, K., & Itoh, Y. (2015). Effects of emotional testimony and gruesome photographs on mock jurors' decisions and negative emotions. *Psychiatry, Psychology and Law*, 1-17. DOI:10.1080/13218719.2015.1032954

Miller, A. K., Rufino, K. A., Boccaccini, M. T., Jackson, R. L., & Murrie, D. C. (2011). On individual differences in person perception: Raters' personality traits relate to their Psychopathy Checklist-Revised scoring tendencies. *Assessment, 18*(2), 253-260.

Molho, C., Tybur, J. M., Güler, E., Balliet, D., & Hofmann, W. (2017). Disgust and anger relate to different aggressive responses to moral violations. *Psychological Science, 28*(5), 609-619.

Murrie, D. C., Boccaccini, M. T., Turner, D. B., Meeks, M., Woods, C., & Tussey, C. (2009). Rater (dis) agreement on risk assessment measures in sexually violent predator proceedings: Evidence of adversarial allegiance in forensic evaluation?. *Psychology, Public Policy, and Law,* 15(1), 19.

Murrie, D. C., Boccaccini, M. T., Guarnera, L. A., & Rufino, K. A. (2013). Are forensic experts biased by the side that retained them?. *Psychological Science, 24*(10), 1889-1897.

Mynatt, C. R., Doherty, M. E., & Tweney, R. D. (1977). Confirmation bias in a simulated research environment: An experimental study of scientific inference. *The Quarterly Journal of Experimental Psychology, 29*(1), 85-95.

Nabi, R. (2002). Anger, fear, uncertainty, and attitudes: A test of the cognitive-functional model. *Communication Monographs, 69*(3), 204-216.

National Research Council, Committee on Identifying the Needs of the Forensic Science Community. (2009). Strengthening forensic science in the United States: A path

forward. Washington, DC: National Academies Press. Retrieved from https://www.ncjrs.gov/pdffiles1/nij/grants/228091.pdf

Neal, T. M., & Brodsky, S. L. (2014). Occupational socialization's role in forensic psychologists' objectivity. *Journal of Forensic Psychology Practice, 14*(1), 24-44.

Neal, T., & Brodsky, S. L. (2016). Forensic psychologists' perceptions of bias and potential correction strategies in forensic mental health evaluations. *Psychology, Public Policy, and Law, 22*(1), 58.

Neal, T. M. (2016). Are forensic experts already biased before adversarial legal parties hire them?. *PloS one, 11*(4), e0154434.

Neal, T. (2018). Forensic psychology and correctional psychology: Distinct but related subfields of psychological science and practice. *American Psychologist*.

Nuñez, N., Schweitzer, K., Chai, C. A., & Myers, B. (2015). Negative emotions felt during trial: The effect of fear, anger, and sadness on juror decision making. *Applied Cognitive Psychology, 29*(2), 200-209.

Olatunji, B. O., Adams, T., Ciesielski, B., David, B., Sarawgi, S., & Broman-Fulks, J. (2012). The Three Domains of Disgust Scale: Factor structure, psychometric properties, and conceptual limitations. *Assessment, 19*(2), 205-225.

Oliver, E., & Griffitt, W. (1976). Emotional arousal and 'objective' judgment. *Bulletin of the Psychonomic Society, 8*(5), 399-400.

Otto, R. K. (1989). Bias and expert testimony of mental health professionals in adversarial proceedings: A preliminary investigation. *Behavioral Sciences & the Law, 7*(2), 267-273.

Palker-Corell, A. M. (2007). Mental health professionals' decision-making in competence for execution evaluations. (Unpublished doctoral dissertation). Sam Huston State University, Huntsville, TX.

Paolacci, G., Chandler, J., & Ipeirotis, P. G. (2010). Running experiments on Amazon Mechanical Turk. *Judgment and Decision-making, 5*, 411-419

Porges, S. (1993). Body Awareness Questionnaire. Retrieved from: http://stephenporges.com/images/bpq.pdf

President's Council of Advisors on Science and Technology (PCAST). (2016). Report to the President: Forensic science in the criminal courts: Ensuring scientific validity of feature-comparison methods. Washington, DC: Executive Office of the

President of the United States. Retrieved from https://www.whitehouse.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensic_science_report_final.pdf

Salerno, J. M., & Bottoms, B. L. (2009). Emotional evidence and jurors' judgments: the promise of neuroscience for informing psychology and law. *Behavioral Sciences & the Law, 27*(2), 273-296.

Salerno, J. M., & Peter-Hagene, C. L. (2013). The interactive effect of anger and disgust in moral outrage and judgments. *Psychological Science, 24*, 2069-2078. DOI: 10.1177/0956797613486988

Salerno, J. M. (2017). Seeing red: Disgust reactions to gruesome photographs in color (but not in black and white) increase convictions. *Psychology, Public Policy, and Law, 23*(3), 336.

Schnall, S., Haidt, J., Clore, G. L., & Jordan, A. H. (2008). Disgust as embodied moral judgment. *Personality and Social Psychology Bulletin, 34*(8), 1096-1109.

Simmons, J., Nelson, L., & Simonsohn, U. (2013). Life after p-hacking. Paper presented at the Annual Meeting of the Society for Social and Personality Psychology. New Orleans, LA. Retrieved from: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2205186.

Smalarz, L., Madon, S., Yang, Y., Guyll, M., & Buck, S. (2016). The perfect match: Do criminal stereotypes bias forensic evidence analysis?. *Law and Human Behavior, 40*(4), 420.

Terasawa, Y., Fukushima, H., & Umeda, S. (2013). How does interoceptive awareness interact with the subjective experience of emotion? An fMRI study. *Human Brain Mapping, 34*(3), 598-612.

Terasawa, Y., Shibata, M., Moriguchi, Y., & Umeda, S. (2013). Anterior insular cortex mediates bodily sensibility and social anxiety. *Social and Cognitive Affective Neuroscience, 8,* 259-266. DOI: 10.1093/scan/nss108

United States v. Freeman, 357 F.2d 606 (2d Cir. 1966)

United States v. Roland, 281 F. Supp. 3d 470, 472 (D.N.J. 2017)

Wason, P. C., & Johnson-Laird, P. N. (Eds.). (1972). *Thinking and reasoning*. Penguin.

Wells, G. L. (1978). Applied eyewitness-testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology, 36*(12), 1546.

Wessel, E., Drevland, G. C., Eilertsen, D. E., & Magnussen, S. (2006). Credibility of the emotional witness: a study of ratings by court judges. *Law and Human Behavior, 30*(2), 221.

Whalen, D. H., & Blanchard, F. A. (1982). Effects of Photographic Evidence on Mock Juror Judgement 1. *Journal of Applied Social Psychology, 12*(1), 30-41.

Wiebking, C., de Greck, M., Duncan, N. W., Heinzel, A., Tempelmann, C., & Northoff, G. (2011). Are emotions associated with activity during rest or interoception? An exploratory fMRI study in healthy subjects. *Neuroscience Letters, 491*(1), 87-92.

Zusman, J., & Simon, J. (1983). Differences in repeated psychiatric examinations of litigants to a lawsuit. *The American Journal of Psychiatry, 140*(10), 1300-1304. http://dx.doi.org/10.1176/ajp.140.10.1300.

APPENDIX A

MATERIALS FROM STUDY 1

Welcome to the Legal Judgments Study! Before you begin, please read the information below.

You are being asked to participate in a research study. The purpose of the study is to investigate opinions about legal cases. We are interested in the processes by which opinions are reached in adjudicative competency and insanity cases. You're being recruited because you are a forensic mental health expert. If you agree to participate, you will be asked to read information about a legal case and then to complete a questionnaire assessing your opinions about the defendant. **We have included a postage-paid envelope for you to return all materials.**

RISKS: We believe that the current study poses minimal to no risk to you. You will read information about one of several cases. Some of the cases include potentially disturbing information about murder cases, such as descriptions of victims' injuries, postmortem reports, photographs of victims that may show blood, and police reports detailing the events that occurred during the crime. The presentation is not more upsetting than what you would encounter if you were asked to consult on a real case.

BENEFITS: There is no direct benefit to you anticipated from your participation in this study.

CONFIDENTIALITY: The data we collect will not be linked to your identity in any way. Although you will be asked to provide us with some personal demographic information (age, education, etc.), we will not ask your name or any other question that could identify who you are.

RIGHT TO REFUSE OR WITHDRAW: You may change your mind about being in the study at any time, and quit after the study has started.

QUESTIONS: If you have any questions about this research project or if you think you may have been harmed as a result of your participation, please contact Dr. Jessica M. Salerno at jessica.salerno@asu.edu.
If you have any questions regarding your rights and participation as a research subject, or if you feel you have been placed at risk, please contact the ASU Chair of the Human Subjects

INSTRUCTIONS: We have provided you a summary of information you might receive from an attorney to make an expert judgment in a case. It summarizes information from police, autopsy reports, and information distilled from a forensic mental health evaluation. We understand that in a real case you would receive a lot more information, and that you would not reach an opinion on the basis of summary data like this in the real world. However, in this scientific study, we are isolating the psychological processes underpinning decisions and your responses to the information we have given is informative for our purposes. We request that you respond to the questions as best as you can on the basis of the summary information provided. The survey will take approximately 20 minutes to complete.

Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at (480) 965-6788.

Summary of Case Information:

On June 17, 2012, Officer James Lee responded to an emergency call about a home invasion. Mrs. Janice Fisher was found in a pool of blood in the kitchen. She was pronounced dead at the scene by EMS. Police found a bloody knife lying in a gravel driveway of the house west of the Fisher residence. A photograph taken at the scene shows a major knife wound across her throat and several blood smudges on her face and hands. Her hands are raised slightly. The photograph also showed her blood-soaked clothing. The wound goes across her neck in a half-moon shape.

Police interviewed Mr. Matthew Fisher, husband of the deceased. Mr. Fisher had been out getting breakfast for the couple. When he arrived home, he saw a tall man running out of the house. Mr. Fisher entered the house and found his wife with a slit throat, lying in a pool of blood. Mrs. Fisher died as her husband held her in their home while on the phone with 9-1-1 operators. Mr. Fisher gave a description of the attacker and identified the knife found next door as one belonging to the couple. Police collected three relevant latent fingerprints: two on the knife and one on the garage door. The fingerprints and knife were sent to the lab. The blood on the knife was later identified as Janice Fisher's blood and the fingerprints matched the defendant's right index fingerprint (knife) and the defendant's right thumb (knife and door).

During canvassing, Officer Lee spoke with Eliot Stern, a neighbor of Mr. and Mrs. Fisher. He reported that his bicycle had been stolen from outside his garage. Officer Lee put out an all-points bulletin (APB) with a description of the suspect and the bicycle. Officer Ken Porter responded to the APB, reporting that he approached a tall white male with a bicycle waiting at a bus stop about 1/4 mile west of the victim's residence. Upon questioning the suspect, he identified himself as Erik John Kaufmann. Police report that Mr. Kaufmann was wearing several hats and many sweaters—even though it was a hot summer morning—and he smelled strongly of body odor. Mr. Kaufmann's voice sounded shaky as he spoke with police, and he kept clasping his hands together and then putting him in his pockets, like he was nervous. He was sweating. When police asked why he was at the bus stop, he stated he was heading to Portland even though the bus at this stop would have been headed in the opposite direction. Police read Mr. Kaufmann his Miranda rights, after which he said that he "needed to rob somebody to get some cash and buy a house." He stated that he needed to "get revenge on a whole generation for the grief they put us through" and made references to "the conspiracy." He appeared to respond to voices that were not actually there, as he said "shut up! I wasn't talking to you" in an apparent response to a voice that the police officers could not hear. Officer Porter arrested Mr. Kaufmann and took him into custody, during which Mr. Kaufmann said he would not talk any further to the police because the police officer was "an agent of the conspiracy" and that he thought the police officer intended to "kill his family."

An autopsy was conducted on Mrs. Fisher. The coroner determined her death was a homicide. Mrs. Fisher had two large cuts across her neck, caused by something sharp with a long blade and died of blood loss. An autopsy photograph showing the wound from the front shows that the wound is roughly 2 inches wide at the front of the throat. The wound is in a half moon shape. There are two cuts that make up one wound. The cuts are deep enough to have severed the larynx. The edges of the wound appear smooth everywhere. In the photograph, you can see blood on her throat and her chest.

Observations from Clinical Mental Health Evaluation:

- Attitude and Appearance: Mr. Kaufmann demonstrated variable cooperation with the interview. Mr. Kaufmann's nails and hair are very long and dirty, his breath is foul, and his clothing is soiled and wrinkled.
- Psychomotor: Mr. Kaufmann exhibits normal energy. He reports sleeping normally.
- Affect: Mr. Kaufmann displays a normal affect.
- Speech: Mr. Kaufmann is coherent in speech. However, his responses were occasionally disorganized, such as when asked what he was doing in the Fisher's home and he responded, "I was looking for a place to buy but then my mother called yesterday." He needs occasional prompting to answer a question. When asked to describe his legal charges, he had to be prompted to continue after listing each charge.
- Thought content: Mr. Kaufmann is preoccupied with the safety of his family, fearing that the government planned to send agents to his home to kill his family. He describes hearing voices that tell him how to save his family from the government.
- Medication: Mr. Kaufmann's use of medication has been sporadic. He expressed that the medication is unhelpful and makes him feel "deflated." He expresses a desire to discontinue medication.
- Previous Diagnosis: Mr. Kaufmann has previously been diagnosed with Schizophrenia, Paranoid Type. Medication controlled his symptoms until he stopped taking it.
- Testing results: Mr. Kauffman was administered the Structured Interview of Reported Symptoms, 2nd Edition (SIRS-2) to assess for deliberate distortions of his symptoms. Results indicated he is not malingering.

Competency-Related Information

- On occasion, Mr. Kaufmann has expressed the belief that his "attorneys are agents of the government." But on several separate occasions, he has made statements like, "I want to talk to my lawyer before we continue."
- When asked about the legal process, Mr. Kaufmann correctly stated, "the prosecution gets to go first then it's my attorney's turn." When asked about the charges, he stated, "they're saying that I meant to murder her and that I planned it ahead of time," but when asked about the penalties associated with the crime, he stated "once the case is done, I get to go home to my family."
- Mr. Kaufmann stated, "The judge is unbiased and controls the courtroom" and "the jury decides if I'm guilty" when asked about the role of the judge and jury. He said, "the prosecutor's job is to tell lies so that he can kill me" and "my attorney is going to betray me to the government" when asked about the role of the prosecutor and defense attorney.

- Mr. Kaufmann disrupted the courtroom during his first appearance by shouting "this generation is a disgrace!," but has expressed an understanding that he should sit quietly and allow his lawyer to speak in the courtroom.
- He has expressed that he is unconcerned about witnesses lying because he believes that the "voices will tell the jurors if the witness was lying."
- Mr. Kaufmann has expressed a clear desire to testify, explaining the belief that the "voices will tell the jurors that he is telling the truth." He plans to testify even if his attorney recommends against it.

Insanity-Related Information

- Mr. Kaufmann has stated that he did not want to kill the victim. However, he has stated "the murder was necessary to protect my family."
- When asked what he hoped to accomplish that day, Mr. Kaufmann explained that he "planned to force Mrs. Fisher to give [him] money."
- Mr. Kaufmann stated that he "needed money from Mrs. Fisher to purchase land for [his] family."
- Mr. Kaufmann has expressed the belief that the murder was justified because he has "been victimized by members of her [the victim's] generation."
- After he committed the crime, Mr. Kaufmann stole a bicycle. He explained that he planned to evade the police by using the bicycle to ride to a bus stop. He planned to take the bus to Portland.

Diagnostic Criteria from the DSM-V for Schizophrenia

Per Criteria A: The following details the way specific symptoms present in this case:

1. Delusions–Mr. Kaufmann's responses suggest he may have paranoid and persecutory delusions
2. Hallucinations–There is some evidence that he is experiencing auditory and perhaps visual hallucinations
3. Disorganized speech–Occasional derailment in speech. Coherent overall
4. Grossly disorganized or catatonic behavior–Not present
5. Negative symptoms–His difficulty responding to some questions suggests some poverty of speech. His poor self-care suggests his activities of daily living are negatively impacted.

Per Criterion B and C: Mr. Kaufmann stated his symptoms have been present for at least the last three years. He lost his job because he spoke to customers about his delusions and hallucinations. However, he reports no impact on his relationship with his wife and children.

Per Criterion D, E, and F: There is no evidence of schizoaffective disorder or depressive disorder with psychotic features. Mr. Kaufmann denies using recreational drugs or medication. There is no history of autism.

Please answer the remaining questions on the following scale:

1:	2:	3:	4:	5:	6:	7:
STRONGLY	MODERATELY DISAGREE	SLIGHTLY	NEUTRAL	SLIGHTLY AGREE	MODERATELY AGREE	STRONGLY AGREE

DISAGREE **DISAGREE**

To what extent do you agree with the following:

1. The defendant reports low energy. _____
2. The defendant describes persecutory delusions. _____
3. The defendant describes auditory hallucinations. _____
4. The defendant has exhibited these symptoms for several years. _____
5. It appears the defendant was having a schizophrenic episode at the time of the crime. _____
6. It appears the defendant was having a schizophrenic episode at the time of the interview. _____
7. The formal clinical diagnosis for the defendant's current condition is schizophrenia. _____
8. The defendant's mental disease or defect is severe. _____

1: STRONGLY DISAGREE	2: MODERATELY DISAGREE	3: SLIGHTLY DISAGREE	4: NEUTRAL	5: SLIGHTLY AGREE	6: MODERATELY AGREE	7: STRONGLY AGREE

9. The duration and severity of the defendant's schizophrenia is such that it represents "a mental disease or defect" as the term is used in the law. _____

Competency

The defendant's clinical symptoms will negatively affect:

10. … his competency-related abilities. _____
11. … the defendant's ability to understand the proceedings. _____
12. …the defendant's ability to assist counsel in his defense. _____

The defendant's clinical symptoms will negatively affect:

13. …his ability to make decisions relating to his defense (e.g. whether to take a plea bargain or to testify in his defense). _____
14. …his ability to understand the charges against him. _____
15. …his ability to understand the penalties associated with the charges against him. _____
16. The defendant's clinical symptoms will result in inappropriate behavior during trial. _____
17. The defendant is competent to stand trial. _____

Insanity

The present offense was likely motivated by:

18. …financial gain (e.g. a murder during a robbery). _____
19. … revenge. _____
20. … by the hallucinations related to the schizophrenia. _____
21. … the delusions related to the schizophrenia. _____
22. The defendant's clinical symptoms negatively affected his ability to appreciate the wrongfulness of his behavior at the time of the crime. _____

23. Due to a mental disease or defect, the defendant lacked the substantial capacity to conform his conduct to the requirements of the law. _____
24. The defendant is legally insane. _____

How much did you rely on the following information Please circle one option for each piece of information:

1. Summary of case information	Not at all	Somewhat	A moderate amount	A lot	Very Much	I did not look at this information
2. Observations from Clinical Mental Health Evaluation	Not at all	Somewhat	A moderate amount	A lot	Very Much	I did not look at this information
3. Crime Scene Photographs	Not at all	Somewhat	A moderate amount	A lot	Very Much	I did not look at this information

1. Have you performed any legal competency evaluations? (please circle one): YES NO
   a. If yes, approximately how many competency evaluations have you performed? _____
2. Have you testified in court about competency before? _(please circle one): YES NO
   a. If yes, approximately how many times? _____
3. Have you evaluated a defendant to determine if (s)he is legally insane? (please circle one):
   YES NO
   a. If yes, approximately how many times? _____
4. Have you testified in court about legal insanity before? (please circle one): YES NO
   a. If yes, approximately how many times? _____

What is your gender? (please circle): MALE FEMALE OTHER: _____

What is your age in years? _____

Please specify your ethnicity (check all that apply):
White _____. Hispanic or Latino _____. Black or African American_____. Asian/Pacific Islander_____
Native American or American Indian _____. Other (please specify):_____

APPENDIX B

MATERIALS FROM STUDY 2

Welcome to the Legal Judgments Study! Before you begin, please read the information below.

You are being asked to participate in a research study. The purpose of the study is to investigate opinions about legal cases. We are interested in the processes by which opinions are reached in cases where experts are asked to judge a defendant's competency and legal sanity. If you agree to participate, you will pretend you are a forensic mental health expert, a type of psychologist who evaluates people with mental illness within the legal system. If you agree to participate, you will be asked to read information about a legal case and then to complete a questionnaire assessing your opinions about the defendant. You will be paid $1.75 for your participation in the study.

RISKS: We believe that the current study poses minimal to no risk to you. You will read information about one of several cases. Some of the cases include potentially disturbing information about murder cases, such as descriptions of victims' injuries, postmortem reports, photographs of victims that may show blood, and police reports detailing the events that occurred during the crime. The presentation is not more upsetting than what you would encounter if you were asked to consult on a real case.

BENEFITS: There is no direct benefit to you anticipated from your participation in this study.

CONFIDENTIALITY: The data we collect will not be linked to your identity in any way. Although you will be asked to provide us with some personal demographic information (age, education, etc.), we will not ask your name or any other question that could identify who you are.

RIGHT TO REFUSE OR WITHDRAW: You may change your mind about being in the study at any time, and quit after the study has started.

QUESTIONS: If you have any questions about this research project or if you think you may have been harmed as a result of your participation, please contact Dr. Jessica M. Salerno at jessica.salerno@asu.edu.
If you have any questions regarding your rights and participation as a research subject, or if you feel you have been placed at risk, please contact the ASU Chair of the Human Subjects Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at (480) 965-6788.

Next, you will read materials from a legal case. We understand that you are not an expert and are most likely unsure about these judgments. Your responses and reactions to the case are still very helpful in understanding how people judge these cases. Please imagine that you are a forensic expert and do the best that you can based on what you read.

The case materials include photographs of the victim in a homicide case.

These photographs might be disturbing and contain blood.

Below is a link that will open a separate tab in your browser with the photographs for you to review.

Please leave this tab open so that you can revisit and review the photographs whenever you'd like while making your judgments about the case.

Please click on this link to view the photographs: Crime Scene and Autopsy Photographs

INSTRUCTIONS: We have provided you a summary of information you might receive from an attorney to make an expert judgment in a case. It summarizes information from police, autopsy reports, and information distilled from a forensic mental health evaluation. We understand that in a real case you would receive a lot more information, and that you would not reach an opinion on the basis of summary data like this in the real world. However, in this scientific study, we are isolating the psychological processes underpinning decisions and your responses to the information we have given is informative for our purposes. We request that you respond to the questions as best as you can on the basis of the summary information provided. The survey will take approximately 20 minutes to complete.

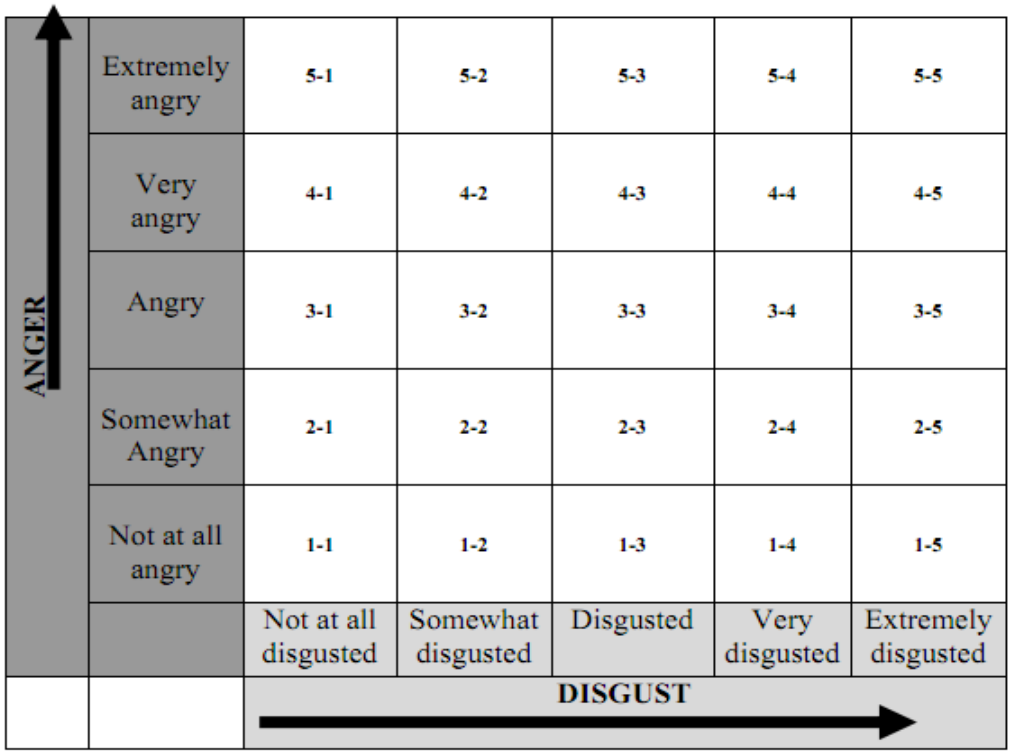
Please feel free to use the back arrows to revisit this information.

GRID INSTRUCTIONS:
Please use this grid to indicate how angry and disgusted you feel right now. You can be high in both, low in both, or high in one and not the other. Along the bottom of the grid is how disgusted you feel, with low disgust on the left through high disgust on the right. Along the left side of the grid represents how angry you feel, from low anger on the bottom to high anger at the top. Please enter the number of the box that best represents how angry and disgusted you feel.

For example if you were extremely angry and not at all disgusted you would enter a 5-1. If you were not at all angry and extremely disgusted you would enter 1-5. If you were not at all angry and not at all disgusted you would enter a 1-1. If you were extremely angry and very disgusted you would enter a 5-4.
Please use this grid to indicate how angry and disgusted you feel SPECIFICALLY ABOUT THE VICTIM'S INJURIES. Her injuries can make you feel high in both, low in both, or high in one and not the other. Along the bottom of the grid is how disgusted you feel about her injuries, with low disgust on the left through high disgust on the right. Along the left side of the grid represents how angry you feel about her injuries, from low

anger on the bottom to high anger at the top.

Please enter the number of the box that best matches with your level of disgust and anger SPECIFICALLY ABOUT THE VICTIM'S INJURIES.



Please enter the number of the box that lines up with your level of disgust and your level of anger.

Using the scale below, please indicate how much you were feeling each of the following emotions when you heard the evidence of the victim's injuries.

	Not at all	Slightly	Moderately	Much	Very Much
I felt anxiety	○	○	○	○	○
I felt contempt	○	○	○	○	○
I felt grossed-out	○	○	○	○	○
I felt outrage	○	○	○	○	○

I felt sadness	○	○	○	○	○
I felt unhappiness	○	○	○	○	○
I felt empathy for the victim	○	○	○	○	○
I felt sympathy for the victim	○	○	○	○	○
I felt pity	○	○	○	○	○
I felt anger	○	○	○	○	○
I felt disgust	○	○	○	○	○
I felt interest	○	○	○	○	○
I felt repulsed	○	○	○	○	○
I felt fear	○	○	○	○	○
I felt compassion for the victim	○	○	○	○	○
I felt depression	○	○	○	○	○
I felt happiness	○	○	○	○	○
I felt infuriation	○	○	○	○	○
I felt pleasure	○	○	○	○	○

I felt sickened	○	○	○	○	○

Using the scale below, please indicate how much you agree with each of the following statements.

	Not at all	Slightly	Moderately	Much	Very Much
I feel a compelling need to punish the defendant	○	○	○	○	○
I feel a desire to hurt the defendant	○	○	○	○	○
I believe the defendant is evil to the core	○	○	○	○	○
I feel morally outraged by the defendant	○	○	○	○	○

Imagine how aware you are of your body processes. Select the answer that most accurately describes you. Rate your awareness on each of the characteristics described below using the following 5-point scale

During most situations I am aware of:

	Never	Occasionally	Sometimes	Usually	Always
swallowing frequently	○	○	○	○	○
a ringing in my ears	○	○	○	○	○
an urge to clear my throat	○	○	○	○	○
my body swaying when I am standing	○	○	○	○	○
my mouth being dry	○	○	○	○	○
	Never	Occasionally	Sometimes	Usually	Always
how fast I am breathing	○	○	○	○	○
watering or tearing of my eyes	○	○	○	○	○
my skin itching	○	○	○	○	○
noises associated with my digestion	○	○	○	○	○
eye fatigue or pain	○	○	○	○	○

Did you see photographs as part of the research materials?

- ○ Yes, color photographs of the victim
- ○ Yes, black and white photographs of the victim
- ○ Yes, color photographs of the murder weapon
- ○ No, I was not given an option to see any photographs
- ○ No, I was given an option to view photographs but did not click on the link

Display This Question:

If participant reported viewing the crime scene photographs

In what way do you think the crime scene photographs you saw earlier influenced your opinions?

_____

_____

_____

_____

_____

Have you ever served on a jury?

- ○ Yes
- ○ No

Display This Question:

If Have you ever served on a jury? = Yes

How many times?

- ○ Once
- ○ Twice
- ○ Three times
- ○ More than three times (please specify how many)

_____

Display This Question:

If Participant has served on one jury.

What type of jury?

- ○ Criminal
- ○ Civil
- ○ Not sure

Display This Question:

If Participant has served on more than one jury.

What types of juries have you served on? (please select all that apply)

- ☐ Criminal
- ☐ Civil
- ☐ Not sure

Display This Question:

If Participant served on a criminal jury.

As part of your jury service, were you asked to determine if the defendant was insane?

- ○ Yes
- ○ No
- ○ Not sure

Display This Question:

If Participant was asked whether defendant was insane.

Did you determine that the defendant was insane?

- ○ Yes
- ○ No
- ○ Not sure

Have you or anyone close to you been a victim of a violent crime?

- ○ Yes
- ○ No
- ○ Not sure

Which of the following best describes your highest education level?

- ○ Less than high school
- ○ High school graduate
- ○ Some college
- ○ 2 year degree
- ○ 4 year bachelor's degree
- ○ Professional degree
- ○ Doctorate

What is your occupation?

_____

Do you work or have you ever worked in the following fields (choose all that apply)

- ☐ Mental Health
- ☐ Law
- ☐ Law Enforcement (including but not limited to: police, crime scene investigation, and pathology)
- ☐ Medicine
- ☐ Insurance
- ☐ Social Work
- ☐ Counseling
- ☐ A job that required you to conduct psychological assessments
- ☐ A job that required you to do psychological diagnostic evaluations
- ☐ A job in which interviewing was an important and consistent part of your job (other than for hiring purposes)

Display This Question:

If Do you work or have you ever worked in the following fields (choose all that apply) = A job that required you to conduct psychological assessments

Please describe what kind of psychological assessments you have experience with.

_____

_____

_____

_____

_____

Display This Question:

If Do you work or have you ever worked in the following fields (choose all that apply) = A job that required you to do psychological diagnostic evaluations

Please describe what kind of diagnostic evaluations you have experience with.

_____

_____

_____

_____

_____

Display This Question:

If Do you work or have you ever worked in the following fields (choose all that apply) = A job in which interviewing was an important and consistent part of your job (other than for hiring purposes)

Please describe what kind of interviews you have experience with.

_____

_____

_____

_____

_____

Display This Question:

If Do you work or have you ever worked in the following fields (choose all that apply) = Mental Health

Or Do you work or have you ever worked in the following fields (choose all that apply) = Social Work

Or Do you work or have you ever worked in the following fields (choose all that apply) = Counseling

How much experience do you have working with people with severe mental illness?

- ○ No experience at all
- ○ A little experience
- ○ A moderate amount of experience
- ○ A lot of experience
- ○ Very much experience

Display This Question:

If Do you work or have you ever worked in the following fields (choose all that apply) = Law

Or Do you work or have you ever worked in the following fields (choose all that apply) = Law Enforcement (including but not limited to: police, crime scene investigation, and pathology)

Or Do you work or have you ever worked in the following fields (choose all that apply) = Medicine

Or Do you work or have you ever worked in the following fields (choose all that apply) = Insurance

How much experience do you have with dead bodies or people with severe injuries, either in person or in photographs?

- ○ No experience at all
- ○ A little experience
- ○ A moderate amount of experience
- ○ A lot of experience
- ○ Very much experience

How knowledgeable are you about the legal system?

- ○ Extremely knowledgeable
- ○ Very knowledgeable
- ○ Moderately knowledgeable
- ○ Slightly knowledgeable
- ○ Not knowledgeable at all

How knowledgeable are you about mental health evaluations?

- ○ Extremely knowledgeable
- ○ Very knowledgeable
- ○ Moderately knowledgeable
- ○ Slightly knowledgeable
- ○ Not knowledgeable at all

Thank you so much for completing our survey!

Do you have any other questions or comments about this survey?

_____

_____

_____

_____

_____

APPENDIX C

STUDY 1 SUPPLEMENTARY ANALYSES

Scale Creation: An experience scale was created by averaging the number of times the expert performed competency and sanity evaluations and how many times the expert testified about competency and sanity (*M* = 170.74, *SD* = 845.07, Cronbach's alpha = .71).

Mediation: Because there was no significant interaction between photograph type and decision type, I ran a more in-depth analysis to see if the interaction discussed above did not appear because it was mediated by ratings on mental health, competency, and sanity. See Figure 7 for the model. There was a significant direct effect of photograph type on competency after controlling for mental health, competency, and insanity scale scores, *B* = –1.05, *SE* = 0.44, 95% *CI* = [–1.98, –.12]. When the photographs were in black and white (compared to no photographs), participants rated the defendant as significantly more competent when controlling for mental health, competency, and insanity scale scores. All indirect effects were not significant. All indirect effects are listed in Table 10 (competency) and Table 11 (sanity).

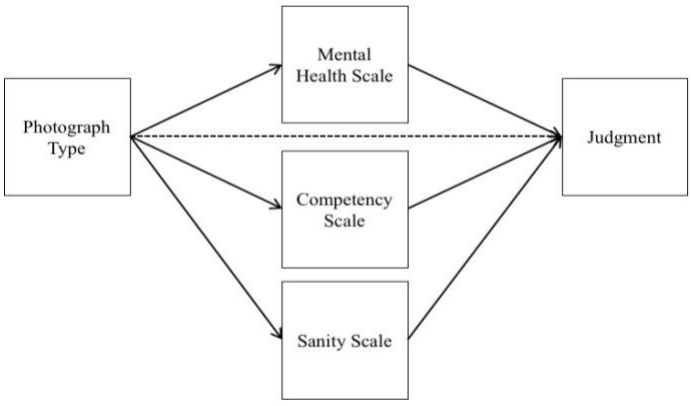


Figure 7. The indirect effect of photograph type on competency through mental health, competency, and sanity scales, moderated by bodily awareness. I tested the model twice, once with ultimate competency judgments and the other with ultimate sanity judgments.

Table 10:

Indirect effect of photographs on competency.

	Total			Mental Health Scale as Mediator			Competency Scale as Mediator			Sanity Scale as Mediator		
	B	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*
B&W (vs. No) Photos	**1.05**	**0.56**	**0.05, 2.25***	–0.21	0.31	–0.99, 0.27	1.27	0.72	–0.13, 2.73	–0.02	0.13	–0.38, 0.16
Color (vs. No) Photos	–0.08	0.24	–0.59, 0.36	–0.03	0.09	–0.37, 0.06	0.03	0.09	–0.07, 0.33	–0.08	0.22	–0.57, 0.31

Note. Significant effects are indicated by bolded fonts and an asterisk.

Table 11:

Indirect effect of photographs on sanity.

	Total			Mental Health Scale as Mediator			Competency Scale as Mediator			Sanity Scale as Mediator		
	B	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*
B&W (vs. No) Photos	0.28	0.48	–0.58, 1.35	–0.03	0.25	–0.83, 0.31	0.18	0.33	–0.32, 1.04	0.13	0.37	–0.6, 0.91
Color (vs. No) Photos	0.15	0.27	–0.44, 0.63	0.02	0.08	–0.07, 0.30	0.14	0.25	–0.32, 0.66	–0.005	0.06	–0.19, 0.07

Note. Significant effects are indicated by bolded fonts and an asterisk.

Moderated Mediation: The direct effect of photograph type on competency ratings after controlling for the three scale scores indicates that an untested variable might influence participant decisions. I looked to see if this direct effect existed at different levels of experience. Additionally, because there was no significant interaction between photograph type and decision type and no mediation, I ran a more in-depth analysis to see if the interaction and mediation existed at different levels of experience. That is, I attempted to rule out the possibility that the interaction above was insignificant because two experts of differing experience responded to the photographs in different ways. See Figure 8 for the models.

Moderated mediation analysis revealed no significant indirect effects of mental health, competency, or sanity. All indirect effects are listed in Table 12 (competency) and Table 13 (sanity).

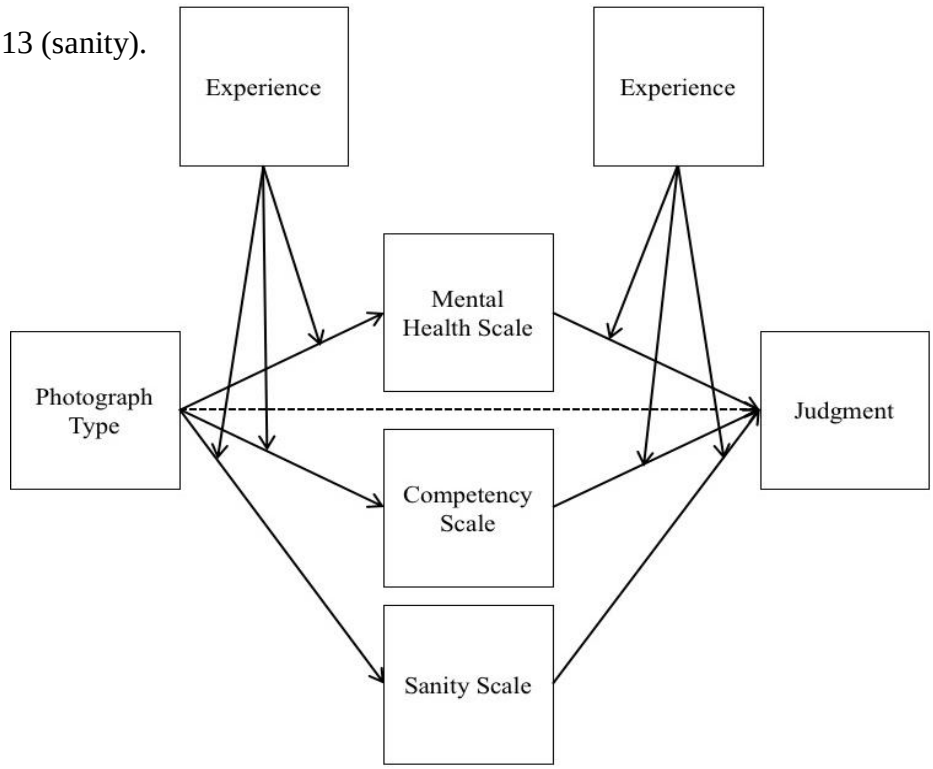


Figure 8. The indirect effect of photograph type on competency through mental health, competency, and sanity scales, moderated by bodily awareness. I tested the model twice, once with ultimate competency judgments and the other with ultimate sanity judgments.

Table 12:

Conditional indirect effects of photograph manipulation on competency as a function of experience.

		Mental Health Scale as Mediator			Competency Scale as Mediator			Sanity Scale as Mediator		
	Experience Value	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*
B&W (vs. No) Photos										
Low Experience	0.00	–0.08	0.52	–1.62, 0.59	0.90	1.13	–1.15, 3.32	0.04	0.28	–0.25, 1.18
Moderate Experience	56.29	–0.29	10.52	–6.46, 2.00	1.09	7.33	–0.36, 8.06	–0.002	10.45	–2.06, 3.64
High Experience	165.56	–0.91	88.56	–60.64, 9.65	1.04	39.27	–8.04, 30.29	0.29	111.54	–10.58, 58.45
Color (vs. No) Photos										
Low Experience	0.00	0.11	0.21	–0.07, 1.06	0.10	0.36	–0.64, 0.81	0.02	0.20	–0.18, 0.81
Moderate Experience	227.15	0.23	51.55	–23.36, 124.19	0.02	57.71	–58.01, 89.89	0.19	88.03	–36.73, 210.00
High Experience	1217.13	20.64	1539.84	–920.25, 3147.05	0.10	0.36	–0.64, 0.81	18.55	2657.62	–1408.65, 6061.36

Note. Significant effects are indicated by bolded fonts and an asterisk.

Table 13:

Conditional indirect effects of photograph manipulation on sanity as a function of experience.

		Mental Health Scale as Mediator			Competency Scale as Mediator			Sanity Scale as Mediator		
	Experience Value	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*
B&W (vs. No) Photos										
Low Experience	0.00	0.02	0.31	–0.46, 0.77	–0.12	0.26	–1.19, 0.16	–0.11	0.49	–1.42, 0.72
Moderate Experience	79.77	0.43	8.64	–0.38, 11.55	0.37	1.35	–0.37, 8.55	0.006	6.66	–1.3, 2.15
High Experience	242.17	2.17	63.02	–1.28, 117.65	2.42	22.76	–3.68, 35.78	–0.03	40.30	–36.22, 7.12
Color (vs. No) Photos										
Low Experience	0.00	–0.08	0.14	–0.61, 0.07	–0.004	0.15	–0.40, 0.25	–0.13	0.31	–1.04, 0.33
Moderate Experience	243.69	–0.28	22.34	–137.58, 11.76	0.65	36.27	–9.00, 241.04	0.11	46.41	–33.63, 31.76
High Experience	1219.10	–28.64	590.88	–8129.26, 120.45	7.02	957.85	–333.99, 2998.98	–11.18	1165.14	–5873.94, 231.29

Note. Significant effects are indicated by bolded fonts and an asterisk.