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SAD EYEWITNESSES AND JURORS' PERCEPTIONS OF THEIR BELIEVABILITY

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By

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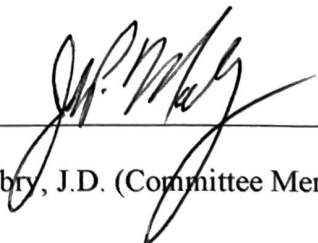
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Abstract

Eyewitness testimony is heavily relied on in court, and there is a large amount of research on how an eyewitness's and defendant's behavior and emotion can influence a jury's verdict decision. The emotional victim effect occurs when a distressed victim is deemed as more believable, compared to victims that display a calm demeanor with a lack of emotional display. The current study tested three hypotheses. First, this work sought to establish the emotional *eyewitness* effect, with Hypothesis 1 predicting that an adult non-victim eyewitness would be deemed more believable than an adult eyewitness displaying a neutral emotional demeanor. Secondly, this work tested two possible mechanisms underlying this effect. Hypothesis 2a predicted that the juror's empathy would lead the emotional eyewitness effect, and Hypothesis 2b predicted that the juror's belief in the sad eyewitness would be driven by a misconception that emotional memories are more accurate than neutral memories. Participants watched either a sad or neutral eyewitness give a deposition regarding an attack she witnessed. Participants then rated how much they believed the eyewitness (on a scale of 1 to 5), completed a state empathy measure (Shen's State Empathy Scale), and rated how accurate they felt her memory was. Results indicated that participants believed the eyewitness more when she appeared sad than when she appeared neutral, showing support for Hypothesis 1. Hypothesis 2a was also supported; the emotional eyewitness effect was driven by the participant's state empathy. Hypothesis 2b was not supported; belief that emotional memories are more accurate than neutral ones was not driving the emotional eyewitness effect. However, the participant's belief in the accuracy of the memory did play an independent role in predicting believability. The results of this research have important implications for lawyers, jurors, eyewitnesses, and the general public. Educating the general public of the potential effects of emotional biases on decision-

making may help reduce their impact in a court room, but also in everyday life. Future research could examine how other emotions influence empathy and believability, and how this effect translates to a more realistic environment (e.g., a full mock trial or real trial video).

Keywords: juror, emotional victim effect, emotional display, non-victim eyewitness, eyewitness, empathy

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Sad Eyewitnesses and Jurors' Perceptions of Their Believability

The United States justice system guarantees the rights of criminal defendants to a public trial with an impartial jury. Many cases rely heavily on the testimony of witnesses when deciding responsibility or guilt (Innocence Project, 2021). Due to the subjective nature of such testimony, jurors should be critical of the believability of a witness in order to maintain a fair trial. Jurors often rely on typical behavioral cues such as avoiding eye contact, trembling hands, and stammered speech, to judge a witness' credibility (Bennett, 2015). Jurors also use the emotion displayed by a witness (e.g., excessive crying or sweating, angry outbursts, or nervous looks) as a testament to their credibility (Bederian-Gardner et al., 2017). Research has found that witnesses are often deemed more credible when they are perceived as having sad emotions (Kaufmann et al., 2003), even though alternative research suggests there is no relationship between emotional display and how accurate the witness' memory is (Rimmele et al., 2011).

The role of emotions in the court room has been studied extensively in regard to their effect on the trial verdict and how believable or credible jurors find a person to be. Typically, research has been focused on investigating the emotions displayed by the victim or defendant. When it comes to the defendant, people perceive sadness to be associated with remorse or innocence, but anger to be associated with guilt. For example, Heath, Grannemann, and Peacock (2004) found that mock jurors rated the defendants as more guilty when they displayed hysterical or excessive emotions. However, when the defendant's voice and expression reflected sadness and distress, the mock jurors gave less guilty verdicts. When it comes to the emotion displayed by the victim, jurors tend to rate victims as more credible when they appear sad, neutral, or angry, but less credible when they appeared to have a positive affect (Wessel et al., 2013). The

justice system is intended to be objective, therefore the impact of subjective assessment of emotion is of particular interest and importance.

Emotional Victim Effect

Previous studies have found that jurors are more likely to believe an emotional victim¹ compared to a neutral one. This is known as the emotional victim effect (Melinder et al., 2016; Wessel et al., 2013). This effect occurs when a juror deems a victim as more credible, the more emotion they display when testifying. This effect has been found with both adult eyewitnesses (Bollingmo et al., 2009; Lens et al., 2014) and children eyewitnesses (Bederian et al., 2017; Cooper et al., 2014; Wessel et al., 2013). For example, Cooper et al. (2014) studied how child emotional displays impacted credibility judgements and verdicts of mock jurors. In their study, participants read transcripts of a sexual abuse case. The transcripts were paired with a drawing of a child who varied in emotion (sad and tearful vs. calm and neutral). They found that participants who perceived the drawing of the child as more emotional were more likely to give guilty verdicts, were more certain of guilt, and found the child more credible. In this case, a still drawing to portray the emotion, paired with the written transcripts, was enough to influence the believability of the victim.

The display or format in which emotion is displayed has also been investigated. Melinder et al. (2016) manipulated not only the emotion displayed by the victim, but also the format in which mock jurors heard/read the transcript of the victim's interview. The victim, portrayed by child female actors, displayed either neutral, sad, angry, or positive emotions during the interview. The emotion was manipulated through small differences in the testimony: at three points in the interview, the child either takes a short break, sobs, is "agitated," or smiles,

¹ Although most of this research refers simply to an "emotional victim," the focus is almost exclusively on sadness as the emotion of interest.

depending on the condition. Participants received the content in the form of either a video recording, audio recording, or written transcripts and rated the credibility of the victim. They found that the children who displayed “sad” emotional features had higher credibility ratings than the angry or happy children (but not significantly different than neutral). This finding was shown for each of the formats, showing that the emotional victim effect occurs regardless of the way in which information or testimony is provided.

It is one thing for the emotion of a victim to play a role in verdict decisions when there is a lack of hard evidence to corroborate their version of events. However, it appears that jurors will rely heavily on emotions even when there is little to no ambiguity as to the guilt of the defendant. In addition to manipulating the emotion displayed by a rape victim (sad, neutral, or positive) a study by Kaufmann and colleagues (2003) manipulated the actual content of the testimony to form two versions- one in which the lack of consent from the victim was made clear and one in which the consent was more ambiguous. In the version for which consent was clearly not given, the woman reported consistently rejecting the male’s advances and actively resisting physically when he approached her. In the more ambiguous version, the woman repeatedly seeks the male’s romantic contact, while also making her stance less clear with statements referring to wanting to remain “just friends” with the male. Surprisingly, there was no difference in guilt ratings based on the ambiguity of the testimony, but participants rated the victim and her testimony as more credible and were more confident in a guilty verdict when the victim appeared sad compared to neutral or positive. This indicates that the victim’s emotion had more of an impact than the actual details of the event. The emotions a witness displays may be more influential to a juror than evidence in a case, but it is unclear based on research whether this extends to witnesses who were not directly involved in the crime.

Research on the emotional victim effect has shown that mock jurors rely heavily on emotion when making decisions. What is it about a sad victim that makes them more believable? Researchers have begun to investigate the mechanisms involved in the emotional victim effect. There are two possible underlying processes that lead to the emotional victim effect. Jurors may be reacting logically or more emotionally/intuitively to the behavior of the victim. It may not be the emotions of the victims that affect jurors, but the jurors' own emotional reaction to seeing the defendant or victim. Understanding empathy as a component in emotional judgments may explain, in part, how people make believability decisions. It's also possible that jurors' perceptions are affected through a more logical explanation. Are jurors believing the emotional victim more because the jurors hold a misconception that emotional memories are simply more accurate than neutral memories.

Emotion and Memory

The role of emotion in memory encoding and retrieval is a long-debated topic. While there is an abundance of research regarding emotional memories, the results are mixed. On the one hand, neuro-imaging research appears to support that emotional events are remembered more strongly than neutral events. For example, Tyng et al. (2017) investigated emotion in learning and memory and found that emotionally stimulating material was associated with greater attention and increased sensory responses. Hence, inducing a "pop-out" effect that leads to "privileged" processing (Öhman et al., 2001). These processes help memories retain accuracy over time. Additionally, Kensinger et al. (2007), investigated memory recognition in emotionally valenced compared to neutral photos. Their results showed enhanced recognition for photos of positive and negative emotionally valenced objects. Young adults showed more recognition for negative photo objects, whereas older adults displayed increased recognition for both positive

and negative emotional objects. Therefore, negative content in the picture increased recognition and memory accuracy in both ages.

Khairudin et al. (2011) studied memory for positive, negative, and neutral content. Specifically, they analyzed participants' memory for words and images. They found that emotional words (whether positive or negative) were remembered better than neutral words. When studying images, which are arguably more representative of a real autobiographical memory than single words, positive images were remembered better than neutral ones, although there was no difference between the neutral and negative images.

There are several other laboratory-based studies that have found support for emotional memories being remembered better, but others have not (Rimmelle et al., 2011; MacMillan et al., 2022; Gallant et al., 2018; Jermann et al., 2009). MacMillan et al., (2022) found that there was no difference in recall for positive, negative, or neutral words. Across three different experiments they found that the valence of the words (positive, negative, or neutral) did not change how accurately participants recalled the words. Therefore, people who remembered more emotionally charged stimuli performed the same as when they remembered neutral stimuli.

A great deal of research focuses on the valence of words or pictures and how they influence memory, however an arguably more realistic way to test memory is by using actual memories. For example, flashbulb memories refer to memory when a person has heard significant and emotional news. These types of memories are usually associated with high emotion and high levels of confidence, but not higher levels of accuracy (Sharot et al., 2004; Talarico & Rubin, 2003). When recalling the September 11th attacks on the World Trade Center, Talarico and Rubin (2003) found that initial ratings of emotionality of the attacks predicted individuals' belief in the accuracy of their memories. People believed that because their

memories were so emotionally charged, they were therefore more accurate. However, people were just as likely to have errors in their memory for flashbulb memories compared to every-day memories. The emotion a person experiences when recalling a memory does not always mean that the memory is more accurate, even if it may look more believable to the observer.

Current research supports that negative events may actually be remembered less. Previous research has focused on how emotion influences false memory and the accuracy of recall. More recent research suggests that recall of events and memory accuracy are either immune to the emotional state during the event (Xie et al., 2022) or decreased by negative emotion (Pezdek et al., 2021). For a meta-analysis, Xie et al. (2022) studied how well memory performed during recall tasks under any emotional state, across 13 different experiments. They found that induced negative emotional state slightly reduced recall and increased recall failures compared to the neutral condition. This information explains that more emotion does not necessarily mean there is a more accurate recall of events. This reasons that an eyewitness recalling a crime stands to be less accurate when more negative emotion is displayed.

Although overall, the results regarding whether emotion benefits, hurts, or does not affect memory are quite mixed, the general public may not have the full picture. Since there is some evidence to suggest that emotional words or events are remembered better than neutral words/events, it is reasonable that the public may have formed a perception that overall, emotional memories are more accurate than neutral ones. Indeed, years of memory research shows that there is a widely held misconception that the emotional content of a memory makes that memory more stable against future distortion or errors (Laney & Loftus, 2010; Sharot et al., 2004). However, in a meta-analysis, Laney & Loftus (2010) discussed how easy it can be to plant false memories, both positive and negative in nature. This can include convincing

participants of a false but positive scenario where they rode in a hot air balloon during childhood (Wade et al., 2002) or a false negative memory where they got sick from strawberry ice-cream (Bernstein et al., 2005). A significant number of participants believed these false memories to be true. Therefore, contrary to the public's misconceptions, emotional memories are not immune to change or manipulation, especially if those memories are recounted in a stressful scenario such as a courtroom or police station.

Jurors may interpret the negative or sad emotion displayed by a witness during their testimony to be indicative of the emotional nature of the memory. Then, if the juror holds this misconception that emotional memories are more accurate than neutral, they would logically conclude that the emotional eyewitness has more accurate recall than a neutral eyewitness.

Empathy

Empathy is an abstract concept with various definitions across literature. Here we will operate with the working definition that empathy is a feeling that happens to an observer when they share or understand another person's feelings (Zaki, 2014). Empathy has both cognitive and affective dimensions. Cognitive empathy is the ability to mentally understand another's feelings, related closely to theory of mind (Blair, 2005). It refers to recognizing emotions, but not necessarily feeling them. Whereas those high in affective empathy can feel what others feel (Blotner et al., 2021). Affective empathy focuses more on the experience of emotion that is provoked by an emotional stimulus (Cuff et al., 2016). However, these are generally considered as two processes in a dual process model of empathy, and researchers have suggested that the two facets of empathy should not be viewed as separate entities (Lamm et al., 2007; Singer, 2006).

An aspect of empathy that is important to identify is whether an individual might feel empathetic towards others in response to a specific event, or whether the individual typically personifies empathy as a characteristic of their personality. This is the distinction between trait and state empathy. Trait empathy is a more longstanding personality trait that is described as the tendency to share the emotion of another (Kawakami & Katahira, 2015). State empathy occurs when the perception of a person's emotional state evokes a temporary response of feeling a similar emotion (Shen, 2010). Research on state empathy suggests that when a relationship is built between two people (such as experiencing high state empathy toward another person), they are more easily influenced by persuasive messages (Shen, 2010). If a juror is experiencing higher levels of state empathy, this establishes a relationship between the juror and witness. The juror may therefore be more persuaded by the witness's testimony. When jurors are more empathetic toward a victim, they may be more likely to believe the victim and consequently more likely to find the defendant guilty. This is supported by a study from Bederian-Gardner et al. (2017) which investigated how participants' empathy was related to perceptions of a victim's emotions and believability as well as the subsequent effect on participants' views of the defendant's believability and guilt. The researchers found that an increase in empathy was related to an increase in participants' rating of a child victim's believability. In addition, results showed that participants with empathy towards the victims interpreted them as both feeling and looking sadder. An increase in empathy was also related to a decrease in the defendant's perceived believability.

While a person's empathy appears to be positively related to how believable they find a victim, what specific role does empathy play? Is a person making judgements about believability because they feel the same as the victim? Some research suggests that this is the case. Empathy

may be the driving force behind a person's assessment of the believability of a victim. Ask and Landstrom (2010) studied how the emotional victim effect was mediated by compassionate affect in response to the victim's statement. For their study, police trainees viewed a video of a female victim reporting a rape with an emotional or neutral demeanor. For the emotional demeanor, the actress cried several times, spoke with a trembling voice, displayed a struggle to maintain control, and paused before recalling sensitive aspects of the event. In the neutral version, the actress recalled the event in a factual manner, spoke with a steady and confident voice, and did not pause when describing sensitive parts of the events. After watching the video, the police trainees answered questions about whether they believed the victim was raped, the emotional state of the victim, if the victim's behavior was what they expected, and how compassionate they felt towards the victim. A mediation analysis identified that an emotional demeanor evoked stronger compassionate responses, which in turn resulted in higher guilt ratings. This suggests that it is not the displayed emotion that directly affects believability, but rather that the emotion invokes empathy, which causes the differences in believability (Ask & Landstrom, 2010). Based on this, it appears that empathy could play a vital role in the relationship between a victim who displays sad emotions and their believability. Perhaps the juror's perceptions of the victim are only affected by the victim's emotion *if* the juror empathizes with the victim.

The Current Study

Most research on the effect of witness's emotion on jurors is studied with the witness as the victim of the crime. This potentially predisposes the jury to feel compassionate towards them, as the victim, prior to hearing the testimony. However, there is no known research on how a juror is affected by the emotion of an adult, non-victim eyewitness. A victim testimony is a firsthand

account of the event that personally affected them, but an eyewitness testimony is a less potentially biased and less inherently emotional retelling of an event. A victim retelling an event could provoke sympathy from a juror for their troubling event, regardless of what emotion the victim displays in the moment. Testing a non-victim eyewitness' believability will pinpoint that the juror is empathetic for the person due to emotion displayed and a predisposition to empathize with and believe a victim. The present study investigated the role of a non-victim eyewitness's display of sadness on a juror's perceptions of the eyewitness' believability and whether that relationship is due to the state empathy experienced by the juror and/or by a belief that the memory is more accurate. After reviewing the research on the emotional victim effect, it was hypothesized that an emotional, non-victim, adult eyewitness would influence a juror similar to how the research has explained an emotional child or adult victim does. The hypotheses were as follows: an eyewitness displaying sad emotions would be rated as more believable than an eyewitness who displays neutral emotions (Hypothesis 1). Further, two possible mediating factors for this relationship were investigated: state empathy and perceived accuracy. I predicted that the relationship between the emotional eyewitness and their believability would be mediated by the level of state empathy experienced by the participant (Hypothesis 2a). Alternatively, the relationship between the emotional eyewitness and their believability may be mediated by how accurate the participant believes the eyewitness's memory to be (Hypothesis 2b).

Method

Participants

Participants included students, faculty, and staff at the University of Central Oklahoma, recruited through a global email blast. There was no compensation offered. The sample size was $N = 113$. A total of 31 participants were removed from the data set. The 31 participants were

removed based on the following criteria: time spent on video indicating participants paused the video or walked away from the computer ($n = 4$), honesty ratings indicating the participants thought the eyewitness was actively lying ($n = 23$; 9 from neutral condition, 14 from sad condition), failing the attention check item ($n = 3$), and recognizing the actress in the video ($n = 1$). This resulted in the total number of participants analyzed to be $N = 82$ ($n_{\text{sad}} = 36$, $n_{\text{neutral}} = 46$). However, demographic information was only taken for 53 participants. This included $n = 2$ faculty, $n = 7$ staff, and $n = 44$ students. Of these, the participants' mean age was 28.7 years (range = 18 to 66). Of the 53 participants who answered demographic questions, 39 identified as female, 12 identified as male, and 2 identified as being non-binary/third gender. The ethnicity distribution was comprised of 39 participants who identified as Caucasian, 3 Hispanic, 2 Black/African American, 1 American Indian/Native American or Alaska Native and 8 participants who identified as a mixed/other ethnicity.

Materials

The materials used in this study included a pre-recorded video of an actor playing the part of an adult, non-victim eyewitness, recanting the details of an attack they witnessed. A questionnaire after the trial video assessed the believability of the witness, the participant's state empathy, perception of the witness' memory accuracy, and the participant's perceptions of the witness's emotion (as a manipulation check). Participants also answered demographic questions.

Eyewitness Video

There were two versions of the eyewitness's testimony video: one in which the eyewitness displayed observable sadness and one in which the (same) eyewitness displayed a neutral and calm demeanor. The sad demeanor was operationalized by: sniffing, pauses in speech, and a shaky voice, as suggested by previous research (Bennett, 2015; Hodgson, 2014).

These features were absent from the neutral version, but all other content remained the same. A script of the eyewitness's testimony is provided in Appendix A, with indications of where in the story the eyewitness displayed certain 'sad' behaviors. Both versions of the video were approximately six and a half minutes long. A pilot study confirmed that participants interpreted the emotions in each video as intended.

Eyewitness Believability

The believability of the eyewitness was measured by the following two items, "Please rate how believable you felt the eyewitness's testimony was" and "Please rate how believable you felt the eyewitness was." Both items are measured on a 6-point scale ranging from completely unbelievable to completely believable. The wording of the question and use of the 6-point scale was based on the Bederian-Gardner et al. (2017) study. Asking two items, one about the person and one about their testimony is modeled after Kauffman et al. (2002). A composite score of believability was calculated as the average response on these two items, with a higher score indicating that the participants believe the eyewitness more.

Perceived Memory Accuracy

The perceived memory accuracy of the eyewitness was measured by asking participants "How accurate do you think the person's recollection of events was?" This was measured on a 6-point scale ranging from completely inaccurate to completely accurate. The wording of the question and use of the scale was based on the Wright et al. (2010) study. A higher score indicates that the participants believed the eyewitness' recollection of events was very accurate. This item served to assess whether the jurors' perceptions were being swayed by a logical misconception regarding emotional memories being more accurate than neutral ones.

Participants' State Empathy

State empathy was measured through Shen's (2010) State Empathy Scale. This is a 12-item scale assessing three dimensions of empathy: affective, cognitive, and associative² empathy. Table 1 displays the items in the scale, which are measured on a 5-point Likert-type scale from 0 "not at all" to 4 "completely." A composite score of state empathy was calculated by averaging responses on all 12 items, with higher scores indicating higher state empathy (i.e., the participant is feeling more empathetic toward the eyewitness).

Table 1

Items and Dimensions of Shen's (2010) State Empathy Scale

Dimensions	Items
Affective Empathy	1. The eyewitness' emotions are genuine. 2. I experienced the same emotions as the eyewitness when watching the testimony. 3. I was in a similar emotional state as the eyewitness when watching this testimony.
Cognitive Empathy	4. I can feel the eyewitness' emotions. 5. I can see the eyewitness' point of view. 6. I recognize the eyewitness' situation. 7. I can understand what the eyewitness was going through in the testimony.
Associative Empathy	8. The eyewitness' reaction to the situation are understandable. 9. When watching the testimony, I was fully absorbed. 10. I can relate to what the eyewitness was going through in the testimony. 11. I can identify with the situation described in the testimony. 12. I can identify with the eyewitness in the testimony.

Manipulation and Attention Checks

Perceived Honesty. Perceived honesty of the eyewitness was measured by asking the participant "Please rate how honest you believe the eyewitness was on a scale from 1

² Shen (2010) defines associate empathy as the dimension of empathy that facilitates social bonding and relationship development. The current study will only utilize the composite score since research has shown mixed support for such delineation (see Spreng et al. (2009) for a review).

(completely dishonest) to 6 (completely honest)”. The purpose of the current study is to identify if the participant believed the eyewitness based on the accuracy of their memory and not whether the eyewitness was lying. Therefore, participants who do not believe the eyewitness was being honest were removed from data analysis.

Perceptions of Emotion. Perceptions of the eyewitness’s emotion was measured with two questions from Bederian-Gardner et al. (2017): “Which of the following best describes how you believe the witness appeared on a scale of 1 (very happy) to 5 (very sad)?” and “Which of the following best describes how you believe the eyewitness was feeling on a scale of 1 (very happy) to 5 (very sad)?”. These two items were used as a manipulation check to make sure that participants did in fact regard the eyewitness and testimony in the “sad eyewitness video” to be sadder than the “neutral eyewitness video.” Higher ratings on each item indicated a successful manipulation of sadness in the video. These two items are separated as two measures, as Bederian-Gardner et al. (2017) suggest that empathy may alter an individuals’ appraisal of how victims appear, feel, or both. The researchers state that by including separate ratings of appraised appearance and feeling, they were able to analyze which side of a victim’s ‘emotion’ (appearance and/or experience) empathy better predicts. Their research showed that empathy may not only influence the way one sees a victim’s emotional appearance, but also how sad the victim is perceived to really feel, regardless of the displayed sadness of the victim. This is why the current study asked both questions separately but analyzed them as a composite score to get an average rating for perceived emotion.

Attention Checks. The questionnaire also included two items that served as an attention-check: “Was the person in the video the victim (yes/no)?” and “Did you recognize/know the person in the video?” As an important distinction of the current work compared to previous

research is the use of a non-victim witness, participants who answered “yes” were not used in data analyses.

Procedure

Participants were recruited through a global email blast through UCO. The entire study was completed online through Qualtrics. All participants were randomly assigned to view either the emotional eyewitness or neutral eyewitness testimony video. Before the video is shown, participants were told that they are watching a recorded deposition from a recent case. After watching one of the two videos, all participants filled out the post-trial survey including all the measures in the following order: eyewitness believability, eyewitness memory accuracy, eyewitness honesty, state empathy scale, and the attention check. Participants also filled out brief demographic information including age, gender, and race/ethnicity. In the debriefing, participants were told that the testimony was in fact made up for the purposes of the experiment. The experiment was conducted in a single session lasting approximately 10 minutes.

Results

The two main hypotheses in the current work were regarding the potential mediation of the emotional eyewitness effect. The emotion of the eyewitness was manipulated through the actress’s portrayal of: sniffing, pauses in speech, and a shaky voice, as suggested by previous research (Bennett, 2015; Hodgson, 2014), during a mock interview. This resulted in two conditions- a sad eyewitness video and a neutral eyewitness video. To confirm the manipulation of the actress’s emotion, participants answered two manipulation check items: “Which of the following best describes how you believe the witness appeared on a scale of 1 (very happy) to 5 (very sad)?” and “Which of the following best describes how you believe the eyewitness was feeling on a scale of 1 (very happy) to 5 (very sad)?”. The manipulation was successful as the

average of these emotion ratings was significantly different between the two conditions, $t(80) = -9.02, p < .001$ ($\eta^2 = .50$), with the sad video receiving a higher³ average emotion rating ($M = 4.06, SD = .47$) than the neutral video ($M = 3.18, SD = .40$). Before conducting any regression analyses, the assumptions of linearity, independence of residuals, and multicollinearity of independent variables were assessed. Data met these assumptions and mediation analyses were then conducted.

Hypothesis 1 predicted that an eyewitness displaying sad emotions would be rated as more believable than an eyewitness displaying neutral emotions. To test this, a simple linear regression was conducted using the eyewitness video condition (0 = neutral, 1 = sad) to predict believability (scale of 1-6). The regression was not significant, $F(1, 80) = .61, p = .44$. However, given that the emotion rating items, used initially as a manipulation check, offer a more fine-grained measure of perceived emotion, the analysis was re-run using the continuous measure of average emotion rating in place of the dichotomous video condition. This is similar to the decision by Bederian-Gardner et al. (2017) to use a more sensitive measure in analyses rather than a more prohibitive dichotomous variable. The perceived emotion rating offers a more nuanced view of how the participants interpreted the actress's emotion. When using the average emotion rating (scale of 1-5) to predict believability (scale of 1-6), the regression was significant, $F(1, 80) = 6.39, p = .01$ and explained 7.39% of the variability in believability rating. The standardized Beta coefficient for emotion rating was $\beta = .27, t(80) = 2.53, p = .01$, which indicates a positive relationship between perceived emotion and believability. Participants with higher (i.e., sadder) emotion ratings had higher believability ratings. Given these results, all future analyses were run using the emotion rating as the independent variable.

³ The scale for these items ranged from 1 (very happy) to 5 (very sad). Therefore, a higher rating indicates more perceived sadness.

Hypothesis 2 aimed to test two possible mediating factors for this relationship: state empathy and perceived accuracy of the eyewitness's memory. A series of four regression analyses were conducted to test for each variable as a mediator, according to the Baron and Kenny (1986) method. In order to show mediation, the four regression analyses must establish the following:

- 1) The independent predicts the dependent variable.
- 2) The independent variable predicts the proposed mediator.
- 3) The proposed mediator predicts the dependent variable.
- 4) The proposed mediator, and *not* the independent variable, predicts the dependent variable.

Hypothesis 2a predicted that state empathy toward the eyewitness would serve as a mediator between average emotion rating and perceived believability. As a requirement of conducting mediation tests, a moderating effect of empathy was first ruled out.

The first regression model in testing mediation was the same as the one conducted to address Hypothesis 1, which did confirm a relationship between perceived emotion of the eyewitness and believability. The second regression successfully established a significant relationship between the perceived emotion and state empathy, $F(1, 80) = 6.89, p = .01$. The model explained 7.94% of the variability in state empathy. The standardized Beta coefficient for emotion rating was $\beta = .28, t(80) = 2.63, p = .01$, which indicates a positive relationship between perceived emotion and believability. Participants who rated the eyewitness's emotion higher (i.e., sadder) experienced higher state empathy toward the eyewitness.

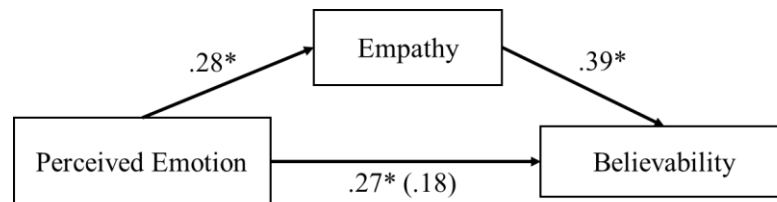
The third regression successfully established a significant relationship between the state empathy and perceived believability, $F(1, 80) = 14.72, p < .001$. The model explained 15.54% of

the variability in believability rating. The standardized Beta coefficient for empathy was $\beta = .39$, $t(80) = 3.84$, $p < .001$, which indicates a positive relationship between state empathy and believability. Participants with higher empathy rated the eyewitness as more believable.

The fourth and final regression, depicted in Figure 1, established that when both state empathy and perceived emotion were included as predictors, only state empathy remained a significant predictor. This regression was significant, $F(2, 79) = 8.88$, $p < .001$. State empathy was a significant predictor, $t(79) = 3.26$, $p = .002$. The standardized Beta coefficient ($\beta = .35$) indicates a positive relationship between empathy and believability. Perceived emotion was not a significant predictor in the model, $t(79) = 1.65$, $p = .10$. This supports that empathy mediates the relationship between perceived emotion and believability.

Figure 1

Empathy Mediates the Emotional Eyewitness Effect



Note. This figure reports the standardized Beta coefficients for each regression in the mediation analysis. The indirect effect of perceived emotion in predicting believability is reported in parentheses.

Hypothesis 2b predicted that perceived accuracy of the eyewitness's memory would serve as a mediator between perceived emotion of the eyewitness and believability. As a requirement of conducting mediation tests, a moderating effect of accuracy was first ruled out.

The first regression model in testing memory accuracy as a mediator was the same as the one conducted to address Hypothesis 1, which did confirm a relationship between perceived

emotion of the eyewitness and believability. However, the second regression failed to establish a significant relationship between the perceived emotion and memory accuracy, $F(1, 80) = .21, p = .65$. This ends the test for mediation, however, regression models 3 and 4 were still conducted.

The third regression did indicate a significant relationship between the memory accuracy and perceived believability, $F(1, 80) = 22.22, p < .001$. The model explained 21.74% of the variability in believability rating. The standardized Beta coefficient for memory accuracy was $\beta = .47, t(80) = 4.71, p < .001$, which indicates a positive relationship between perceived memory accuracy and believability. Participants were more likely to believe the eyewitness when they felt the memory was more accurate.

The fourth regression established that when both memory accuracy and perceived emotion were included, both variables were significant predictors of believability, further indicating a lack of mediation. The regression was significant, $F(2, 79) = 17.33, p < .001$. Memory accuracy was a significant predictor, $t(79) = 5.12, p < .001$. The standardized Beta coefficient ($\beta = .48$) indicates a positive relationship between accuracy and believability. However, perceived emotion was also a significant predictor, $\beta = .30, t(79) = 3.16, p = .002$. This indicates that perceived memory accuracy and the emotion of the eyewitness are independent predictors of believability.

Discussion

The purpose of this research was to investigate whether the emotion displayed by an eyewitness would influence how believable a juror found that eyewitness to be. The emotional victim effect states that a distressed victim is considered more believable, compared to victims that display a calm demeanor with a lack of strong emotional display (Melinder et al., 2016). The current study sought to extend research regarding the emotional victim effect to adult, non-victim

eyewitnesses (Hypothesis 1). Further, this work explored two factors that might explain the underlying mechanisms of this relationship. The two mechanisms investigated in the current work addressed a more emotional mechanism (empathy; Hypothesis 2a) and a more logical mechanism (misconceptions about the accuracy of emotional memories; Hypothesis 2b).

Hypothesis 1 was supported; participants believed the emotional eyewitness more than the neutral eyewitness, establishing the emotional eyewitness effect. Hypothesis 2a was also supported; participants' state empathy mediated the emotional eyewitness effect. The emotional eyewitness effect only occurred when participants were empathetic toward the eyewitness. This implies that jurors experience empathy based on the emotions displayed by an eyewitness, and that empathy (i.e., feeling "bad" for the person) is what leads them to believe the eyewitness more. Hypothesis 2b was not supported; it was predicted that perceptions of memory accuracy would mediate the emotional eyewitness effect. While the perceived accuracy of the memory did play an independent role in how believable participants found the eyewitness to be, the perception of memory accuracy was not based on the emotion displayed by the eyewitness. Taken together, these results suggest that while empathy drives the believability of an emotional eyewitness, participants still consider whether the memory itself seems accurate in making judgements about how believable an eyewitness is.

Implications

Given the results of the current work, that believability of an eyewitness is driven by jurors' empathy, it is reasonable to assume that jurors' verdict and decision-making process would likewise be affected. It is not a novel idea that humans often make decisions based largely on emotion rather than logic (Shiv & Fedorikhin, 1999; Simon, 1987). While early research primarily viewed emotions as deterrents to logical decision making (for a review, see Shields,

2007), many researchers would argue that certain emotions can be beneficial in decision making (e.g., Bliss-Moreau & Barrett, 2009; Seo & Barrett, 2007), and others would go so far as to say that decisions simply cannot be made without emotions (Damasio, 2005). As Brescoll (2016) points out, the general public's belief that emotional decision-making leads to biases and irrational choices does not appear to have much empirical support. Therefore, it is perhaps not a problem that jurors would make believability judgements based, at least partially, on their feelings of empathy toward the eyewitness. Instead of trying to diminish the effect of emotions and empathy, members of the judicial system could possibly use this information for their benefit.

Lawyers could use this information to explain to eyewitnesses how their general demeanor and apparent emotional reactions may be interpreted by the jury. It is not only the display of emotion, but more broadly the eyewitness's body language and nonverbal cues. These could be cues even as subtle as hand gestures, that should be considered (Gurney et al., 2013). Research suggests that people often use subtle cues from body language, including eye-contact and head pose to make assumptions about an individual's personality (Romeo et al., 2021; Subramanian et al., 2013). A juror may in turn allow their perceptions of the eyewitness's personality to impact their trust in the eyewitness (Mahrholz, Belin, & McAleer, 2018).

This area of research is also applicable outside of a trial to the general public. The public perception of eyewitnesses, victims, and defendants is important because it could decrease the expectation of how a defendant should behave emotionally, reduce victim blaming, as well as decrease the expectation for how a victim should act or what they look like. Beyond the context of a courtroom, emotional decisions are frequently made in everyday life. Education on this topic could inform individuals of the emotional factors that influence decision-making.

Limitations

While the current work has important real-world applications, it is important to recognize differences between this work and the reality of a real-life justice system that could limit these findings. While the use of a highly controlled setting, materials, and manipulation was an intentional choice to investigate causal mechanisms, that may reduce how well the results of the current work generalize to the real world (Mintz et al., 2006). There are distinct differences between the single video deposition seen in this experiment and a real trial. In a real trial, jurors are able to witness questioning of the witness from an opposing side. A lack of cross-examination is a common limitation across lab-based studies, which is the predominant format of studies about the emotional victim effect (Wessel et al., 2013). This study's inability to cross-examine the witness did not allow for the additional information gathered from these questions that would otherwise be included in a real trial. If participants received more components of a real trial and had more unanswered questions resolved, it is possible that they would deem the eyewitness more or less believable based on the cross-examination or evidence presented.

Another key distinction between this lab-based artificial setting and a real trial is the lack of any meaningful consequence(s) resulting from the participants' decisions or beliefs. In the context of this study, participants may not put too much thought into the questions asked of them and base decisions more on their "gut" than if they were participating in a real jury with an actual crime in which a defendant's future would be dramatically affected. Therefore, it is possible that in a real jury, people would be less impacted by their emotions. They might not be as swayed by their empathy and may instead rely more on logic, given the weight of the decision.

Alternatively, there may be *more* emotional components in a real trial. In a courtroom with a real eyewitness, there are more cues to a person's emotion than could be displayed in this

study. For example, in a court room, jurors would be able to see body language, eye contact, interactions between people, or other personable factors. By using a video to show participants the eyewitness' testimony (portraying from the chest and above of the actress), participants were unable to see the entirety of the witness' body language. When those additional cues that would be available in a courtroom are applied, perhaps the perception of emotion and therefore empathy are increased. Some research even suggests that nonverbal cues have five times more influence than verbal cues (Pease & Pease, 2006) and comprise two-thirds of communication (Damanhour, 2018). These nonverbal cues from an eyewitness and all others involved in a trial could have great impact on a juror, well beyond what could be captured in a video.

Another limitation of this study was the manipulation of emotion by the actress. Although two former law enforcement officers and a current forensic expert reviewed and approved of the script for realism, and participants were told that the footage was real, the student actress and her display of emotion may not have been perceived in the way it was intended. Specifically, several participants who viewed the neutral video commented (in an open-ended final question asking for feedback) that the actress appeared anxious and "shifty", or otherwise referred to a lack of trust in the eyewitness. This could have decreased the participants' perceptions of trustworthiness or believability. While some participants' comments may bring into question the realistic nature of the actress's portrayal, a statistical analysis of the survey items asking participants about the emotion displayed and felt by the actress showed a reliable and quite sizeable difference in the perceived emotion in each video. On a scale in which "3" was labeled as neutral emotion and "4" was labeled as sad, the average rating for the sad video was 4.06 and the average for the neutral video was 3.18.

Many of the limitations of the current work are based on the potential lack of generalization to the real world. The major limitations of the current work are predominantly related to the external validity of this work. However, since the current study was an attempt to investigate underlying mechanisms regarding a fairly new phenomenon, it was a conscious decision to prioritize the internal validity in this work. Shifting the focus to external validity would be an important next step for future research.

Future Directions

As the current research is the first to extend the emotional victim effect to an adult, non-victim eyewitnesses, future studies will be necessary to establish the reliability of this effect and investigate the larger implications. Non-experimental studies could survey actual jurors after a trial to get their perspective on the emotions displayed by an eyewitness, whether they felt empathetic toward the eyewitness, if they believe that empathy or the person's emotion had any effect on their perceptions, and their beliefs regarding the reliability of memory. If surveying real jurors is unattainable, future studies could use videos taken from real trials to control how realistic it appeared to participants and replicate a real trial more precisely. Additionally, real trials would often include more 'hard' evidence, in addition to eyewitness testimony. To what extent would a juror rely on eyewitness testimony even when it is not supported by the hard evidence? Some previous research suggests that the subjective assessment of an eyewitness's testimony has more of an impact on verdicts and confidence than the factual content of the testimony (Kaufmann et al., 2003).

Future work could investigate emotions other than sadness or determine how these emotions impact other relevant constructs. Believability may be just one factor in the larger construct of credibility. Other facets of credibility including trustworthiness and intelligence

(Bederian et al., 2017; Brodsky et al., 2010) could be investigated in reference to the effect of displayed emotion. Manipulation of other emotions will also be important for future work. For example, studies examining how child victims display emotional behavior in forensic interviews show that child victims express a range of emotions, from sadness and neutral behavior to positive behavior, anger, anxiety, confusion, shame, and guilt (Goodman et al., 1992).

Additionally, Hodgson (2014) found that when a defendant displayed anger, they were deemed as more guilty by jurors. Further research could identify whether this effect of a defendant's anger is also seen in eyewitnesses. It would also be worthwhile to investigate how the nature of the crime interacts with the way an eyewitness's emotion is perceived. For example, jurors may expect someone involved in a violent crime to behave differently in terms of emotion compared to someone involved in a non-violent crime.

There are many other factors, other than emotion and empathy, that may affect how much jurors believe an eyewitness. These factors, which could be investigated in future research, include the impact of perceived ulterior motives of the eyewitness, the eyewitness's level of authority, similarity to the juror, or the eyewitness's intellectual abilities. For example, jurors who believe that the eyewitness has an ulterior motive or hidden agenda may believe that the eyewitness is conspiring to gain something or avoid loss. Jurors might also be more likely to believe someone who they view as a person of authority or overall trustworthiness. Additionally, an eyewitness who appears and behaves similar to a juror could increase their trust in the eyewitness implicitly. Lastly, an eyewitness who appears less educated or provides a testimony using imprudent vocabulary could be deemed less believable to a juror due to their perception of the eyewitness' lack of awareness or understanding.

Conclusions

The primary conclusion of the current research is that people are more likely to believe an eyewitness who appears sad rather than an eyewitness who does not show much emotion, and that this belief is driven by the level of empathy they feel toward the eyewitness. In addition to empathy, participants did still incorporate whether they believed the memory itself was accurate in their judgements of the eyewitness's believability. While the strong impact of an emotional reaction may not bode well for the justice system, logic is not lost. Jurors' perception of eyewitnesses is a crucial part of any trial, since many cases rely heavily on eyewitness testimony when deciding a verdict (Innocence Project, 2021). Due to the immense impact of eyewitness testimony, jurors should be critical of the believability of a witness in order to preserve a fair trial. It is important that jurors be aware of potential biases they may have, the impact that their empathy can have on their perceptions, and how much individual attention they are giving to a logical analysis of the facts.

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Appendix A
Witness Script

A = Attorney

W = Witness

Notes in italics indicate a distinct alteration of the eyewitness's behavior to denote sadness.

A: Please state your name and address for the record.

W: My name is Claire Somersmith and I live at 1201 Honeygrove Lane.

A: Where were you on the night of Thursday, October 14, 2021?

W: I was at my house watching tv.

A: Who else was in the house?

W: I live with my parents. It's my parents' house.

A: How long have you lived there?

W: Well, I'm 23, so 23 years.

A: Are there any houses located near or around your house?

W: Yes, there's a house on either side and several across the street.

A: Did anything unusual happen that night at around 11PM?

W: I heard yelling coming from outside.

A: What did you do when you heard the yelling?

W: Well I heard the yelling and since it was late, I went to the window in the living room to look outside.

A: What did you see when you looked?

W: I saw some people outside my neighbor's house.

A: Which neighbor?

W: The one across the street, a little to the left.

A: What were the people doing?

W: There was a guy at the front door yelling and one person in a car in the driveway.

A: Did you recognize either of those people?

W: The guy at the door was Nick, he's the son of the couple who live there. I didn't recognize the person in the car.

A: How do you know Nick?

W: He used to live there, so I know him and his parents as my neighbors. They've lived there for as long as my family has, so I've known them basically my whole life.

A: How well do you know Nick and his parents?

W: I know them pretty well. Nick's only a little older than me, so we saw each other a lot at school, but we weren't in the same classes. I know them from church too, especially his mom and dad. Me and my mom and dad have gone just about every weekend of my life and his parents are always there.

A: How clearly could you see Nick on the night of October 14th?

W: Pretty clearly. It was dark out, but the street lights were on. My house and their house also had the outside porch lights on.

A: Could you see who Nick was yelling at?

W: Well he was at the front door, but the door was closed, so I guess his parents in the house.

A: Could you hear what Nick was yelling about?

W: Not really.

A: What happened next?

W: He yelled and banged on the door for a minute, but no one responded. Then he started to kick at the door. After a few kicks, the doorframe shattered, like it came apart and he went in.

A: How did you react?

W: I was kind of shocked and freaked out. I know he's struggled with drug abuse in the past and this was not the first time he's come home angry, but he hadn't the kicked in the door before.

A: What happened next?

W: Well it was kind of quiet then, so I thought it had settled down, but then there was a loud crash from inside their house which made me kind of jump. And then Nick and his parents came out of the house.

A: How were they acting?

W: They were arguing. His mom seemed really upset. His dad was you know talking to Nick and trying to calm him down. His dad's a really nice guy who volunteers a lot at church.

(pause/hesitation/sigh/furrowed eyebrows). I know he's always trying to help Nick, like gets jobs, drive him around and stuff.

A: Did anything else happen in the driveway?

W: After they're arguing for a bit, Nick pounds, like slams his fist on the hood of their car and kicks the headlight. Nick's dad kind of put his hands on his shoulders to try to kind of direct him away from the car but Nick swung out of that and then punched him in the jaw.

A: How did his mom and dad react?

W: His mom came over and was pushing him away from the dad because he was swinging at him again. The dad kind of stumbled back after the punch and tried to block Nick. I saw blood streaming down his face. The son sort of shoved the mom away against the car and then continued to punch the dad in the face a few more times. *(furrowed eyebrows/sniffling/mouth turned down)*

A: Did Nick's dad try to defend himself?

W: No he didn't really. A couple times he would try to shove him away but he's a very calm quiet nonviolent person- the dad that is. That started to make me nervous- that Nick kept punching and his dad wasn't fighting back. *(furrowed eyebrows/sniffling/mouth turned down)*. I was scared he was going to get like really hurt. *(slight teary-ness)*. Nick's like 25 so his dad's you know a bit up there.

A: What was his mom doing at this point?

W: She tried to get in the middle again and was yelling and crying. But then she went back into the house. She came out a second later on her phone. At that point Nick's dad was sort of leaning against his car holding up his shirt like to his face to wipe some of the blood. Nick went to his car and I thought he was gonna leave but he came back to his dad and starts to punch him repeatedly in the stomach. (*slight tears*)

A: Can you tell the jury exactly where Nick and his father were in relation to the car?

W: Well his dad was on the ground, leaning against the back tire of his car. Nick was like over top of him and I *thought (emphasis)* he was punching him in the stomach. His mom was sort of behind them, like closer to the front door on the phone.

A: You said you 'thought' Nick was punching his dad. Could you clarify what you mean by this?

W: Well, when he stopped (air quotes) punching him, Nick turned around to run back to his car. So then I saw a knife in his hand. It was like a big kitchen knife I think. I looked back at his dad and there was a lot more blood (*slight tears/furrowed eyebrows/sniffling/mouth turned down*).

A: And was that the end of it?

W: (*sniffles, recovers herself*) well, Nick drove off and his mom was leaning over his dad. I was really upset and kind of panicked. (*Deep breath*) After a minute, cuz I wanted to make sure Nick wasn't coming back, I ran over there.

A: Why did you run over?

W: Well I really like Mr. Davenport, Nick's dad. I've obviously known all of them a long time, but his dad's like so sweet and I was scared. (*looking down, eyes widen, sniffle*) It was more of a natural reaction. I didn't think about it.

A: What happened when you got there?

W: His mom was hysterical, like really upset, crying on the phone. I hear her telling someone, the cops, that her husband was stabbed and he's hurt. (*slight tears*). She's trying to hold like her hands against his stomach (*tears, sniffle, turned down mouth*). He's kind of slumped over on the ground, moaning. He was trying to talk but his mouth was really bloody. I could hear the police sirens at that point. I just have never seen someone like that. I didn't know if he would make it (*slight tears/furrowed eyebrows/sniffing/mouth turned down*).

A: Was that everything you saw?

W: At some point an ambulance came and they took him to the hospital.

A: Have you seen Nick or his parents since that night?

W: I haven't seen Nick at all, but I asked his mom about how his dad was the next day.

A: And what did she say?

W: He was still in the hospital, but thankfully (*sigh*) he was gonna be okay (*trembly voice*).

A: Thank you very much. No further questions.

Video cuts.