

Empathy Unveiled: Exploring the Mediating Role of Empathy in the Sad Eyewitness Effect

Cassie A. Ridley, Jaclyn K. Maass, & J. Adam Randell
Department of Psychology, University of Central Oklahoma

Abstract

The emotional victim effect occurs when jurors believe distressed victims more than neutral victims. The current work sought to establish this in non-victim eyewitnesses and test possible mediating roles of empathy and misconceptions about emotional memories. Participants watched either a sad or neutral eyewitness deposition video and completed: a believability rating, Shen's State Empathy Scale, and a perceived memory accuracy rating. Results supported the emotional eyewitness effect and the mediating role of empathy. Participants' perceptions of the eyewitness's sadness were a significant predictor of believability. Participants' believability increased as perceptions of sadness increased, and this effect was driven by the participants' state empathy. The misconception that emotional memories are more accurate than neutral ones did not mediate the effect, but belief in the accuracy of the memory played an independent role in predicting believability. This work benefits those inside and outside of the judicial system and supports future research in more applied settings.

Key Words: juror, emotional victim effect, emotional display, non-victim eyewitness, empathy

Empathy Unveiled: Exploring the Mediating Role of Empathy in the Sad Eyewitness Effect

Introduction

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's memory is (Rimmele et al., 2011). This presents a potential problem in the criminal justice system. Although we expect a jury of our peers, which inherently includes some flawed judgement, decisions should still be made on facts and critical assessments rather than misperceptions.

The role of emotions in the courtroom 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 et al. (2004) found that mock jurors rated the defendants as more guilty when they perceived a defendant to have hysterical or excessive emotions, and less guilty when the defendant's voice and expression reflected sadness and distress. When it comes to the emotion displayed by the victim, jurors tend to rate victims as more credible when they perceive them as sad, neutral, or angry but less credible when they perceive them 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.

Portions of these findings were presented as a poster at the 2022 Psychonomic Society Annual Conference, Boston, Massachusetts, United States and at the 2022 Oklahoma Research Day Conference, Edmond, Oklahoma, United States. We have no conflicts of interest to disclose.

Correspondence concerning this article should be addressed to Cassie Ridley, Department of Psychology, 100 N University Dr, Edmond, OK 73034, cassieridley0@gmail.com.

Emotional Victim Effect

Previous studies have found that the emotions displayed by victims influence the likelihood that they are believed, which is known as the emotional victim effect (Ask & Landstrom, 2010). Several studies have found that victims who appear sad are considered more believable than victims displaying more neutral emotions (Bederian et al., 2017; Kaufmann et al., 2003). This effect has been demonstrated with adult victims (Bollingmo et al., 2009; Lens et al., 2014) and child victims (Bederian et al., 2017; Cooper et al., 2014; Wessel et al., 2013). Not only has this been seen with mock jurors, but some research has found evidence of the emotional victim effect in actual jurors (Magnussen & Wessel, 2010) and police officers in training (Ask & Landstrom, 2010). The effect has also been shown through several modalities including audio, written transcripts, video (Melinder et al., 2016), and drawn images (Cooper et al., 2014), showing the powerful nature of the emotional victim effect.

The type of emotion displayed also plays a significant role in assessments of believability and guilt. Melinder et al. (2016) manipulated the emotion displayed by a victim (as well as 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 took a short break, sobbed, was "agitated," or smiled, depending on the condition. The researchers found that the children who displayed sad emotional features had higher credibility ratings than the angry or 'positive' children. However, it should be noted that Melinder et al. (2016) did not find direct evidence for the traditional emotional victim effect, since the three emotional displays were not significantly different than the child displaying *neutral* emotions.

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.

It is evident that mock jurors rely heavily on victim emotions when making decisions, but what is it about a sad victim that makes them more believable? Little research so far has investigated the mechanisms underlying this effect. 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 than neutral material. Öhman et al. (2001) suggest that this induces a "pop-out" effect that leads to "privileged" processing of the emotional stimuli, helping memories retain accuracy over time. Several studies have found better recall for emotionally valenced words (Khairudin et al., 2011) and images (Kensinger et al., 2007; Khairudin et al., 2011) compared to neutral content. 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 over neutral. Therefore, negative content in the picture increased recognition and memory accuracy in both ages.

While these are just a few of the research studies finding better recall for emotional memories, there are also many studies that failed to find such an effect. For example, 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. Perhaps even stronger evidence comes from research with more complex, real life autobiographical memories rather than lab-based studies of individual stimuli. Research on flashbulb memories, for example, has consistently found that while people are more confident in the accuracy of these emotional memories, they are just as susceptible to decay and misinformation as everyday memories (e.g., Sharot et al., 2004; Talarico & Rubin, 2003). The emotion a person experiences when recalling a memory does not always mean that the memory is more accurate, even if it may seem more believable to the observer.

More recent research has found that accuracy of recall is 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, and it's possible that an eyewitness recalling a crime could be less accurate when more negative emotion is associated with the event.

While the scientific research on the interaction between emotion and memory is mixed, the public may have a more definitive (and partially false) perception. 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). 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. If the juror holds this misconception that emotional memories are more accurate, they would logically conclude that the emotional eyewitness has more accurate recall than a neutral eyewitness.

Empathy

Empathy is a complex construct with various definitions across the 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 (Blötner 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 (state-level empathy), or whether the individual typically personifies empathy as a characteristic of their personality (trait-level empathy); (Kawakami & Katahira, 2015). Research on state empathy suggests that when experiencing high state empathy toward another person, this can build a (temporary) relationship between two people, during which time 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. 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 evokes 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.

Current Study

Most research on the effect of a 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. A victim retelling an event could provoke sympathy from a juror based on their troubling event, regardless of what emotion the juror perceives the victim to have in the moment, but non-victim eyewitness's testimony is a less potentially biased and a less inherently emotional retelling of the event. However, there is no known research on how a juror is affected by the perceived emotion of an adult, non-victim eyewitness. Testing a non-victim eyewitness's believability will pinpoint that the juror is empathetic for the person due to the perceived emotion displayed, rather than a predisposition to empathize with a victim. The present study used a video testimony to investigate the role of a non-victim eyewitness's display of sadness on a mock juror's perception of the eyewitness's 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, we hypothesized that an eyewitness who participants perceived as sadder would be rated as more believable than an eyewitness who participants perceived as being more emotionally neutral (Hypothesis 1). Further, two possible mediating factors for this relationship were investigated in Hypothesis 2: state empathy (2a) and perceived accuracy of the memory (2b).

Material and Method

Participants

Participants included students, faculty, and staff at a public metropolitan university in the southwestern United States, recruited through a university-wide email blast. There was no compensation offered. A total of 113 people completed the survey. Eight participants were removed from the data set based on the following criteria: increased time spent on testimony video indicating participants paused the video or walked away from the computer ($n = 4$), failing the attention check item ($n = 3$), and recognizing the actress in the video ($n = 1$). We removed an additional 23 participants who rated the eyewitness as actively lying (9 from neutral condition, 14 from sad condition).¹ This resulted in a total of $N = 82$ ($n_{\text{sad}} = 36$, $n_{\text{neutral}} = 46$) participants included in data analysis.

Due to a programming error, demographic information was only obtained for the last 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). Thirty-nine identified as female, 12 identified as male, and two identified as being non-binary/third gender. The ethnicity distribution was comprised of 39 participants who identified as Caucasian, three Hispanic, two Black/African American, one American Indian/Native American or Alaska Native and eight participants who identified as a mixed/other ethnicity.

Materials

¹ The results of the analyses did not change when these 23 participants were included.

IV: Eyewitness Emotion

Two versions of an eyewitness's supposed deposition were recorded using a student in the performing arts major playing the role of the eyewitness: one in which she displayed observable sadness and one in which she 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. The crime described in the deposition involved a violent physical assault between two members of a family who lived across the street from the eyewitness. The script for the videos is provided in the supplemental materials. Both versions of the video were approximately six and a half minutes long. A pilot study confirmed that the emotions in the video were interpreted as intended.

In addition to this manipulation of displayed emotions, we also assessed the participants' perceptions of the eyewitness's emotions using 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)." In addition to a manipulation check, these items provided insight into the participants' subjective interpretation of the emotion. Asking participants about both how the person appeared and how they actually felt was suggested by Bederian-Gardner et al. (2017). We then used a composite score to get an average rating for perceived emotion, with higher scores representing more perceived sadness.

DV: Eyewitness Believability

The believability of the eyewitness was measured by the following two items in a survey distributed through Qualtrics: "Please rate how believable you felt the eyewitness's testimony was" and "Please rate how believable you felt the eyewitness was." Both items were 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.

Mediator 1: 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.

Mediator 2: Perceived Memory Accuracy

To measure how accurate the participants perceived the eyewitness's memory to be, participants responded to the question "How accurate do you think the person's recollection of events was?" 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. This item was meant to assess participants' belief about how accurate memory recall was for the eyewitness as people sometimes (mistakenly) judge sad or emotional memories to be more accurate than neutral ones. However, participants may have thought the memory was inaccurate not due to a misconception about the nature of memory, but due to the eyewitness choosing to provide inaccurate details (i.e., lying). As this was not the intention of the current study, participants answered one question to distinguish between perception of memory accuracy from belief that the eyewitness was actively lying. Participants responded to the question "Please rate how

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).

Table 1

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

Dimensions	Items
Affective Empathy	<ol style="list-style-type: none">1. The eyewitness' emotions are genuine.2. I experienced the same emotion as the eyewitness when watching the testimony.3. I was in a similar emotional state as the eyewitness when watching this testimony.4. I can feel the eyewitness' emotions.
Cognitive Empathy	<ol style="list-style-type: none">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.8. The eyewitness' reaction to the situation is understandable.
Associative Empathy	<ol style="list-style-type: none">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.

honest you believe the eyewitness was on a scale from 1 (completely dishonest) to 6 (completely honest).” Those who responded between 1-3, which would indicate belief in some degree of dishonesty, were removed from data analysis as reported in the Participants section.

Screening Items

The questionnaire also included one attention check item to confirm that the participants identified the person in the video as an eyewitness, not a victim, and one item to screen out participants who recognized the actress.

Procedure

This study was approved by the University's Institutional Review Board. Participants were recruited through a university-wide email blast to all current faculty, students, and staff. They completed the study online through Qualtrics, in a single session which lasted an average of 49 minutes. Upon accepting the informed consent, participants were randomly assigned to view either the emotional eyewitness or neutral eyewitness deposition video. Before the video was shown, participants were told that they were about to watch a recorded deposition from a recent criminal case. After watching one of the two videos, participants filled out a survey including all measures in the following order: eyewitness believability, eyewitness memory accuracy, eyewitness honesty, state empathy scale, two screening items, and demographic questions (age, gender, and race/ethnicity). In the debriefing, participants were told that the deposition was not from a real case, that an actress was using a script written for the purposes of the experiment, and that they should not discuss the study with anyone else.

It should be noted that the mediating factors (accuracy and empathy) we investigated were measured after the dependent variable (believability). This may be considered a violation of testing mediation/causality, but we believe that it does not affect the validity of our results. Had we assessed empathy prior to believability, we could have primed the participants or increased their feelings of empathy overall. The empathy questions were also phrased in a way that the participant was recalling how they felt toward the eyewitness while watching the

deposition video. Therefore, while the measure of empathy occurred after the dependent variable, it was an assessment of how empathetic they were feeling prior to making the believability judgement. Further, as our intention was to measure participants' more automatic or instinctual assessment of believability, we felt it was important to prioritize an immediate measure of that variable.

Calculation and Results

Preliminary Analyses

First, we assessed whether our eyewitness video conditions influenced our participants' perceptions of the witness' emotions. An independent samples *t*-test revealed that the manipulation was successful, $t(80) = -9.02, p < .001$ ($\eta^2 = .50$). Participants gave the eyewitness a higher (i.e., sadder) average emotion rating ($M = 4.06, SD = .47$) when viewing the sad video compared to when viewing the neutral video ($M = 3.18, SD = .40$). While the difference between average emotion ratings was significant and in the expected direction, there were 13 participants in the neutral video condition who rated the victim as being sad (average emotion rating of 3.5 or 4) and one participant in the sad video condition who rated the victim as neutral (average emotion rating of 3).

Main Analyses

Perceived Emotion Predicts Believability

Hypothesis 1 predicted that an eyewitness the participants perceive as sadder would be rated as more believable than an eyewitness the participants perceive as displaying more neutral emotions. To test this, we regressed the believability ratings participants gave of the eyewitness on the dummy-coded eyewitness video condition variable (0 = neutral, 1 = sad). However, the analysis revealed that the eyewitness video condition did not significantly predict participants' ratings of the eyewitness's believability, $\beta = 0.09, b = 0.14, SE = 0.18, t(80) = .78, p = .44, R^2 = 0.01$.

Given the less than perfect match between how participants perceived the eyewitness's emotion compared to our intended emotion being displayed (discussed in section 3.1 above), we next tested the above hypothesis using average perceived emotion rating, rather than video condition, as the predictor. This continuous measure of emotion offers a more fine-grained measure of perceived emotion. While removing the ability to infer any causal influence of emotionality, using the continuous measure captures more variance in the emotionality that participants perceived in the eyewitness. It also offers a more valid measure of the participants' *perception* of what emotion the eyewitness was feeling, rather than what emotion the eyewitness intended to display. Similar decisions have been used fruitfully (Bederian-Gardner et al., 2017).

Regressing participants' ratings of the eyewitness's believability on the eyewitness's perceived emotion revealed the expected relationship, $\beta = .27, b = .36, SE = .14, t(80) = 2.53, p = .01, R^2 = .07$. Participants who rated the eyewitness as sadder also rated the eyewitness to be more believable. Given these results, we ran all future analyses using the emotion rating as the independent variable.

Empathy and Accuracy as Mediators

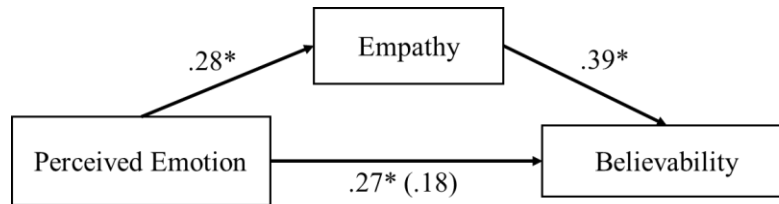
We examined whether the perceived emotion-believability relationship was mediated by state empathy (Hypothesis 2a) and perceived accuracy (Hypothesis 2b). We examined these relationships separately using the step-by-step procedure laid out by Baron and Kenny (1986) method and a bootstrapping method (i.e., PROCESS, Hayes, 2017).

We first tested the mediating role of state empathy. Our analyses revealed that perceived emotion predicted state empathy, $\beta = .28, b = .34, SE = .13, t(80) = 2.63, p = .01, R^2 = .08$. Participants who rated the eyewitness as sadder experienced higher state empathy toward the eyewitness. Further, state empathy predicted believability, $\beta = .39, b = .43, SE = .11, t(80) = 3.84, p < .001, R^2 = .16$. Participants with higher empathy rated the eyewitness as more believable. Finally, when believability was regressed on both perceived emotion and state empathy, perceived emotion no longer predicted believability, $\beta = .18, b = .23, SE = .14, t(79) = 1.65, p = .10, pr^2 = .03$. State empathy, however, remained a significant predictor, $\beta = .35, b = .38, SE = .12, t(79) = 3.26, p = .002, pr^2 = .12$. This

mediation pattern was confirmed with both a Sobel test, $z = 2.04$, $SE = .06$, $p = .04$; and a bootstrapping method, $b = .159$, $SE = .08$, 95% CI: .035 - .294, $t(79) = 2.12$, $p = .04$. Therefore, these results suggest that empathy mediates the relationship between perceived emotion and believability (see Figure 1).

Figure 1

Significant Mediation of the Emotional Eyewitness Effect through State Empathy



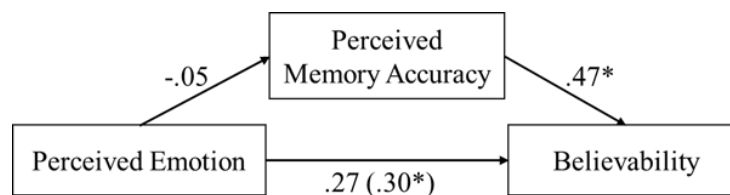
Note. This figure reports the standardized Beta coefficients for each regression in the empathy mediation analysis. The indirect effect of perceived emotion in predicting believability is reported in parentheses.

Next, we examined the mediating role of perceived memory accuracy. The analyses, however, revealed that perceived emotion did not predict perceived memory accuracy, $\beta = -.05$, $b = -.08$, $SE = .18$, $t(80) = -0.46$, $p = .65$ $R^2 = .003$. Although this suggests that memory accuracy did not mediate the perceived emotion-believability relationship, we completed the analyses suggested by Baron and Kenny's method and reported them here.

Although not a mediator of the perceived emotion-believability relationship, we found that perceived memory accuracy independently predicted how believable participants found the eyewitnesses, $\beta = .47$, $b = .38$, $SE = .08$, $t(80) = 4.71$, $p < .001$, $R^2 = .22$. Participants were more likely to believe the eyewitnesses when they felt the eyewitnesses' memory was more accurate. Further, when simultaneously regressing believability on perceived emotion and perceived memory accuracy, both remained significant predictors of believability, $\beta = .30$, $b = .39$, $SE = .12$, $t(79) = 3.16$, $p = .002$, $pr^2 = .11$, $\beta = .48$, $b = .39$, $SE = .08$, $t(79) = 5.12$, $p < .001$, $pr^2 = .25$ respectively. These analyses indicate that the emotion of the eyewitness and their perceived memory accuracy are independent predictors of believability (see Figure 2).

Figure 2

Non-Significant Mediation of the Emotional Eyewitness Effect through Perceived Memory Accuracy



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

General Discussion

The purpose of this research was to investigate whether the emotion displayed by an eyewitness influenced how believable a juror found the eyewitness to be. The emotional victim effect states that emotions displayed by victims influence the likelihood that they are believed (Ask & Landstrom, 2010). 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 eyewitness more as perceived sadness increased, 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 their perception of the eyewitness's emotion, 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 (Bechara et al., 2000; 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. One takeaway from our study is the important possible disparity between what emotion we are feeling and intend to portray versus how those behaviors and mannerisms are interpreted by those around them. This difference is demonstrated by our study's findings, which did not find a significant result based on the manipulated emotion, but did find a significant emotional victim effect when using the measurement of participants' perceptions of the eyewitness's emotions. The distinction between the appearance or display of emotion and what emotion is actually being felt has been reiterated by other researchers (Bederian-Gardner et al., 2017).

Although it is not guaranteed that the emotions displayed would indicate the intended emotion to jurors, lawyers may inform eyewitnesses that they do not need to emotionally "hold back" or work to remain composed and instead express natural feelings when testifying. Even nuanced body language and nonverbal cues as subtle as hand gestures should be considered (Gurney et al., 2013). Research suggests that people often use subtle cues from body language, including eye-contact and head poses, 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, et al., 2018). As evidenced by the current study, among many others, jurors are using more than just the facts of the case in forming their perceptions and making judgments.

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

One limitation in the current work is the diminished ability to make a truly causal claim regarding the relationship between emotion and believability. Since our results are based on a measured variable of perceived emotion rather than the manipulation of emotion (video condition), we cannot know if the participants felt the empathy before or after perceiving the eyewitness's emotion. This lack of definitive directionality severely limits an ability to make a causal claim regarding the emotional eyewitness effect. However, as this study measured state-level (i.e., situational) empathy, those empathetic feelings would have to be in response to some stimulus. Therefore,

it may be possible to infer that the perception of the eyewitness's sad feelings did occur (as the stimulus in question) before feeling situational empathy toward the eyewitness.

We used the average rating of perceived emotion in our analyses once the initial test of the sad eyewitness effect, using video condition as the predictor, was not significant. There are several possible reasons for this, including the conceptual distinction between intended display of emotion versus perception of emotion discussed previously. There are two other methodological aspects that may explain the lack of a significant effect: statistical power and video quality. Insufficient statistical power based on sample size may be a limitation of the current study. An a priori power analysis using G*Power (Faul et al., 2009) indicates that 55 participants would be needed for a linear regression to achieve .80 power (at alpha = .05) for a medium effect size. However, if we had conservatively predicted a small effect size, power analysis would suggest a minimum of 395 participants. Given the non-significant result when using the video condition as a predictor, if the manipulated emotion of an eyewitness does have an effect (unobserved here), it may be a smaller effect, requiring more participants to detect it.

Another factor that may have affected the ability to see a significant effect from the video manipulation is the quality of the video itself. 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. While overall the actress's portrayal of neutral and sad emotions was received as intended by the participants (based on a statistically significant and sizable difference in the emotion ratings between videos), the neutral video in particular could have more indisputably depicted neutrality. Approximately 28% of the participants in the neutral video condition rated the actress as appearing more sad than neutral, indicating either that the difference between neutral and sad was insufficient or the acting capabilities did not allow the emotions to come across as intended. Further, 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 the current work has many real-world applications, it is important to recognize differences between this work and the reality of a real-life justice system that could limit the generalizability of these findings. While the use of a highly controlled setting and materials was an intentional choice to attempt 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 observe 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, evidence presented, and other witnesses' testimony.

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 courtroom, jurors would be able to see body language, eye contact, or interactions between people. 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.

Many of the limitations of the current work are based on the potential lack of generalization to the real world. However, since the current study was an attempt to investigate underlying mechanisms regarding a fairly new phenomenon, it was a conscious decision to prioritize experimental control. 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 testimony using imprudent vocabulary could be deemed less believable to a juror due to their perception of the eyewitness' lack of awareness or understanding.

Conclusion

The primary conclusion of the current research is that the sadder someone appears, the more likely people are to believe them, and this 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.

Statements and Declarations - The author reports no conflict of interest. Ethical approval was obtained by the respective institutional review board prior to data collection.

Funding – No funding has been disclosed.

References

- Ask, K., & Landstrom, S. (2010). Why emotions matter: Expectancy violation and affective response mediate the emotional victim effect. *Law and Human Behavior* (34). DOI 10.1007/s10979-009-9208-6
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173.
- Bechara, A., Damasio, H., & Damasio, A. R. (2000). Emotion, decision making and the orbitofrontal cortex. *Cerebral Cortex*, 10(3), 295-307. <https://doi.org/10.1093/cercor/10.3.295>
- Bederian-Gardner, D., Goldfarb, D., & Goodman, G.S. (2017). Empathy’s relation to appraisal of the emotional child witness. *Applied Cognitive Psychology*, 31(5), 488-499. DOI: 10.1002/acp.3345
- Bennett, M. W. (2015). Unspringing the witness memory and demeanor trap: what every judge and juror needs to know about cognitive psychology and witness credibility. *American University Law Review*, 64(6). <https://digitalcommons.wcl.american.edu/aulr/vol64/iss6/1>
- Bernstein, D. M., Laney, C., Morris, E. K., & Loftus, E. F. (2005). False memories about food can lead to food avoidance. *Social Cognition* 23: 11-34.
- Blair, R. J. R. (2005). Responding to the emotions of others: Dissociating forms of empathy through the study of typical and psychiatric populations. *Consciousness and Cognition*, 14, 698–718. <https://doi.org/10.1016/j.concog.2005.06.004>
- Bliss-Moreau, E., & Barrett, L. F. (2009). What’s reason got to do with it? Affect as the foundation of learning. *Behavioral and Brain Sciences*, 32(2), 887–891. <http://dx.doi.org/10.1017/S0140525X09000892>
- Blötner, C., Steinmayr, R., & Bergold, S. (2021). Malicious mind readers? A meta-analysis on Machiavellianism and cognitive and affective empathy. *Personality and Individual Differences* (181). <https://doi.org/10.1016/j.paid.2021.111023>
- Bollingmo, G., Wessel, E., Sandvold, Y., Eilertsen, D. E., & Magnussen, S. (2009). The effect of biased and non-biased information on judgments of victims’ credibility. *Psychology, Crime & Law*, 15(1). <https://doi.org/10.1080/10683160802131107>
- Brescoll, V. L. (2016). Leading with their hearts? How gender stereotypes of emotion lead to biased evaluations of female leaders. *The Leadership Quarterly*, 27(3), 415-428. doi: 10.1037/1093-4510.10.2.92
- Brodsky, S. L., Griffin, M. P., Cramer, R. J. (2010). The Witness Credibility Scale: an Outcome measure for expert witness research. *Behavioral Sciences & the Law*. 28(6). doi: 10.1002/bsl.917
- Cooper, A., Quas, J.A., & Cleveland, K. C. (2014). The emotional child witness: Effects on juror decision-making. *Behavioral Sciences & the Law* (32). DOI: 10.1002/bsl.2153
- Cuff, B., Brown, S., Taylor, L., & Howat, D. (2016) Empathy: A Review of the concept. *Emotion Review*, (8). <https://doi.org/10.1177/1754073914558466>
- Damanhour, M. (2018). The advantages and disadvantages of body language in intercultural communication. *Khazar Journal of Humanities and Social Sciences*, 21(1), 68–82. <https://doi.org/10.5782/2223-2621.2018.21.1.68>
- Damasio, A. R. (2005). *Descartes’ error: Emotion, reason, and the human brain*. Penguin eBooks.
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A.G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, 41, 1149-1160.
- Goodman, G. S., Taub, E. P., Jones, D. P. H., England, P., Port, L. K., Rudy, L., & Prado, L. (1992). Testifying in criminal courts: Emotional effects on child sexual assault victims. *Monographs of the Society for Research in Child Development*, 57, 1–141.
- Gurney, D.J., Pine, K.J., & Wiseman, R. (2013). The gestural misinformation effect: Skewing eyewitness testimony through gesture. *University of Illinois Press*. <https://www.jstor.org/stable/10.5406/amerjpsyc.126.3.0301>
- Hayes, A.F. (2017). *Introduction to mediation, moderation, and conditional process analysis* (3rd ed.). The Guilford Press.
- Heath, W. P., Grannemann, B. D., & Peacock, M. A. (2004). How the level of defendant emotion affects jurors’ decisions when presentation mode and evidence strength are varied. *Journal of Applied Social Psychology*, 34, 624–664.
- Hodgson, K. L. (2014). *The effects of defendant nonverbal behavior in the courtroom on jury perception of guilt* (Doctoral dissertation, The Chicago School of Professional Psychology).
- Innocence Project. (2021). Eyewitness identification reform. innocenceproject.org.

- Kaufmann, G., Drevland, G. C. B., Wessel, E., Overskeid, G., & Magnussen, S. (2003). The importance of being earnest: Displayed emotions and victims credibility. *Applied Cognitive Psychology, 17*(1). <https://doi.org/10.1002/acp.842>
- Kawakami, A. & Katahira K. (2015). Influence of trait empathy on the emotion evoked by sad music and on the preference for it. *Frontiers in Psychology, vol. 6*. doi:10.3389/fpsyg.2015.01541
- Kensinger, E. A., Garoff-Eaton, R. J., & Schacter, D. L. (2007). How negative emotion enhances the visual specificity of a memory. *Journal of Cognitive Neuroscience, 19*(11), 1872–1887.
- Khairudin, R., Givi, M.V., Shahrazad, W.S., Nasir, R., & Halim, F. W. (2011). Effects of emotional contents on explicit memory process. *Pertanika Journal of Social Science and Humanities, 19*. <https://www.researchgate.net/publication/282217378>
- Lamm, C., Batson, C. D., Decety, J. (2007). The neural substrate of human empathy: Effects of perspective-taking and cognitive appraisal. *Journal of Cognitive Neuroscience, 19*, 42–58. doi:10.1162/jocn.2007.19.1.42
- Lens, K. M. E., van Doorn, J., Pemberton, A., & Bogaerts, S. (2014). You shouldn't feel that way! Extending the emotional victim effect through the mediating role of expectancy violation. *Psychology, Crime & Law, 20*(4). doi.org/10.1080/1068316X.2013.77796
- MacMillan, M. B., Field, H. R., Neath, I., & Surprenant, A. M. (2022). Valence does not affect recognition. *Canadian Journal of Experimental Psychology/Revue Canadienne De Psychologie Experimentale, 76*(2), 111-121. <https://doi.org/10.1037/cep0000275>
- Magnussen, S., & Wessel, E. (2010). Displayed emotions in court: Effects on credibility judgments. In P. A. Granhag (Ed.), *Forensic psychology in context: Nordic and international approaches* (pp. 247–263). Willan Publishing.
- Mahrholz, G., Belin, P., & McAleer, P. (2018). Judgements of a speaker's personality are correlated across differing content and stimulus type. *PloS one, 13*(10), e0204991.
- Melinder, A., Burrell, L., Eriksen, M.O., Magnussen, S., & Wessel, E. (2016). The emotional child witness effect survives presentation mode. *Behavioral Sciences and the Law (34)*. DOI: 10.1002/bsl.2232
- Mintz, A., Redd, S. B., & Vedlitz, A. (2006). Can we generalize from student experiments to the real world in political science, military affairs, and international relations? *Journal of Conflict Resolution, 50*(5), 757-776.
- Öhman, A., Flykt, A., & Esteves, F. (2001). Emotion drives attention: Detecting the snake in the grass. *Journal of Experimental Psychology, 130*, 466–478. doi: 10.1037/0096-3445.130.3.466
- Pease, A., & Pease, B. (2006). *The definitive book of body language: The hidden meaning behind people's gestures and expressions*. Bantam Books.
- Pezdek, K., Abed, E., & Cormia, A. (2021). Elevated stress impairs the accuracy of eyewitness memory but not the confidence–accuracy relationship. *Journal of Experimental Psychology: Applied, 27*(1), 158-169. <https://doi.org/10.1037/xap0000316>
- Rimmele, U., Davachi, L., Petrov, R., Dougal, S., & Phelps, E. A. (2011). Emotion enhances the subjective feeling of remembering, despite lower accuracy for contextual details. *Emotion, 11*(3). doi:10.1037/a0024246
- Romeo, M., Hernández García, D., Han, T., Cangelosi, A., & Jokinen, K. (2021). Predicting apparent personality from body language: Benchmarking deep learning architectures for adaptive social human–robot interaction. *Advanced Robotics, 35*(19), 1167-1179.
- Seo, M. G., & Barrett, L. F. (2007). Being emotional during decision making—Good or bad? An empirical investigation. *Academy of Management Journal, 50*(4), 436–456. <http://dx.doi.org/10.5465/AMJ.2007.26279217.18449361>
- Sharot, T., Delgado, M. R., & Phelps, E. A. (2004). How emotion enhances the feeling of remembering. *Nature Neuroscience, 7*(12), 1376–1380. <https://doi.org/10.1038/NN1353>
- Shen, L. (2010). On a scale of state empathy during message processing. *Western Journal of Communication, 74*(5). <https://doi.org/10.1080/10570314.2010.512278>
- Shields, S. A. (2007). Passionate men, emotional women: Psychology constructs gender difference in the late 19th century. *History of Psychology, 10*(2), 92.
- Shiv, B., & Fedorikhin, A. (1999). Heart and mind in conflict: The interplay of affect and cognition in consumer decision making. *Journal of Consumer Research, 26*(3), 278-292.
- Simon, H. A. (1987). Making management decisions: The role of intuition and emotion. *Academy of Management Perspectives, 1*(1), 57-64.
- Singer, T. (2006). The neuronal basis and ontogeny of empathy and mind reading: Review of literature and implications for future research. *Neuroscience and Biobehavioral Reviews, 30*, 855–863. doi:10.1016/j.neubiorev.2006.06.011

- Spreng, R. N., McKinnon, M.C., Mar, R.A., & Levine, B. (2009) The Toronto Empathy Questionnaire: Scale development and initial validation of a factor-analytic solution to multiple empathy measures. *Journal of Personality Assessment*, 91(1). doi:10.1080/00223890802484381
- Subramanian, R., Yan, Y., Staiano, J., Lanz, O., & Sebe, N. (2013, December). On the relationship between head pose, social attention and personality prediction for unstructured and dynamic group interactions. In *Proceedings of the 15th ACM on International conference on multimodal interaction*, (pp. 3-10).
- Talarico, J.M., & Rubin, D.C. (2003). Confidence, not consistency characterizes flashbulb memories. *Psychological Science* (14).
- Tyng, C.M., Amin, H.U., Saad, M., & Malik, A.S. (2017). The Influences of Emotion on Learning and Memory. *Frontiers in Psychology*. doi: 10.3389/fpsyg.2017.01454
- Wessel, E., Magnussen, S., & Melinder, A. M. D. (2013). Expressed emotions and perceived credibility of child mock victims disclosing physical abuse. *Applied Cognitive Psychology*, 27, 611–616.
- Winkel, F. W., & Koppelaar, L. (1991). Rape victims' style of self-presentation and secondary victimization by the environment: An experiment. *Journal of Interpersonal Violence*, 6(1), 29-40.
- Wright, D. B., Hanoteau, F., Parkinson, C., & Tatham, A. (2010). Perceptions about memory reliability and honesty for children of 3 to 18 years old. *Legal and Criminological Psychology*, 15(2), 195-207.
- Xie, W., Ye, C., & Zhang, W. (2022). Negative emotion reduces visual working memory recall variability: A Meta-analytical review. *Emotion*, <https://doi.org/10.1037/emo0001139>
- Zaki, J. (2014). Empathy: A Motivated account. *Psychological Bulletin*, 140. <http://dx.doi.org/10.1037/a0037679>