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Keywords

Trauma, Witness interviewing, Law enforcement, Enhanced Cognitive Interview, Recall, Accuracy

Publication Statement

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Comparison of Forensic Interview Techniques

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Abstract

Experts question whether the techniques used to interview crime victims and witnesses during investigations are optimized to gather the most accurate information while minimizing the potential for negative experiences for the interviewee. In response, this study used a randomized-control design to compare a novel trauma-informed interview created for this study against an established interview, the Enhanced Cognitive Interview (ECI). Participants ($N = 45$) were recruited from a university human subjects pool. Participants watched a video depicting a robbery, responded to surveys during a 30-minute delay, and were randomized to answer questions about the video in the trauma-informed ($n = 21$) or ECI condition ($n = 24$). Participants were compared based on the accuracy and inaccuracy of their memory and their experience during the interview. The two techniques did not significantly differ on any outcome, suggesting the trauma-informed approach added little to the ECI, but also did not detract from the ECI, in a laboratory setting. Findings are discussed with respect to implications for the efficacy and uptake of evidence-based interview techniques in applied legal settings.

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1 INTRODUCTION

Traumatic events can constitute a crime, and when that is the case, the criminal justice system often interviews the person who experienced or witnessed the crime. Eyewitness statements can contribute to trial evidence and tend to be more convincing at trial than other evidence^{1;2;3}. Yet, standard forensic interview techniques can introduce inaccuracies into testimonies by inadvertently leading interviewees to incorporate suggested information into their memory of the event⁴. The primary evidence-based approach to forensic interviewing is also the best researched, known as the Enhanced Cognitive Interview (ECI). While the ECI has documented efficacy in producing accurate testimonies in naturalistic and lab settings, forensic professionals have suggested the ECI may not account for the cognitive differences in the encoding and recall of memories for traumatic events and may also fail to minimize the potentially negative experience of being interviewed in a forensic setting⁵. Yet, to date, a trauma-informed approach to forensic interviewing has not been studied in a laboratory or applied setting. Thus, there is need for empirical evaluation of a trauma-informed version of the ECI. The current study aims to assess whether a trauma-informed forensic interview is superior to the

ECI for: (1) the facilitation of accurate memory recall; and (2) the subjective experience of interviewees.

1.1 History of Forensic Interviewing

Before the establishment of evidence-based forensic interviews, law enforcement professionals used many and varied approaches to interviewing. Typically, forensic interviews asked participants to freely recall the event in chronological order, with follow-up questions using who, what, when, where, why, and how prompts⁶. However, these types of questions can provide unintended scaffolding that leads interviewees to recall inaccurate information⁴. Traditional interview techniques also tended to comprise close-ended questions, which can limit the amount of recall compared to open-ended questions⁷.

1.2 Cognitive Interview and Enhanced Cognitive Interview

Given the problems traditional forensic interview techniques can cause, the Cognitive Interview (CI)⁷ was developed to elicit information using principles from memory research. The CI was developed based on findings that memories are encoded in a network across

multiple neural structures⁸, meaning that retrieval techniques that use multiple strategies should be more effective than focusing on recall using only one strategy⁹. Thus, the CI relies on multiple retrieval cues to elicit recall of an event from these overlapping neural areas¹⁰. The retrieval cues include: context reinstatement, encouragement to report everything without guessing, recall with perspective-taking, and recall with varied temporal order. The CI was later revised into the Enhanced Cognitive Interview (ECI), which comprises the four mnemonic techniques from the original CI, with clearer guides for how interviewers should communicate and build rapport with interviewees¹¹.

The ECI's rapport-building section was added because personal communication was shown to build trust with interviewees and increase interviewees' comfort when sharing personal information¹¹. The main components of ECI rapport building involve the interviewer personalizing information at the beginning of the interview (i.e., using the interviewee's name or inquiring about biographical information) and communicating empathy by showing concern for and understanding of the interviewee. The interviewer also asks the interviewee general personal questions, such as their interests.

The first retrieval cue in the ECI, *context reinstatement*, is based on the context maintenance and retrieval (CMR) model of memory¹². The CMR model suggests that experiences are encoded in memory as a mental representation that includes contextual elements like sounds or sights. CMR posits that by activating components of the original representation in the neural network during recall, the overall recall of related information will be enhanced. Context reinstatement is implemented in the interview by instructing participants to "reinstatement in your mind the context surrounding the incident⁷."

The second retrieval cue, *report everything without guessing*, is based on findings that victims and witnesses of crime tend to recall peripheral details, such as the color of a water bottle, rather than characteristics of a perpetrator^{13;14}. Asking the interviewee to recall everything they can is intended to encourage reporting of potentially vital peripheral details that may otherwise have been considered unimportant⁷. The report everything without guessing cue is implemented by instructing participants to "report everything that [they] can about [the event]" and describe "all the details [they] can without leaving anything out." The interviewer then gives the participant as much time as they need to recount all of the details they can remember about the event.

The third retrieval cue, *recall with perspective-taking*, is based on findings that a shift in perspective when recalling an event increases the amount of information a participant recalls, fostering recall of new details not

identified in the first recall attempt¹⁵. The recall with perspective-taking cue is implemented by asking participants to close their eyes and imagine the scene of the event from the perspective of another person who was present (e.g., the witness, victim, offender) and describe the event from that individual's perspective.

The fourth retrieval cue, *recall with varied temporal order*, is based on associative-chain theory¹⁶, which suggests that recalling information prompts the recall of other information encoded around the same time. Reversing the order of recall has also been shown to allow investigators to better distinguish truth-tellers from liars because such reversals require greater consumption of cognitive resources, which would otherwise be devoted to self-presentation of "honesty¹⁷." The recall with varied temporal order cue is implemented by asking interviewees to describe the event in reverse order, starting with the end of the event and progressing backward to the beginning.

In numerous empirical studies, the ECI has demonstrated superiority over traditional interview techniques in eliciting more accurate and less inaccurate information in both naturalistic and lab settings¹⁸. Most frequently, the ECI has been studied in analogue laboratory settings¹⁸, which typically involves exposing participants to an analogue crime victimization experience, either through a pre-recorded video¹⁹ or live experiences facilitated by researcher confederates²⁰, and a delay generally ranging between a few minutes to 24 or 48 hours. Finally, participants engage in an interview using the ECI protocol or a Standard Interview condition (SI). The SI interview typically includes prompts to describe the event in chronological detail, consisting primarily of close-ended questions which can limit the amount of recall⁷. The ECI has also been evaluated in naturalistic settings, such as having police officers trained to use the ECI, with the visual stimuli being the real crimes the victim or witnesses were a part of²¹.

1.3 Trauma-Informed Cognitive Interview

Independent of the ECI literature, experts in applied forensic interviewing have made calls to refine traditional interviewing techniques to account for cognitive differences in memory of traumatic events and minimize potential retraumatizing effects of being interviewed⁶. The trauma psychology and criminology literatures suggest that the experience of engaging with the legal system and participating in a forensic interview can be a secondary traumatic experience for victims²². In response to these findings and the on-the-ground experience of legal professionals, interview protocols that incorporate trauma-informed principles, such as the Forensic Experiential Trauma Interview⁶, have begun to emerge. Compared with the ECI, which has decades of efficacy research, there have been no formal evaluations

of interview techniques that were specifically designed to be trauma-informed. Thus, it is unclear whether a trauma-informed forensic interview could reduce interviewee stress during the interview or even be a positive source of support during a challenging experience for interviewees. Advocates of such an approach have suggested trauma-informed interviews should build on a free-recall framework by adding six components.

First, it has been argued that trauma-informed forensic interviews should acknowledge the potential emotional and cognitive consequences of traumatic experiences. For example, an interviewer might state, "Experiencing [or witnessing] a crime or remembering it can be difficult for some people. I'm sorry you had to experience [or witness] that. I also know it can be difficult to talk to a stranger. I really appreciate you being willing to talk about it." Acknowledging the effects of trauma is intended to assist in establishing rapport and help the interviewer demonstrate empathy to promote the interviewee's feelings of safety and trust. Second, proponents suggest trauma-informed interviews should use the language "what are you able to remember?" to destigmatize the common experience of traumagenic amnesia and reduce pressure to confabulate details. Third, advocates suggest asking about interviewees' thought processes during the event. This technique is intended to reduce the likelihood of interviewers asking "why" questions (e.g., "Why didn't you fight back?") that can inadvertently convey blame to victims or witnesses of crime.

A fourth trauma-informed interview strategy is asking about memories of sensory detail from the event (e.g., what the victim or witness remembers hearing or smelling). Questions regarding the victim's or witness's tactile memories are drawn from the idea that tactile memories are what the more primitive part of the brain remembers, which more efficiently stores trauma memories than other parts of the brain. We speculate that this is referring to the up regulation of the amygdala response during a trauma which results in the remembrance of more specific sensory details²³. Anecdotally, Strand⁶ described that eliciting memories from this portion of the brain has yielded useful information for the investigation and increased recall of memories brought up from recalling the tactile experience. Fifth, trauma-informed interview advocates suggest asking interviewees about their emotional and physical reactions during the event. These questions are useful because it can provide the interviewer with a deeper understanding about the context or severity of the event. Understanding the context and severity of the traumatic event will give the investigator evidence about the impact of the crime. Finally, advocates suggest asking during a trauma-informed interview what was the most difficult or unforgettable part of the event, which can cue key details about the event that the interviewee may have

omitted if it did not seem relevant to the investigation⁶.

Proponents suggest that trauma-informed forensic interview techniques can produce increased quantity and accuracy of recalled information and create a more supportive interviewing experience for interviewees. However, there are no publicly available trauma-informed forensic interview protocols and no such protocol has been empirically tested in a lab or applied setting⁶. Thus, there is need to evaluate the effectiveness of a trauma-informed version of the ECI.

1.4 Current Study

The current study employed a randomized control design to investigate two types of forensic interview techniques: the ECI and a novel Trauma-Informed Cognitive Interview (TICI) created for this study. The techniques were compared based on the accuracy and quantity of interviewees' free recall of narrative details from an analogue crime film, as well as interviewees' satisfaction with the interview experience. We hypothesized that, relative to participants randomized to the ECI condition, participants in the TICI condition would report (1) a larger quantity of accurately recalled information; (2) a lower quantity of inaccurately-recalled information; and (3) greater satisfaction with the interview experience. Given the exploratory nature of this project, and to check the efficacy of the randomization to an experimental group, measures of participant individual difference and characteristics of the interview were assessed. Assuming the efficacy of randomization, it was hypothesized that there would be no significant differences between the experimental groups.

2 METHODS

A University Institutional Review Board reviewed the protocol and approved the study.

2.1 Participants and Setting

Participants were 45 adult (18 years or older) undergraduate students from a private liberal arts university in the Midwest United States. Participants were recruited through the university's human subject pool website. Participants were compensated with course credit. The sample was predominantly female (33 women, 73.3%; 12 men, 26.7%). Most participants were first- or third-year students (53% first-year ($n = 24$); 13% second-year ($n = 6$); 29% third-year ($n = 13$); 4% fourth-year ($n = 2$)). Participants' racial/ethnic backgrounds were representative of the student population from which this sample was drawn, with most participants identifying as White (38 White or Caucasian, 1 Black or African American, 5 Asian or Pacific Islander, and 1 other race/ethnicity). On average, participants

self-identified as holding a mid-level social status ($M = 5.89$, $SD = 1.61$) within their communities. A majority of participants reported being full-time students ($n = 40$; 88.9%), but 19 had additional employment (44.2%). In terms of sexual orientation, most of the sample identified as heterosexual/straight ($n = 40$; 88.9%), with the remaining 11.1% ($n = 5$) identifying as lesbian, gay, bisexual, asexual, or another sexual orientation. Additionally, 43 participants were from the United States and 2 participants were from a different country of origin. Finally, in terms of exposure to crime, 15 participants indicated that they had been a victim of a crime, and eight participants indicated they had committed a crime. A total of 11 participants indicated that they had reported a crime to legal authorities, and 13 had been interviewed by police before participating in this study. This study was conducted in two research office rooms located on a university campus. The study began in the first room, which was furnished with a table, laptop computer, and chairs for the participant and researcher. The second room was organized like a police interview room, with a single table flanked by a chair on either side.

2.2 Materials

2.2.1 Analogue crime video

A video depicting an attempted armed robbery was used as the encoding stimulus. The video was recorded from a camera mounted on a helmet worn by the point-of-view (POV) character, so the video appears from the perspective of the crime victim. The POV character (victim) is on a bike ride when approached by a man on a motorcycle with a firearm who demands the POV character's bicycle and wallet (Figure 1). The POV character avoids the offender and runs away. The video is about 2.5 minutes long and was sourced from YouTube using the search terms "Go-Pro" and "crime"²⁴. The sound from the video was removed because the people depicted spoke a language other than English which would introduce variability among a sample with varied language proficiencies.



Figure 1. Screenshot of the analogue crime video that participants viewed

2.2.2 Independent variable: two interview techniques

The Enhanced Cognitive Interview (ECI) is an interview technique developed from cognitive theories of memory and comprises four techniques¹¹. These four techniques include context reinstatement, encouragement to report everything without guessing, recall with perspective-taking, and recall with varied temporal order. The ECI also relies on basic guides to effective communication and rapport building.

The Trauma-Informed Cognitive Interview (TICI) was developed for this study based on the ECI and publicly available descriptions of trauma-informed interview techniques. The TICI relies on similar techniques as the ECI but also uses an understanding of encoding and retrieval of trauma-specific memories. In the TICI, the interviewer acknowledges the trauma the participant may have experienced while trying to minimize additional harm of the interview experience, such as not asking questions that could place fault on the participant.

2.2.3 Dependent variables

Interviewee recall: accuracy and inaccuracy

All interviews were transcribed and then all participant dialogue was partitioned so that every word the participant said was in its own paragraph. For example, if a participant said 200 words in their interview, the transcribed interview would be broken into 200 paragraphs. Each participant's recorded words were then grouped together into "fact" statements which could either be a single word (e.g., "white") or phrases (e.g., "there was a gunman"). These fact groupings were then coded as either accurate, inaccurate, repetition, opinion/unknown, or filler. All of the interviews were coded by a single primary coder; and as is standard for qualitative double-coding to ensure coding reliability, 20% of the interviews ($n = 9$) were double-coded. Cohen's Kappas (i.e., a measure of inter-rater reliability) were acceptable ($>.6$). Statements were coded as "accurate" if they were correct based on the video stimulus. Statements were coded as "inaccurate" if they were incorrect based on the video stimulus. Statements were coded as "repetition" if the participant had already referred to the given fact earlier in their interview. Statements were coded as "opinion/unknown" if they were opinionated in nature (e.g., "He seemed like maybe he was having a bad day") or the coder could not verify the veracity. Statements were coded as "filler" if they did not fit into one of these categories (e.g., "no" or "I don't know" statements). The totals for each of these categories were then summed, and the participants' total number of accurate ($M = 53.73$; $SD = 20.23$) and inaccurate statements ($M = 6.82$; $SD = 4.40$) was used for our accuracy and inaccuracy outcomes.

Subjective interview experience

The Response to Forensic Interview Participation Questionnaire (RFIPQ) is a 22-item measure adapted for this study from Newman and colleagues' Response to Research Participation Questionnaire²⁵. The RFIPQ assesses participants' perceptions of the interview procedure and was analyzed as an outcome in the current study. Participants were asked to rate on a scale of 1 (strongly disagree/no) to 5 (strongly agree/yes) how strongly they agreed with statements regarding their participation in the forensic interview. Example items include, "I gained something positive from participating in the interview" and, "The interview took too long." The participants' ratings on the survey questions were then summed ($M = 87.78$; $SD = 8.14$). For the current study, Cronbach's $\alpha = .80$ (Cronbach's α is a statistical indicator of internal reliability, meaning a statistical indicator of whether the items within the measure were all assessing the same construct).

2.2.4 Potential Covariates

Measures of individual difference, including gender, age, trauma history, substance abuse, duration of the interview, attention to the video, and interviewer identity had the potential to contribute to differences in the dependent variable. Differences in these variables between participants in the two randomized experimental groups (ECI vs. TICI) were assessed to determine whether it was necessary to include these variables as covariates in the hypothesis testing analyses. The measures used to assess these variables are described below.

Demographic attributes

Participants responded to 20 demographic questions assessing their race/ethnicity, age, gender, sexual orientation, crime victimization and perpetration, and previous history with forensic interviews. Age and gender were assessed as potential moderators of the relationship between interview condition and outcomes; the other demographic information was used to characterize the sample.

Mental health and substance use

Depression, post-traumatic stress symptoms, and substance use were measured as potential moderators of the relationship between interview condition and outcomes.

Depression

The Patient Health Questionnaire (PHQ-9²⁶) is a depression screening tool often used in healthcare settings²⁷. The measure includes 10 questions. The first nine questions probe how often the participant has experienced problems (e.g., "Little interest or pleasure in doing things;" "Poor appetite or overeating") in the last two weeks, rated on a 0 (not at all) to 3 (nearly

every day) scale. The tenth question asks participants to rate how difficult their life has been made by the endorsed problems (not difficult at all to extremely difficult). The PHQ-9 has been shown to have excellent internal reliability (Cronbach's $\alpha = .89$ ²⁷) and to predict depression diagnoses based on a clinical interview²⁸ and other standardized measures of depression symptoms (e.g., Beck Depression Inventory²⁹). For the current study, internal reliability was excellent (Cronbach's $\alpha = .88$).

Post-traumatic stress symptoms

The Trauma-Symptoms Checklist - 40 (TSC-40³⁰) is a 40-item self-report measure of symptomatic distress in adults arising from traumatic experiences. Participants are asked how often they experienced 40 items (e.g., "insomnia;" "sexual problems;" "feelings of guilt") in the last 2 months. Each question is associated with 6 different trauma symptom subscales (disassociation, anxiety, depression, sexual abuse trauma index, sleep disturbance, and sexual problems). The participant's answers to the relevant items were summed for each subscale. The total score (McDonald's coefficient $\Omega = .93$) has been found to be internally reliable and have convergent validity with participant-reported cumulative exposure to traumatic events³¹. For the current study, Cronbach's $\alpha = .85$.

Substance use

The Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST)³² is a substance use screening measure focused on frequency of use of 9 substances in the past 3 months, measured on a scale from 0 (never) to 4 (daily or almost daily). Answers are summed and the scores on the higher end of the spectrum are determined to be in need of intervention. Queried substances include alcohol, cocaine, tobacco products, cannabis, amphetamine type stimulants, inhalants, sedatives or sleeping pills, hallucinogens, and opioids. This section of the ASSIST showed a good internal consistency ($\alpha = .68-.88$), good concurrent validity with the CRAFFT Substance Use Screening Tool ($r = .41-.76$; $p < .001$ ³³). For the current study, Cronbach's $\alpha = .67$.

Recognition of video stimulus details

An attention check quiz was used to confirm participants were paying attention to and encoded the broad contents of the video stimulus. Attention was evaluated as a potential covariate. The quiz comprised five multiple choice questions such as, "What color was the van that went by at the beginning of the video?" with potential responses including "black," "white," "red," and "blue." These questions were created for the current study based on the video stimulus.

Trauma history

The Brief Betrayal Trauma Survey³⁴ includes 11 behaviorally-defined trauma items (e.g., “You were deliberately attacked that severely by someone with whom you were very close”) to screen for lifetime trauma exposure, which was evaluated as a potential covariate. Given that trauma history can relate to memory and attention differences, the BBTS was used to evaluate differences in trauma history between experimental groups. This measure has demonstrated good test-retest reliability³⁴, and convergent validity with trauma symptoms³⁵.

Awareness of deception

At the end of the study session, participants were asked questions about the true purpose of the study (e.g., “If you had to guess, what do you think the study is about?”). No participants in the study were found to be aware of the study’s purpose.

Measures of ethical adherence

Participants’ emotional reaction to the video and their reaction to the procedures were evaluated to ensure adverse participant experiences were identified and addressed.

Emotional reaction to video

A short questionnaire, developed for a previous study of forensic interviewing³⁶, was used to assess participants’ emotional reaction to the video stimulus. Participants were asked to “Think about how the video you have just watched made you feel,” rating six emotions (e.g., *happy, excited, okay, calm, sad, and angry*) on a 7-point Likert scale (1 = “not at all;” 7 = “very much”). Additionally, the survey asked participants to indicate which of the six emotions best describes how the video made them feel and write a short free-response explanation. Emotional reactions to the video stimulus were assessed to identify potential adverse reactions to the video and assess differences between experimental groups.

Perception of research participation

The Response to Research Participation Questionnaire (RRPQ²⁵) includes items that assess participants’ perceptions of the research procedures, including the relative benefits, costs, and emotional reactions. The RRPQ was used to monitor ongoing participant perceptions of costs and benefits to adjust protocols as needed to maximize benefits and minimize costs to participants. First, participants were asked to rank their top three reasons for participating in the research study from a list including nine choices (e.g., “I was curious;” “for the compensation”). Next, participants rated 23 items (e.g., “Knowing what I know now, I would participate in this study if given the opportunity”)

tapping their reaction to participating in the study from 1 (strongly disagree/no) to 5 (strongly agree/yes). Participants’ responses were summed, with negatively worded items reverse scored, so that higher scores indicated a more positive experience participating. The scale has demonstrated excellent internal reliability in adults (Cronbach’s $\alpha = .83$ ²⁵) and had excellent internal reliability in the current study (Cronbach’s $\alpha = .82$).

2.3 Interviewer Training and Fidelity

Each research assistant (RA) was trained to facilitate the first half of the study session, as well as to administer the protocols for both interview conditions. Interviewers were trained to strictly adhere to the interview script. To receive training approval, RAs were required to review the materials individually and with either the Principal Investigator (PI) or the Graduate Research Assistant (GRA) supervisor, and conduct a full mock interview that was audio recorded and assessed by the PI and/or GRA supervisor for fidelity to interview script. All RAs received feedback on deviations from script; interviewers who made more than 5 minor (e.g., wording slightly differs) or 2 major (e.g., asking a prompt out of order, using unscripted wording) deviations from the interview script received feedback on discrepancies and were required to complete a second audio-recorded mock interview. All RAs achieved fidelity to the script by the second practice administration. Study interviews were audio recorded and transcribed. Ongoing checks of fidelity to the script were also conducted. All RAs maintained adequate adherence to the interview scripts.

2.4 Procedure

The study procedure was completed during one visit lasting approximately 90 minutes. Each session was facilitated by two RAs. One RA facilitated all of the procedures leading up to the experimental interview, including consent and the consent quiz, administering the video stimulus, and the pre-interview surveys. The second RA conducted the experimental interview, post-interview surveys, and debriefing procedures. At the start of the session, participants received consent information in writing and verbally. After discussing consent information, the research assistant administered a consent quiz to check understanding of the consent information³⁷. Following the consent procedures, participants viewed the video stimulus on a computer screen approximately 12 inches from their face at eye-level. Immediately following presentation of the video stimulus, participants were asked to complete self-response measures in Qualtrics during a 30-minute delay period to simulate the gap between a crime and when a victim is interviewed by police.

The series of surveys and questionnaires were pre-

sented in the following order: Emotional reaction to video stimulus survey, demographic questionnaire, MacArthur Scale of Subjective Social Status, Patient Health Questionnaire, Trauma-Symptoms Questionnaire, Alcohol, Smoking and Substance Involvement Screening Test (ASSIST), and the Brief Betrayal Trauma Survey. If the participant completed all of these surveys and questionnaires before the 30-minute delay period ended, participants worked on a word search puzzle.

After the delay period, participants were escorted to another room with the second RA. Participants were interviewed using one of two interview types, the Enhanced Cognitive Interview (ECI) or the Trauma-Informed Cognitive Interview (TICI). The interview condition (the ECI or the TICI) was randomly assigned to the participant. The interview was audio recorded and later transcribed and coded for recall of the film stimulus.

After the interview, participants responded to post-interview questionnaires, including: the Recognition of Video Stimulus Details, the RFIPQ, and the RRPQ. After the second block of questionnaires, participants' awareness of the study deception was assessed. Then the participant was debriefed and given the opportunity to re-consent after learning about the deception. Finally, participants were offered a list of potential support services and then thanked for their time. After the study, participants were compensated through the human subject pool system.

2.5 Data Analysis

Data was analyzed using SPSS (Version 25.0). To assess whether potential covariates should be included in hypothesis testing analyses, separate independent-samples t-tests evaluated whether the two randomized interview conditions differed based on demographic or interview characteristics. To compare the effects of the interview condition (ECI vs. TICI) on average recall accuracy, average recall inaccuracy, and overall interview experience, a one-way between-subjects ANOVA was conducted.

3 RESULTS

A total of 47 participants were recruited and completed study activities. Of the 47 participants, 2 participants were excluded from analyses for deviations from protocol (i.e., materials out of order; audio recorder malfunction). Of the 45 participants who were included, 24 were randomly assigned to the ECI condition and 21 were randomly assigned to the TICI condition. All variables of interest were assessed for skew, kurtosis, and normality using the Shapiro-Wilk Test, given its superiority over the Kolmogorov-Smirnov Test for smaller sample sizes³⁸. All variables had acceptable distribution, with

the exception of the accuracy and inaccuracy variables, which had acceptable skewness and kurtosis, but did not have normal distribution. Given that transforming the accuracy and inaccuracy variables would have affected the ease of interpretation and that there were mixed indications of normality, the variables were left untransformed.

3.1 Emotional Response to Video

Participants' ratings for six emotions (*happy*, *excited*, *okay*, *calm*, *sad*, and *angry*) were evaluated to determine emotional reactions to the video. For the positive emotions, participants reported feeling "not at all" *happy* ($M = 1.16$, $SD = .37$) and a "low" level of *excitement* ($M = 1.80$, $SD = 1.30$). For the neutral emotions, participants reported feeling a "low" level of *okay* ($M = 1.98$, $SD = 1.51$) and a "low" level of *calm* ($M = 1.61$, $SD = .87$). For the negative emotions, participants reported feeling "slightly" *sad* ($M = 3.40$, $SD = 1.63$) and "slightly" *angry* ($M = 3.39$, $SD = 1.67$).

3.2 Covariates

Separate independent-samples t-tests evaluated whether participants in the two randomized interview conditions differed based on demographic or interview characteristics (Table 1). The t-tests indicated participants in the two conditions did not differ by participant characteristics, including attention check results (scored out of 100; lower scores indicate fewer questions correct), age (in years), gender (1 = woman; 2 = man), trauma symptoms (TSC-40 scored from 0-120; lower scores indicate less severe trauma symptoms), substance abuse (lower scores indicate less substance use), or interview characteristics, including interview duration (how long the interview was, in minutes), and interviewer (which researcher conducted the interviewer). The t-tests indicated no differences between experimental conditions based on participant characteristics. As such, subsequent analyses did not include covariates.

3.3 Outcomes

We hypothesized that the TICI interview condition would perform better than the ECI interview condition across three outcomes. One-way between-subjects ANOVAs evaluated the effect of interview condition (ECI vs. TICI) on accuracy (i.e., participants' number of accurate statements), inaccuracy (i.e., participants' number of inaccurate statements), and subjective rating of interview experience. No significant main effects were found for any of the examined outcomes, including accuracy (ECI $M = 53.38$, $SD = 20.75$; TICI $M = 54.14$,

Measure	ECI		TICI		df	t
	M	SD	M	SD		
Gender	1.29	.46	1.24	.44	43	.40
Age	19.46	1.18	19.71	2.26	43	-.49
Trauma Symptoms	78.54	25.38	92.43	26.96	43	.39
Substance Abuse	13.38	3.51	12.52	3.31	43	.83
Duration	10.78	3.43	12.77	4.23	43	-1.75
Attention Check	.88	.34	.86	.36	43	.17
Interviewer	5.67	2.12	5.38	2.22	43	.44

* $p < .05$

Table 1 Analyses comparing participants in the two experimental groups based on individual characteristics revealed there were no significant differences between the two groups, indicating the experimental randomization was effective

$SD = 20.12$; $F[1, 44] = .02$, $p = .90$, $\eta_p^2 = .88$), inaccuracy (ECI $M = 5.92$, $SD = 3.35$; TICI $M = 7.86$, $SD = 5.25$; $F[1, 44] = 2.24$, $p = .14$, $\eta_p^2 = .05$) or subjective interview experience (ECI $M = 89.04$, $SD = 7.04$; TICI $M = 86.33$, $SD = 9.20$; $F[1, 44] = 1.25$, $p = .27$, $\eta_p^2 = .03$).

4 DISCUSSION

The present study evaluated whether a novel trauma-informed approach to forensic interviewing designed for this study (i.e., Trauma-informed Cognitive Forensic Interview; TICI) addressed concerns raised by law enforcement⁶ that existing interview approaches fail to elicit accurate information and can be perceived negatively by interviewees. Specifically, this study empirically tested the efficacy of the TICI against the current gold-standard forensic interview protocol (i.e., Enhanced Cognitive Interview; ECI) for eliciting participant memories of an analogue crime event and perceived experience during the interview. Based on a review of the research literature regarding memory^{23,39,40} and trauma-informed practices^{41,42,43}, it was hypothesized that the TICI would elicit more accurate recall, less inaccurate recall, and be evaluated as better for overall experience by participants. The results showed that the ECI and TICI did not significantly differ in accuracy and inaccuracy of information elicited during the interview, or participant perception of their interview experience. Both interviews elicited a greater number of accurate than inaccurate statements, and both interview types were perceived relatively positively by participants. These results did not align with our hypotheses that the TICI would produce superior outcomes to the ECI. Though the current study used a relatively

small sample from a population with limited generalizability, these results provide initial support that a TICI can achieve parity with the gold standard ECI. That is, adding trauma-informed strategies to the ECI does not appear to diminish the ECI's efficacy.

The following section will consider three potential explanations for why the TICI did not surpass the ECI with respect to interviewee recall accuracy, inaccuracy, and subjective interview response. The first explanation for the current study findings is that methodological limitations precluded detection of differences in the performance of the two interviews. The small sample size may have limited power to detect effects. The time delay of 30 minutes may not have been sufficient to permit forgetting for a complex narrative memory. The video stimulus likely did not produce the type of peri- and post-traumatic cognitive responses that the TICI was designed to address.

The video stimulus limitation warrants further discussion, given that it is central to this manipulation and should be considered carefully by future researchers. From a cognitive perspective, highly stressful events like crime victimization can produce up-regulation of amygdala activity and down-regulation of hippocampal activity²³. As a result of these cognitive changes, memories of stressful events like crime victimization tend to include strong encoding of specific details (e.g., a water bottle), but include weaker encoding of associations between detailed elements, such as the temporal or spatial context^{13,14}. Though some participants in the study were able to take the perspective of the first-person victim in the video, most viewed the crime as having happened to someone else or believed the incident to have been acting. Further, participants' neutral affective rating of the video suggests that the video did not elicit a strong arousal response. This finding confirms that the steps taken to protect participants from unnecessary distress was effective. Many studies have successfully evaluated the ECI technique using analogue crime videos^{7,10,19}. However, because the TICI addresses trauma-related cognitive and emotional responses, performance differences may be undetectable when the recalled stimulus was perceived as an everyday event. Alternatively, the use of a novel video stimulus may not have been as efficacious an analogue crime experience as the stimuli used in ECI studies. Because the differences between the ECI and TICI are designed to account for cognitive effects of acute stress on memory, the use of a low-affect video may have contributed to the similarities in performance between the ECI and TICI. Future research could examine whether a more stressful stimulus (e.g., confederate theft of an object²⁰) or paired arousal condition at encoding (e.g., electrical stimulation) might result in clearer differences in memory performance between the ECI and TICI. In tandem, the ECI and TICI could be piloted in an applied

context, after an individual has experienced a crime. While applied settings present their own methodological limitations, primarily that veracity of recall often cannot be confirmed, research with crime victims could be a useful avenue for future research on these forensic interviewing techniques.

The second explanation of the current results is that the ECI may be effective in supporting the cognitive and emotional needs of crime victims, despite not being designed to be trauma-informed. Indeed, the core content of both the TICI and ECI techniques are similar and rooted in best practices for eliciting memories. Thus, the focus of the ECI on facilitating accurate recall—regardless of the traumatic nature of a to-be-recalled memory—may have resulted in strategies that support the cognitive and emotional needs of someone who has recently experienced a potentially traumatic event.

The third explanation of our findings is that the TICI technique used in the study may not have incorporated enough trauma-informed elements to be significantly different from the ECI in eliciting accuracy, inaccuracy, and subjective interviewee experience. The differences between the two interview techniques' scripts were minimal, with additional language such as acknowledging the potential trauma of the interviewee's crime experience in the rapport phase; the interviewer asking "What are you able to remember about what happened?" in the "total recall" phase, and additional trauma meaning questions at the end. The relatively minimal differences between the interviews was intentional, to focus on the inclusion of specific interview changes proposed by advocates for trauma-informed interviewing in the literature⁵.

5 FUTURE DIRECTIONS

The current study is one of the first to test a trauma-informed forensic interview. As such, there are numerous possible directions for future research in this area. One direction would be testing the TICI in an applied setting, as interviewees would be experiencing true cognitive effects of the stress of crime victimization. Further developing the TICI is a second avenue for future research to consider. For example, the TICI could incorporate elements from Trauma-Focused Cognitive Behavioral Therapy (TF-CBT), which is the standard treatment for individuals experiencing distress following a traumatic event. Given concerns for potential traumatization during a standard interview, using TF-CBT interventions, such as relaxation, may be supportive. Relaxation techniques could support interviewees physically and emotionally, which may support their recall ability⁴⁴. Implementing such techniques as part of the TICI could be evaluated in future research.

Given the ECI's documented success in eliciting more accurate recall and less inaccurate recall than the stan-

dard police interview, it may be appropriate to focus on implementation of the ECI into the law enforcement setting. In studies that have tested the ECI with law enforcement, the technique was well-received by the officers and training was efficiently implemented²¹. Despite the substantial evidence that the ECI is efficacious and accepted in the field, there appears to be limited uptake of the ECI in practice⁴⁵. The limited implementation of the ECI in practice suggests that forensic interviewing research may benefit from shifting focus to identifying and addressing barriers to the uptake of the existing well-validated approaches to interviewing victims and witnesses, such as the ECI, into practice in the field.

Despite the lack of support for the current study's hypotheses, we believe continuing to develop the TICI and studying an updated TICI technique against the existing validated interview techniques in an applied context are important next steps for researchers in this domain. In addition, focusing on implementing the already well-studied ECI into law enforcement training and practices should be considered. It is crucial that research continue contributing to the development of forensic interviewing techniques so that the experience of forensic interviewees can be improved while also supporting collection of accurate forensic evidence.

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7 EDITOR'S NOTES

This article was peer reviewed.

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