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What Evidence Matters to Jurors? The Prevalence and Importance of Different Homicide Trial Evidence to Mock Jurors

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The present research explores how important different trial evidence is to mock jurors' decisions. Study 1 surveys legal professionals to determine what evidence is common at homicide trials. Study 2 utilizes the list of evidence generated in Study 1 to ask mock jurors to report how important each piece of evidence would be in deciding their verdicts. The results indicate that DNA is most important to mock jurors, followed by fingerprints, the weapon, video records, crime-scene photos, gunshot residue, bodily secretions, video confession, testimony from a forensic expert, and eyewitness testimony. Study 3 utilizes a different methodology wherein mock jurors were presented with folders labeled with different evidence and asked to choose the piece of evidence they wanted to learn more about first, second, and so on. The results from Study 3 indicate again that DNA evidence is most important to mock jurors, followed by video confession evidence, eyewitness testimony, and fingerprint evidence. Implications are discussed.

Key words: evidence; homicide trial; juror decision-making.

Although approximately 90 to 95% of criminal cases end in a plea deal, the remaining 5 to 10% of cases can end up in a jury trial (Devers, 2011). These cases tend to concern more serious offenses (e.g., first-degree murder) and often are not 'slam dunk' cases for either side. Thus, the criminal justice system relies on jurors to be the fact-finders and determine the guilt or innocence of the defendant through listening to a variety of different types of evidence presented at a trial. A subset of the empirical literature in psychology and law has attempted to determine how important mock jurors perceive the different pieces of trial evidence to be when making their verdict decisions. This research has typically been carried out using a deductive approach informed by theory. Although deductive research is common and often warranted, the present research was conducted to determine if utilizing an inductive approach to researching jurors' perceptions of the importance of trial evidence would lead to similar results.

Knowing which evidence jurors perceive to be most important has many benefits. First, researchers can focus their efforts on the evidence that is most important to jurors. Specifically, researchers can test and explore how different methods of presentation and different characteristics of that evidence might lead jurors to make different decisions. Thus, the literature would better reflect the needs of those wanting to apply it to the courtroom.

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Second, legal actors (e.g., attorneys and judges) can make more informed decisions if they know what evidence is important to jurors. For example, prosecutors and defense attorneys would know what evidence is likely to bolster or weaken their case and can adjust their strategies accordingly. Thus, knowing what evidence jurors might value has both empirical and practical applications. To provide guidance for researchers and practitioners, the present research explores how important mock jurors report different pieces of evidence to be, utilizing an inductive approach to research.

Jurors' Weighting of Evidence

To explore how jurors may weight specific pieces of evidence in their verdict decisions, the existing literature on the impact of three broad types of evidence on jurors' verdicts is reviewed briefly (i.e., eyewitness testimony, expert testimony, and visual evidence).

Eyewitness Testimony. Research on eyewitness testimony is abundant and has been ongoing for more than 30 years. Although eyewitness testimony is arguably the most convincing evidence presented at trial, it is also one of the most unreliable pieces of evidence (e.g., Loftus & Schneider, 1987; Wells & Olson, 2003). This is a dangerous combination, illustrated by the fact that jurors believe eyewitness identifications to be more reliable than they actually are (Brigham & Bothwell, 1983). The most influential part of eyewitness testimony to jurors is the confidence of the witness (Cutler, Penrod, & Dexter, 1990), with increased witness confidence leading to increased perceived credibility of the witness (e.g., Wells & Lindsay, 1983; Whitley & Greenberg, 1986) and increased likelihood to convict (e.g., Cutler et al., 1990; Fox & Walters, 1986; Levett, Danielsen, Kovera, & Cutler, 2005; Wells, Lindsay, & Ferguson, 1979). Unfortunately, statistics on the prevalence of eyewitness testimony are difficult to find; however, one may infer through white papers, Supreme Court rulings,

and exonerations based on fallible testimony that eyewitness testimony is common at trial.

Expert Testimony. Like eyewitness testimony, expert testimony has received attention from psycho-legal researchers, with the research regarding the impact yielding mixed findings. The various types of experts used in psycho-legal research may explain why the findings on how much weight jurors give expert testimony are varied. Using Bayes Theorem to determine the appropriate weights, some researchers have found that jurors under-weight scientific expert testimony (Faigman & Baglioni, 1988; Kaye & Koehler, 1991; Martire, Kemp, Sayle, & Newell, 2014; Thompson & Schumann, 1987), while others have found that jurors weight the testimony appropriately (Brekke, Enko, Clavet, & Seelau, 1991; Nuñez, Gray, & Buck, 2012; Saks & Wissler, 1984), and other researchers have found in the same study that some jurors under-weight expert testimony and others give expert testimony too much weight (B. C. Smith, Penrod, Otto, & Park, 1996). The broad range of the type of expert makes it difficult to draw conclusions on the degree to which jurors weight expert testimony in their final decisions. As Gross (1991) points out, there are other pieces of evidence that may play a larger role in jurors' final decisions, such as eyewitness testimony. Presently, the majority of the research regarding the weight that jurors place on expert testimony deals specifically with psychological experts (e.g., Cutler & Kovera, 2011).

Research has also explored how common expert testimony is at both criminal and civil trials. The most recent exploration of the prevalence of expert testimony at trial found that in civil cases in 2012 in Polk County, IA, 86% of cases had at least one expert testify (Jurs, 2016). The next most recent research found similar numbers: in civil cases randomly selected to be a part of the Arizona Jury Project in 1996/7, 86% contained expert testimony (Diamond, 2007). However, the prevalence of expert testimony has been shown to differ based on city. In both civil

and criminal cases in 1990 and 1991, experts were present in 92% of cases in Baltimore, MD, 46% of cases in Seattle, WA, and 80% of cases in Tuscon, AZ (Shuman, Whitaker, & Champagne, 1994). Two years prior (1988), research indicated that 63% of civil cases in Dallas, TX, contained expert testimony. Thus, it seems that not only has the prevalence of expert testimony increased over time, but also that prevalence varies according to city and state. Unfortunately, much of the existing research does not further break down the prevalence of expert testimony by type of expert, although Diamond (2007) reports that the experts included physicians, mental health professionals, biomechanical engineers, financial analysts, and academic scientists (frequencies of each are not given).

Visual Evidence.   A third type of evidence, visual evidence, has long been used to supplement the testimony of experts and eyewitnesses (Mnookin, 1998), and has become increasingly common as technology has advanced (Feigenson & Spiesel, 2009). As the prevalence of photographs, videos, and maps has increased, so too has the concern regarding their influence on jurors (Bornstein, Miller, Nemeth, Page, & Musil, 2005). Much of the psycho-legal literature has focused on the effect of gruesome crime-scene pictures on jurors' decisions. For example, Bright and Goodman-Delahunty (2006) presented participants with gruesome crime-scene pictures, neutral pictures, or no pictures and examined how the pictures affected verdicts. It was found that the mock jurors who were shown pictures, whether gruesome or not, were more likely to find the defendant guilty than those who were not shown any pictures (Bright & Goodman-Delahunty, 2006). Finkelstein and Bastounis (2010) examined the effects of a crime-scene photograph on mock jurors' sentencing recommendations. The participants read a trial transcript depicting an involuntary homicide and half were shown a photograph of the bloody victim at the crime scene. The participants were then asked to sentence the defendant (who had already been found guilty) to up to 15 years in prison. The participants who were shown the photograph of the crime scene gave significantly longer sentences than those who did not see the photograph (Finkelstein & Bastounis, 2010). These findings and others indicate that visual evidence, particularly when it is gruesome, leads to more punitive decisions (e.g., Bright & Goodman-Delahunty, 2006; Finkelstein & Bastounis, 2010; Oliver & Griffitt, 1976; Whalen & Blanchard, 1982).

The Present Research

The present research was designed to extend the current literature regarding the prevalence and importance of trial evidence (e.g., eyewitness testimony, expert testimony and visual evidence) by first determining what types of evidence are commonly presented to jurors during trial. As the literature on the prevalence of expert testimony indicates, factors such as the location of the court can impact prevalence statistics. Thus, the present research surveyed legal professionals from various locations in the United States in order to obtain a more diverse perspective. Second, the present research seeks to explore how important mock jurors view the prevalent evidence to be. The evidence presented at any given trial is case-type specific, so a decision was made to examine homicide trials because of the frequency at which homicides occur; homicide was the most severe offense in the 75 largest counties in the United States for 60% of the defendants arrested for more than one felony in 2009, second only to rape (65%; Reaves, 2013).

Study 1 was conducted to determine what evidence is commonly presented at homicide trials by surveying a sample of legal professionals (e.g., lawyers and judges). Study 2 and Study 3 were designed to explore how important this evidence is to mock jurors using two different methodologies. Because this research is exploratory and uses an inductive approach, specific hypotheses were not warranted. Overall, the goal was to determine

what evidence, when given a list of common homicide trial evidence, mock jurors would find important to the process of reaching a verdict in a homicide trial.

Study 1

The purpose of Study 1 is to determine what evidence legal professionals report as being commonly presented at homicide trials. Presently, there is only one published study that explores what evidence is presented at trial, although it is specific to civil trials and expert testimony, and is based on 30-year-old trial data (Gross, 1991). Additionally, there are no field studies to the authors' knowledge that explore the frequency of a variety of different pieces/types of evidence at criminal homicide trials. As such, Study 1 is necessary in order to obtain some sort of empirically supported list of evidence that is commonly presented at homicide trials to utilize in future studies.

Method

Participants and Design. Attorneys and judges ($n = 136$) from six states (CA, CO, IA, MI, TX, and WI) in the United States participated in the current study. The states recruited from were chosen after a search of online legal professional databases was conducted across the country. This search yielded five states (CA, CO, IA, MI, and WI) which had emails for criminal attorneys (both public and private) and judges listed on their respective websites. Contact information for attorneys and judges from the sixth state, TX, was obtained from another research group that had generated an email list for a previous study utilizing legal professionals. These states provide a representative range in the sentencing guidelines for homicide (i.e., first- or second-degree murder) from a minimum of 25 years to a maximum of either life in prison without the possibility of parole or the death penalty. Further, the chosen states also provide a balanced representation of political beliefs, with two states being traditionally liberal (CA and CO), three states being traditionally conservative (TX, WI, and MI), and one state being traditionally split (IA).

Potential participants ($n = 3098$) were then contacted via email, briefly told the purpose of the study, and provided with a link to participate. The participants did not receive compensation for their time, but instead were offered to be sent the findings of the study if desired. Approximately 4% ($n = 136$) of the legal professionals who were contacted completed the survey. Of those, the majority of participants were male (76%) and had been practicing law for an average of 26 years, with 66% of the sample being criminal defense attorneys.

Materials and Procedure. Interested legal professionals were instructed to click on the study link provided to them at the bottom of the email solicitation they received. They were then taken to the study website and presented with informed consent documentation. Those who did not consent to participate were redirected to a thank you page and were not presented with any study materials. Those who consented to participate then proceeded through the study. Participants were first asked their gender, what type of legal professional they were, how many years they had been practicing, in what state they currently practiced, and if they had ever worked on a homicide case. Participants were then given a list of 66 pieces of evidence generated by a group of psycho-legal researchers and informed by existing literature, and a database of capital murder trial transcripts. From this list, the participants were asked to report whether they thought each piece of evidence was commonly presented at homicide trials, as well as whether or not each piece of evidence was presented at the last homicide trial they were a part of. Participants were asked if the evidence was present at their last trial to ensure they were not suffering from availability or representativeness heuristics. Participants were shown the list of 66 pieces of evidence in four separate groups (i.e., physical/

biological, documentary, demonstrative, and testimony).

Lastly, participants were asked if there were any pieces of evidence they thought should have been included as part of the list of evidence presented, to account for the possibility that the list is not exhaustive. Responses to this question varied greatly; thus, no new pieces of evidence were added to the original list.

Results

To determine whether or not availability heuristics were at play, differences between 'common' and 'last' selections were explored and found to be non-significant. Table 1 lists the 66 pieces of evidence from most common to least common based on the legal professionals' percentages of endorsement as common. The following 10 pieces of evidence were selected as commonly presented at homicide trials by over 50% of the legal actors surveyed: crime-scene pictures, witness to the crime, diagrams of injuries, police officer expert testimony, forensic expert testimony, weapon, fingerprints, maps, audio confession, and video confession. See Table 1 for the additional evidence and the percent of endorsement associated with each piece of evidence.

Discussion

There are some pieces of evidence that legal professionals reported as commonly appearing at criminal homicide trials (e.g., eyewitnesses) which have received research attention from psycho-legal researchers (for a review, see Wells & Olson, 2003). However, there are other pieces of evidence that the legal experts listed as commonly appearing at homicide trials which have received little scrutiny (e.g., diagrams of injuries), as well as pieces of evidence which have received substantial attention from researchers (e.g., psychological expert testimony) that the legal professionals said are not commonly presented at homicide trials. Thus, future research may focus on some of the understudied pieces of evidence to determine if and how they affect jurors' decisions. The main purpose of Study 1, however, was to generate a list of evidence that legal professionals reported as frequently appearing in homicide trials. This list was then utilized as the basis for Study 2 and Study 3.

Study 2

The purpose of Study 2 is to determine how important mock jurors think the evidence from Study 1 is in determining their verdicts. As reviewed earlier, the literature suggests that certain types of evidence are more important to mock jurors than others. For example, research has shown that when a witness expresses confidence in his or her identification of the defendant, mock jurors are more likely to find the defendant guilty (e.g., Cutler et al., 1990; Levett et al., 2005). Furthermore, photographs have also been shown to impact mock jurors' decisions, suggesting that mock jurors place greater weight on photographic evidence than on verbal evidence (e.g., Bright & Goodman-Delahunty, 2006). Expert testimony, however, has not been consistently shown to influence mock jurors' decisions. Thus, more research is necessary to determine the role of expert testimony at trial. Study 2 is designed to further explore the perceived importance of a large variety of evidence to mock jurors, beyond eyewitness, expert, and visual evidence. A second goal of Study 2 is to narrow down the list of pieces of evidence that at least 20% of the sample said were commonly presented at homicide trials from Study 1 (41 pieces) to 10 pieces of evidence that mock jurors reported as being most important in making verdict decisions.

Method

Participants. The participants ($n = 317$) were recruited through Amazon's Mechanical Turk (mTurk) and compensated for their time

Table 1. Common homicide trial evidence according to attorneys (Study 1), average importance of evidence according to mTurk participants (Study 2), and the difference between the two.

Evidence	% of attorneys who endorsed	Attorney rank	MTurk rank	Difference
Crime-scene photos	68	1	5	−4
Witness to the crime	64	2	10	−8
Diagrams of injuries	63	3	27	−24
Police officer testimony	61	4	30	−26
Forensic expert testimony	60	5	9	−4
Weapon	58	6	3	3
Fingerprints	57	7	2	5
Maps	57	8	40	−32
Audio confession	51	9	11	−2
Video confession	51	10	8	2
Chain of evidence documents	50	11	14	−3
DNA	49	12	1	11
Timeline of the crime	46	13	13	0
Texts messages from cellphone	43	14	22	−8
Victim's property found with defendant	40	15	15	0
Gunshot residue	39	16	6	10
Alibi witness	36	17	26	−9
Photographs from cellphone	35	18	24	−6
Written confession	35	19	16	3
Mental health professional testimony	34	20	34	−14
Blood typing	32	21	23	−2
Audio records	32	22	17	5
Medical expert testimony	32	23	19	4
Character witness	30	24	41	−17
Defendant's property at scene	29	25	12	13
Other bodily secretions	29	26	7	19
Fibers	27	27	20	7
Video records	27	28	4	24
Files on computer hard drive	26	29	18	11
Emails	26	30	28	2
Tire marks	26	31	33	−2
Information technology expert testimony	24	32	32	0
Facebook posts	23	33	39	−6
Hair	23	34	21	13
Psychologist expert testimony	22	35	36	−1
Footprints	18	36	29	7
Internet search history	15	37	37	0
Receipts	15	38	31	7
Physician expert testimony	14	39	25	14
Bank account information	11	40	35	5
Neuroimages of the brain	4	41	38	3

through mTurk. Participants who were not United States citizens ($n = 8$), who did not identify as living in the United States ($n = 5$), or who failed an attention check question (i.e., 'Please select four for this question', $n = 8$) were excluded from analyses, leaving data from 296 participants, of which 175 (59.1%) were male and 234 (79.1%) were Caucasian, ranging in age from 18 to 67 years ($M = 34.78$).

Materials and Procedure.   After consenting to participate, the participants were told to imagine they were serving on a jury whose duty it was to decide whether or not the defendant was guilty of homicide. The participants were instructed that they would be presented with 41 pieces of evidence (derived from Study 1; see Table 1) and asked to rate how important each piece would be in reaching a verdict. Each piece of evidence was presented without context. For example, participants were asked to rate how important DNA evidence would be when making a verdict decision and were not told whose DNA it was or where it was found. Participants were told to think about each piece of evidence as though it was the only evidence presented at trial. This was done to attempt to gain ratings of each piece of evidence independent of the other pieces. Participants were then presented with the evidence in a randomized order and asked to rate the level of importance of each using a 10-point Likert scale (where $1 = not$ at all $important$ to $10 = very$ $important$). When participants finished rating the evidence, they completed a basic demographic questionnaire and received a code to obtain compensation through mTurk.

Results

All 41 pieces of evidence have mean scores at or above the midpoint of the scale (i.e., 5.5), indicating that each piece of evidence was on average perceived as somewhat important by mock jurors in making their verdict decisions (see Table 1). Although the mean rating of

Table 2.   Study 2 descriptive statistics.

Evidence	M (SE)
DNA	9.17 (0.08)
Fingerprints	8.52 (0.09)
Weapon	8.34 (0.10)
Video records	8.11 (0.10)
Crime-scene photos	8.03 (0.11)
Gunshot residue	8.02 (0.10)
Other bodily secretions	8.02 (0.11)
Video confession	7.99 (0.13)
Forensic expert testimony	7.76 (0.10)
Eyewitness	7.73 (0.11)

importance for each piece of evidence is high, there is no indication of ceiling effects; the entire range of the scale was used for all but 8 items. The results indicate that the 10 pieces of evidence mock jurors reported would be most important when deciding a verdict are (in order of importance): (1) DNA, (2) fingerprints, (3) weapon, (4) video records, (5) crime-scene photos, (6) gunshot residue, (7) other bodily secretions, (8) video confession, (9) forensic expert testimony, and (10) eyewitness testimony (see Table 2 for descriptive statistics). A comparison of the findings of Study 1 and Study 2 is presented in Table 1.

Discussion

The purpose of Study 2 was to obtain ratings of importance of a list of evidence that at least 20% of legal actors said are commonly presented at homicide trials. The results indicate that, on average, the jurors viewed all of the pieces of evidence to be at least somewhat important in order to reach a verdict. However, there are at least 10 pieces of evidence that the jurors rated as highly important, including some types of evidence that psycho-legal researchers have been researching (e.g., expert testimony, eyewitness testimony, and photographic evidence) and others that have received less attention (e.g., video records).

DNA evidence, which mock jurors in this study rated on average as most important when deciding a verdict (and which 49% of legal actors said is common at homicide trial), has more recently received attention from researchers (e.g., L. Smith & Bull, 2014; Walsh, Ribaux, Buckleton, Ross, & Roux, 2004). Unfortunately, like eyewitness testimony, research has found that jurors have trouble understanding the fallibility of DNA evidence, especially when conveyed in statistical terms (Findlay & Grix, 2003; Lieberman, Carrell, Miethe, & Krauss, 2008; Villejoubert & Mandel, 2002). In fact, Koehler (1996) found that even when mock jurors were presented with the exact same DNA evidence expressed in different notations (frequency, likelihood ratio, or posterior odds ratio), they weighted the testimony differently in their verdict decisions. Other empirical research has found that compared to Bayes Theorem, jurors over-weight (Koehler, Chia, & Lindsey, 1995) and under-weight (Nance & Morris, 2005; Schklar & Diamond, 1999) DNA evidence. Additionally, Lieberman et al. (2008) found that DNA evidence is the most persuasive type of evidence in determining the suspect's guilt, and is found to be even more persuasive than eyewitness testimony. This subset of research concerning DNA evidence illustrates the lack of agreement regarding the role DNA plays in jurors' verdict decisions, further illustrating the need for more research on the topic.

Study 3

The list of the 10 most important pieces of evidence as rated by the mock jurors that was obtained from Study 2 was utilized for Study 3, which was designed to partially replicate the findings from Study 2 using a different methodology. Specifically, the goal of Study 3 is to determine if having only the 10 most important pieces of evidence from Study 2 to choose from would alter mock jurors' perceptions of importance, or if the results would remain the same as those of Study 2.

However, Study 3 was designed to explore jurors' perceptions of importance by measuring importance in a different way. The methodology utilized in Study 3 allowed the mock jurors to choose how they wanted to progress through the evidence at trial. It was realized that jurors in actual trials cannot *choose* what evidence they receive and the order in which they receive it, but this methodology made it possible to see how jurors might prioritize different kinds of evidence in in order to make their decision. This methodology, called a process-tracing method (for a review, see Schulte-Mecklenbeck et al., 2017), reveals how people collect information before making a decision, and has been used to study various aspects of decision-making (e.g., political decisions, Redlawsk, 2002).

Because mock jurors were allowed to choose the order in which they saw the pieces of evidence and because there were 10 pieces of evidence available, there are over 3 million possible orders. To minimize the number of different orders, a pilot test was completed first with the 10 pieces of evidence from Study 2 to see if a consistent order emerged, with the goal of narrowing the number of items down to 4 or 5.

Pilot

MTurk participants ($n = 96$) were presented with brief juror instructions and asked to choose from 10 folders (DNA, Fingerprints, Weapon Involved in the Crime, Video Records, Photographs of the Crime Scene, Gunshot Residue, Other Bodily Secretions, Video Confessions, Forensic Expert's Testimony, and Witness to the Crime) the evidence that they wanted to learn more about first, second, and so on. After viewing the evidence, participants were asked to decide if the defendant was guilty of homicide.

Exactly 50% of the sample chose to view 5 or more pieces of evidence (of the 10 available), with 14.6% viewing all 10 pieces and 15.6% viewing 9 pieces. An examination of the mean ranking of each piece of evidence

yielded 5 pieces that were on average viewed within the first 7 pieces of evidence chosen. The 5 pieces of evidence that are ranked highest, and therefore chosen on average first, are DNA ($M = 6.08$, $SE = 0.41$), eyewitness testimony ($M = 5.09$, $SE = 0.41$), fingerprints ($M = 4.79$, $SE = 0.41$), video confession ($M = 4.44$, $SE = 0.40$), and forensic expert testimony ($M = 4.12$, $SE = 0.38$).

For Study 3 it was necessary to determine whether or not there were reliable differences amongst the top 4 or 5 pieces of evidence; 4 pieces allowed for 24 possible orders, whereas 5 pieces allowed for 120 possible orders. The data indicate that the most important piece of evidence across both Study 2 and the pilot study (DNA) is significantly different to the fifth ranked piece of evidence (forensic expert testimony), $t(95) = 4.31$, $p < .001$. For this reason, and the large difference in the number of possible order combinations (96) between using 4 and 5 pieces of evidence, Study 3 was conducted using the top 4 pieces of evidence from the present pilot study.

Method

Participants. The participants ($n = 123$) were recruited through mTurk and compensated for their time. Participants who were not United States citizens ($n = 2$), who did not identify as living in the United States ($n = 4$), or who failed an attention check question ($n = 3$) were excluded from analyses, leaving data from 114 participants, of which 54 (47.4%) were male and 89 (78.1%) were Caucasian, with an age range of 20 to 77 years ($M = 35.37$).

Materials and Procedure.   After consenting to participate, the participants were asked to assume the role of mock jurors in a homicide trial in which their job was to decide whether or not the defendant was guilty of homicide. The participants were first presented with brief juror instructions and then directed to

another page on which the following instructions appeared:

> The defendant in this case is on trial for homicide. The folders below contain information (if available) about the specific piece of evidence typed on each folder. Please select from the folders below which piece of evidence you would like to learn more about in the order of importance. For example, if you think Evidence 'X' is most important to making your decision, please select that folder first, and so on, until you have viewed all of the evidence. You may only choose one folder at a time, and you can open the same folder more than once, but you are asked to look at every folder. Your goal is to determine whether or not the defendant is guilty of homicide.

Below these instructions were four folders, and the location and order of each folder on the screen was randomized. Each folder was labeled with a different piece of evidence (DNA, Fingerprints, Video Confessions, and Witness to the Crime). After participants chose which piece they wanted to learn more about first, they were directed to another page in which they were given a brief description of the evidence. For example, if participants selected to learn more about DNA evidence first, they were directed to a page where they were told: 'The defendant's DNA was a match to the DNA found at the scene of the crime'. Each description of the evidence implied guilt. This was done in order to minimize the complexity of the design and therefore increase power. If the culpability of the evidence had also been varied, there would have been 48 possible different orders.

If participants had not viewed all four pieces of evidence, they were redirected back to the page where the evidence folders were. When all four pieces of evidence had been viewed (or participants opted to give their verdicts), participants were asked to decide whether or not the defendant was guilty of homicide. Because the evidence was all indicative of guilt, it was expected that the majority of participants would find the

defendant guilty. The participants then responded to several demographic questions and were compensated for their participation.

Results

To test the order in which participants chose to progress through the evidence, the data were coded to indicate order of progression in line with Peters (2013). The piece of evidence that mock jurors chose to view first was coded as four, the second piece was coded as three, the third piece as two, and the fourth piece as one. Items that were not chosen to be viewed were coded as zero. An examination of the mean ranking for each piece of evidence indicates that, again, DNA evidence was most likely to be viewed first ($M = 2.95$, $SE = 0.11$), then video confession evidence ($M = 2.46$, $SE = 0.11$), eyewitness evidence ($M = 2.33$, $SE = 0.10$), and fingerprint evidence ($M = 2.18$, $SE = 0.10$). DNA evidence was on average more likely to be chosen first compared to video confession, eyewitness, and fingerprint evidence, with 46.49% of mock jurors viewing DNA evidence first. However, video confession, eyewitness, and fingerprint evidence were not found to be reliably different from each other in terms of rank and order ($ps > .05$). Because of this, a different form of analysis was used to further explore the order in which mock jurors progressed through the evidence.

Using the statistical program R, four decision trees were created to examine the relationship between the different types of evidence. Decision trees iteratively split the variables of interest into different groups until a homogenous group is found. The base of the decision tree is referred to as the root and is the variable that best separates the data based on the dependent variable (DV). If the split at the root does not lead to two homogeneous groups, that node is then split again, with each group generated from the split referred to as a leaf. Splitting continues until the leaves furthest from the root are homogenous or the groups are too small. Decision trees allow for paths to be generated to show what happens when variables are split certain ways. Because the goal of a decision tree is to show the path to different categories, it is necessary to define the DV. Although mock jurors were asked to give a verdict, there was little variability in responses as all of the evidence was indicative of guilt; 88.6% of participants said the defendant was guilty. Therefore, instead of using the verdict as the DV, different decision trees were created with each piece of evidence serving as the DV.

Because the mock jurors in this study were significantly more likely to choose DNA evidence first, the decision tree in which the DNA evidence is the root was determined to be the most plausible decision tree (Figure 1). The decision tree that begins
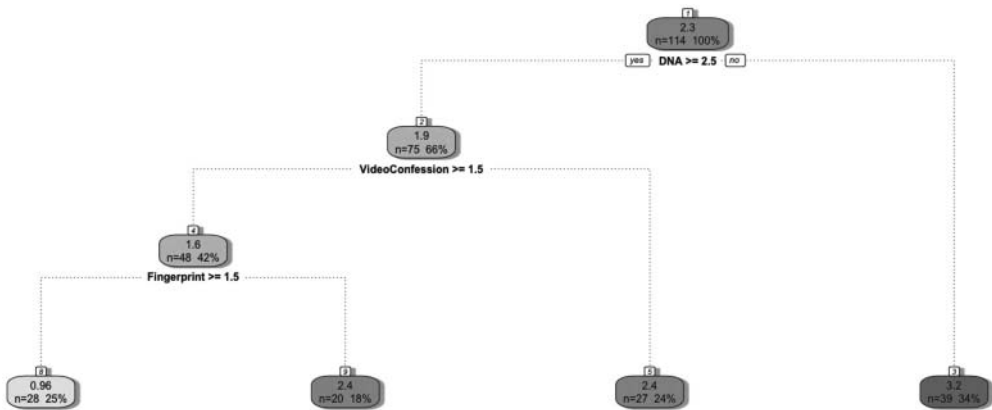

Figure 1.   Study 3 decision tree analysis with eyewitness evidence as the dependent variable.

with DNA evidence was created when eye-witness evidence was forced to be the DV. As can be seen in Figure 1, the tree shows that when mock jurors viewed the DNA evidence first, 66% of them then viewed video confession evidence, then fingerprint evidence, and lastly eyewitness evidence. When mock jurors viewed DNA evidence third, fourth, or not at all ($M_{rank} < 2.5$), 34% of them viewed the eyewitness evidence next. The tree also shows that there are two paths that lead to eyewitness testimony being chosen approximately third ($M_{rank} = 2.4$): through video confession or fingerprint evidence. Because eyewitness evidence was set as the DV, it was forced to be last and therefore could not come before fingerprint evidence (or DNA or video confession evidence). Disregarding the fact that eyewitness testimony was forced to be the DV, the reported decision tree analysis indicates that participants progressed through the evidence in the following order: (1) DNA, (2) video confession, (3) fingerprint, and (4) eyewitness.

Discussion

Data from Study 3 were analyzed using two different methodologies and found to tell somewhat similar stories. Specifically, both analyses indicate that on average DNA evidence was chosen first by mock jurors and video confession evidence was chosen second. The results are less clear when considering what pieces of evidence were chosen third and fourth. When looking at mean rankings, eyewitness testimony was chosen earlier than fingerprint evidence. However, the decision tree analyses indicate that fingerprint evidence may have been chosen before eyewitness testimony. This finding must be interpreted with caution, however, as eyewitness evidence was forced to be last in order for DNA evidence to be first. These results indicate that DNA evidence is the piece of evidence that mock jurors on average want to learn more about first at a homicide trial.

Thus, DNA may be the most important piece of evidence to mock jurors when deciding a verdict, as the majority of the participants in the present study selected to learn more about DNA evidence first. In a similar manner, it may be argued that a video confession is the second most important piece of evidence to mock jurors deciding the fate of a defendant on trial for homicide, as mock jurors on average chose to learn more about video confession evidence second. Likewise, eyewitness and fingerprint evidence appear to be the third and fourth most important pieces of evidence to mock jurors.

General Discussion

The present research examined first what evidence legal professionals reported to be common evidence at homicide trials, and then how important that evidence is to mock jurors when making verdict decisions. Using an inductive approach in which each study was built using the results of the previous one, the present series of studies is able to explore the importance of different evidence in deciding a verdict using a novel approach in Study 3. After surveying legal professionals and determining which evidence appears at homicide trials in Study 1, the generated list of evidence was used in Study 2. Across three studies (i.e., Study 2, the Study 3 Pilot, and Study 3) and two different methodologies, the results indicate that the mock jurors perceived DNA evidence to be most important piece of evidence when determining a verdict. The order of importance of the other pieces of evidence is, however, not consistent across the studies. Specifically, fingerprint evidence is ranked 2nd of 41 pieces in Study 2, 3rd of 10 pieces in the pilot study, and 3rd/4th of 4 pieces in Study 3; video confession evidence is ranked 8th of 41 pieces in Study 2, 4th of 10 pieces in the pilot study, and 2nd of 4 pieces in Study 3; and eyewitness testimony is ranked 10th of 41 pieces in Study 2, 2nd of 10 pieces in the pilot study, and 3rd/4th of four in Study 3.

Although the differences are not major, the following may explain the discrepancies. First, the differences may be due to the decrease in total evidence in each progressive study. Specifically, Study 2 involved 41 pieces of evidence, the pilot study involved 10 pieces, and Study 3 involved just 4 pieces. Differing numbers of evidence may lead to different types of comparisons, and thus to different importance levels. For example, eyewitness testimony may not have seemed as important when considered with 40 other pieces of evidence, but when in the context of 10 or less pieces of evidence, it may have seemed more important. Further, Study 2 is the only study in which mock jurors were asked to consider each piece of evidence as the only piece of evidence present at trial. In the proceeding studies, mock jurors were aware that there were 4 to 10 pieces of evidence for them to consider, and it is likely that they considered the evidence as a whole, instead of individually. Additionally, Study 2 and Study 3 differ in methodology; instead of asking mock jurors to rate the importance of each piece of evidence, as was done in Study 2, Study 3 asked mocked jurors to choose the evidence they wanted to learn more about first, second, and so on based on how important they perceived each piece of evidence to be. This novel methodology made it possible to obtain a measure of importance without asking mock jurors to quantify how important each piece of evidence was.

Although inconsistent in the exact order, the results do indicate that DNA, fingerprints, eyewitness testimony, and video confession evidence are important to mock jurors. As such, it seems important that future psycho-legal research should explore what it is about these pieces of evidence that causes them to be perceived as important, and if there are any factors that may alter their importance. This research can then better inform policy and legal professionals.

Limitations

The present series of studies is limited by the fact that the scenarios are specific to, and the evidence comes from, a homicide trial. However, this was done purposefully because it cannot be assumed that all types of evidence will be perceived similarly by jurors across case types (e.g., homicide versus drug trafficking). The present research is also in part limited by the small subset of evidence that was used in Study 3. Unfortunately, this was a requirement of the design to be able to obtain the required sample size. As mentioned earlier, the difference in the number of possible orders in Study 3 when going from 5 to 4 pieces of evidence is 96 (120 versus 24). These drastic differences encourage the use of fewer pieces of evidence. Nevertheless, the variation of the 4 pieces of evidence was still more than what is typical in the psycho-legal research. Design restrictions also did not allow the present research to be able to explore the importance of exculpatory evidence. Future research should examine how important mock jurors perceive exonerating evidence, or lack of important evidence, to be in making verdict decisions. It may be the case that DNA evidence is equally important to mock jurors whether or not it is present and damning. In other words, jurors may say a defendant is guilty if the DNA evidence is a match to the defendant, not guilty if the DNA is not a match, and not guilty if there is no DNA evidence. However, future research should test this.

Although the design of the present research utilizes an inductive approach and novel methodology, there may be an alternative explanation for the findings. Study 2 and Study 3 asked participants to indicate the importance of various pieces of evidence. However, the possibility that participants' prior knowledge of the evidence was influential in their decisions cannot be ruled out. For example, participants may have thought that DNA evidence was important, but they may also have known very little about it and chosen it first because they wanted to learn more about it. Thus, their choice of DNA evidence first may not have indicated that it was more important than video confession evidence. Alternatively, in Study 2, participants may

have reported certain types of evidence as less important (e.g., neuroimages) because of their unfamiliarity with the nature of the evidence itself or how it can be utilized in a criminal trial. Thus, their lower rating of importance of a piece of evidence may indicate their lack of knowledge as opposed to unimportance in verdict decisions. Future research should explore the possibility that prior knowledge of evidence may influence interpretations of importance.

Lastly, future research should conduct an analysis of the evidence presented at actual criminal homicide trials. Study 1 was designed to begin to learn about what evidence is common, but unfortunately there is no fieldwork indicating that the present results are indicative of actual trial evidence. Until a comprehensive and representative field study is conducted, the present research is the best proxy for a list of common homicide trial evidence.

Conclusions

The present research establishes the types of evidence that legal professionals indicate are commonly presented at trial, and explores which of these types are considered by mock jurors to be important. The results obtained expand the existing knowledge of how jurors make decisions during trial by starting with evidence that legal professionals report to be commonly presented at trial and using that evidence to determine what types of evidence are important to mock jurors when making verdict decisions. Four pieces of evidence were found to be most important in a homicide trial: DNA, fingerprint, video confession, and eyewitness evidence. Using more elaborate trial materials, researchers should examine how these four pieces (or the lack of these crucial pieces) can affect trial outcomes. More knowledge regarding the ways in which nuances in common trial evidence can affect verdicts can inform courtroom procedures and policy.

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