Juror Typologies and DNA Comprehension: Who Benefits from Jury Trial Innovations?

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Abstract
DNA evidence has become more frequently presented at trials over the last 2 decades. However, legal commentators have expressed concerns about jurors’ comprehension and ability to correctly utilize such evidence. The present study uses secondary data to explore the effects of trial innovations on improving comprehension among jurors most likely to have difficulty understanding and applying DNA evidence.

Introduction

Scientific Evidence and Jury Comprehension
Numerous studies suggest that evidence strength is the primary factor influencing a jury’s verdict. Although jurors tend to be reasonably competent in handling scientific evidence, they often make systematic errors when complex evidence or statistics are presented (Hans et al., 2007).

DNA Evidence and Trial Innovations
DNA evidence is typically accompanied by complex testimony conveying information such as the method of generating population frequencies, match criteria and probabilities, as well as laboratory errors and error rates. Although this evidence may have high probative value, the legal community has expressed growing concern regarding jurors’ ability to comprehend such evidence. However, courts have implemented a variety of trial innovations (e.g., note taking and question asking) to facilitate jurors’ ability to process and retain information.

Extant research suggests that these innovations may have mixed results on jury comprehension of complex trial evidence (Dann, 2004). Moreover, it is unclear whether some jurors are more likely to benefit from these aids than others, particularly in cases involving DNA evidence.

Previous Research

Trial Innovation Effectiveness
Dann et al. (2003) conducted an experimental study to measure the effects of jury trial innovations. Mock jurors were randomly assigned to eight-person juries in one of six experimental conditions that used different trial innovations (described in the accompanying Independent Variables section). All juries watched the same videotaped armed robbery mock trial based on an actual case, State v. Peppard, 776 A.2d 1091 (Conn. 2001).

Findings
Dann et al. (2003) found trial innovations to be ineffective. However, DNA evidence comprehension was generally higher after deliberation. Moreover, comprehension was positively associated with jurors’ education level and the number of math and science courses taken. Yet, it was lower among those with greater reservations about science and suspicions of mitochondrial DNA evidence contamination.

Current Study
The current study uses secondary data collected by Dann et al. (2003) to explore whether trial innovations are effective for improving comprehension among specific types of jurors in cases where DNA evidence is presented.

Methods
We selected a subsample of 445 jurors likely to have difficulty comprehending mitochondrial DNA evidence (based on Hans et al.’s [2011] typology created from Dann et al.’s [2003] dataset). Hans et al. (2011) found greatest comprehension of mitochondrial DNA evidence among white women, as well as highly educated jurors, those with a greater history of taking math and science courses, those with fewer reservations about science, and those with fewer concerns about mitochondrial DNA evidence contamination. We excluded participants with these characteristics from Dann et al.’s (2003) sample.

Independent Variables
- **Control Condition (n = 70)**
- **Note taking (n = 79)**
- **Question asking by jurors and note taking (n = 69)**
- **Mitochondrial DNA checklist (n = 71)**
- **Multipurpose juror notebook (n = 77)**
- **All innovation (n = 75)**

Dependent Variables
- **Support for innovations**
  - 1 (strongly oppose to 10 (strongly in favor)
- **Comprehension Scale**
  - 8 (no improvement) to 10 (full improvement)
- **Verdict confidence level**
  - 1 (not confident) to 10 (very confident)

Notes: 1. Mitochondrial DNA checklists used to guide jurors through complex mitochondrial DNA evidence by asking a series of questions. 2. Multipurpose juror notebook contained copies of the two experts’ slides, the mitochondrial DNA checklist, and glossary of relevant DNA terms (see Dann et al., 2003).

Results

Verdict Confidence
The mean verdict confidence level was high (8.51 on a 10-point scale). In addition, verdict confidence was significantly correlated with scores on the DNA Comprehension Scale (r = -0.12, p < .05). Jurors with greater evidence comprehension were more confident in their verdict.

However, a one-way ANOVA yielded no effect of experimental condition on confidence level (p = .44).

Interestingly, even though comprehension was not improved, and overall comprehension was moderate, jurors were still confident of their verdict.

Conclusions

General Findings
- Jurors were generally favorable to most innovations.
- Trial innovations are not effective at improving comprehension rates among jurors likely to have the greatest difficulty understanding mitochondrial DNA evidence.
- Innovations did not impact verdict confidence.

Limitations and Policy Implication
- Most innovations were not examined independently -- All conditions included note-taking.
- Note-taking may distract jurors from paying attention to testimony, and interfere with the effectiveness of other trial innovations.
- Testimony complexity was not manipulated. Innovations may be more effective if accompanied by simplified evidence presentation.