

# EFFECTIVENESS OF BAYESIAN INSTRUCTIONS AS A FUNCTION OF TRIAL VALENCE AND SEROLOGY EVIDENCE: A BRIEF REPORT

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## Abstract

*The legal community has become increasingly concerned about jury difficulty in effectively deliberating probabilistic evidence (Hall & Knowles, 2000; Smith, Penrod, Otto, & Park, 1996). Solutions to this dilemma include recent developments of specialized instructions in lieu of standard pattern instructions. An exemplar of these specialized instructions is based on Bayes' Theorem and is designed to teach jurors how to effectively weigh quantitative as well as qualitative evidence when deliberating criminal cases. However, previous laboratory studies assessing the usefulness of the Bayesian jury instructions have been inconclusive (Smith et al., 1996). A possible explanation for these findings may be that the trial transcripts were too neutral in qualitative terms, perhaps not reflecting a realistic courtroom environment. The objective of our study was to explore the effectiveness of Bayesian jury instructions as a function of varied qualitative data coupled with serology evidence.*

## Method

Three hundred ninety-six undergraduates served as mock jurors. We employed a 2 x 4 x 3 randomized design: Trial Valence, Serology Evidence, & Instructions. Jurors read a neutral or negative trial transcript and rated mid-trial probable guilt of the defendant from 0 to 100. After presenting one of four blood serology conditions [none, low (62%), medium (77%), or high probability evidence (93%)], we then presented jurors with no instructions, pattern instructions, or Bayesian instructions. Again, jurors assessed the defendant's probable guilt. A voir dire questionnaire excluded 38 nonviable jury members. We calculated a percentage change score from mid-trial to final guilt assessment for each juror and analyzed the data using a multifactor analysis of variance.

## Results

Figure 1 illustrates a significant main effect for the serology evidence,  $F(3, 334) = 4.00, p < .01$ . No and high serology conditions yielded lower and higher guilt ratings respectively than any other conditions (Tukey Test). Curiously, the low and medium conditions did not differ. Another interesting observation was a near significant trend for the type of instructions,  $F(2, 334) = 2.40, p = .093$ , with Bayesian instructions yielding scores three times as high as pattern or no instructions. Although trial valence and all of the interactions were ns for percentage change scores, a separate analysis for the final guilt assessments yielded a significant effect for trial valence  $F(1, 334) = 8.92, p < .005$ .

## Discussion

Jurors attributed higher guilt levels with negative trial transcripts. Our data lend support for using Bayesian instructions when deliberating quantitative and qualitative evidence. However, our most interesting finding is what we refer to as the "clotting effect." Perhaps jurors can effectively deliberate with high probabilities, but with low or medium probabilities they experience difficulty, failing to differentiate levels. Jury composition and individual juror differences may be contributing to this effect, and we propose Machiavellianism, a personality trait measuring ability to manipulate and deceive (Christie & Geis, 1970), as a good starting point for investigating this hypothesis. Our current research is examining the role of Machiavellian (Mach) levels in the ability of jurors to effectively deliberate both qualitative and quantitative evidence. We theorize that high Machs may focus more on qualitative evidence during deliberation and return higher final guilt ratings than low Machs, and that such investigation may provide insight into the clotting effect. In any event, data reported herein reinforce the necessity of providing specialized instructions when low or medium probabilistic evidence is introduced to jurors.

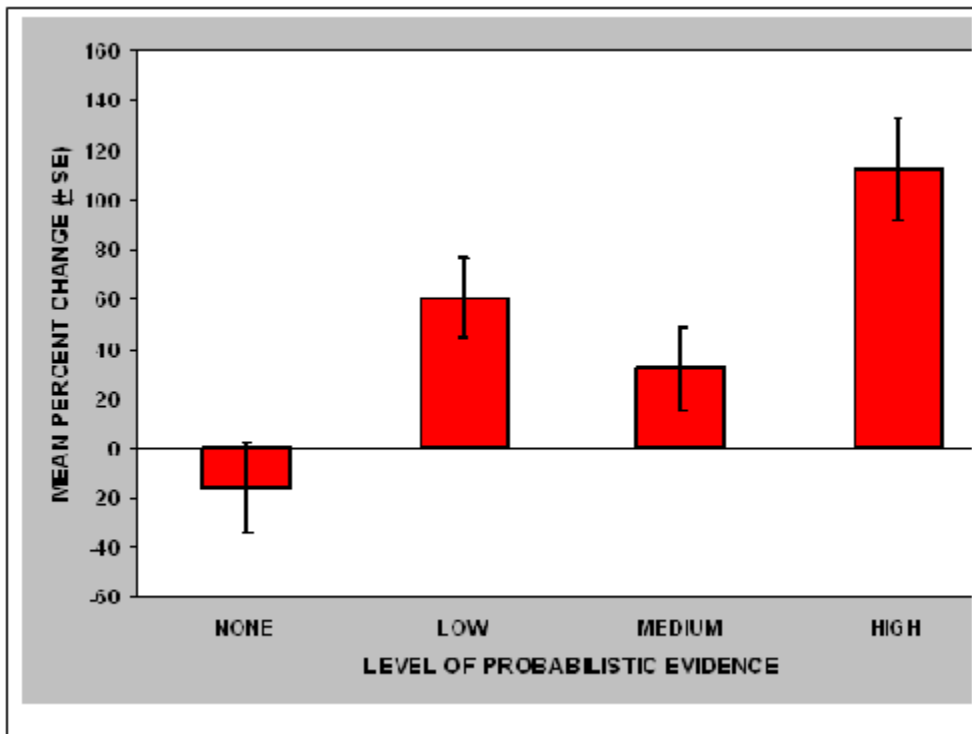


Figure 1. Mean percent change scores ( $\pm$ SE) for each level of probabilistic serology evidence.

## References

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### **Biographical Sketches**

Kathleen Hall is currently Assistant Professor of Psychology at Missouri Southern State University. Todd Wiebers is Professor & Chair of Psychology at Henderson. They presented portions of this paper at the 2001 meeting of the Midwestern Psychological Association.

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