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THE EFFECT OF CLINICAL VS. SCIENTIFIC EXPERT TESTIMONY ON MOCK JUROR DECISION-MAKING IN CAPITAL SENTENCING

by

Daniel A. Krauss

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As members of the Final Examination Committee, we certify that we have read the dissertation prepared by Daniel A. Krauss entitled The Effect of Clinical vs. Scientific Expert Testimony on Mock Juror Decision-Making in Capital Sentencing and recommend that it be accepted as fulfilling the dissertation requirement for the Degree of Doctor of Philosophy.

Bruce Sales
Date 4/16/95

Judith Becker
Date 4/16/95

Jamie Rafter
Date 4/16/95

Gary Schwartz
Date 4/16/95

Joel Dvoskin
Date 4/16/95

Final approval and acceptance of this dissertation is contingent upon the candidate's submission of the final copy of the dissertation to the Graduate College.

I hereby certify that I have read this dissertation prepared under my direction and recommend that it be accepted as fulfilling the dissertation requirement.

Dissertation Director
Bruce Sales
Date 4/16/95
STATEMENT BY AUTHOR

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SIGNED: David A. Moss
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ABSTRACT

The Supreme Court and many state courts have assumed that jurors are capable, with the aid of adversary procedures (i.e., cross-examination and competing experts), of differentiating less accurate clinical opinion expert testimony (testimony based solely on a clinician's years of experience within the field) from expert testimony based on more sound scientific footing, and appropriately weighing these two types of testimony in their decisions. Psychological literature on both persuasion and jury decision-making suggests, however, that this assumption is dubious. Using a simulated capital sentencing hearing based on Texas law, this experiment investigated whether mock jurors are more influenced in their decision-making by clinical opinion expert testimony or actuarial expert testimony (testimony based on standardized risk assessment instrument). The effectiveness of different types of adversary procedures in eliminating the influence of expert testimony was also investigated. Results suggest that jurors are more influenced by clinical opinion expert testimony than they are by actuarial expert testimony, and this preference for clinical opinion expert testimony remains even after the presentation of adversary procedures. Limited empirical support was found for the notion that various types of adversary procedures will have differential impact on the influence of expert testimony on juror decisions. The legal and policy implications of these findings are discussed.
INTRODUCTION

The concept of dangerousness and its prediction play a significant role in many aspects of the legal system. Assessments of dangerousness affect not only civil and criminal litigation outcomes (i.e., involuntary civil commitment of individuals (O'Connor v. Donaldson, 1975), psychotherapists' liability for their patients' actions (Tarasoff v. Regents, Univ. of Cali., 1976), post-jail detention of sexual predators (Kansas v. Hendricks, 1997), sentencing of criminal defendants, but influence other important arenas of legal decision-making as well (e.g., pre-trial detention of criminal defendants (U.S. v. Salerno, 1987), parole of criminal defendants, and deciding whether a criminal defendant lives or dies (Barefoot v. Estelle, 1983)).

Psychologists and psychiatrists in increasing numbers have offered themselves as experts in estimating future dangerousness or future violence (Golding, 1990; Melton, Petrila, Poythress, & Slobogin, 1997; Monahan & Steadman, 1994; Showalter 1990; Shuman & Sales, in press), and the courts, including the United States Supreme Court (see Estelle v. Smith, 1981), have uniformly recognized certain mental health practitioners (psychologists and psychiatrists) as experts in this area. Yet it is not clear that mental health practitioners have scientific warrant or special expertise in making these predictions. Empirical research (e.g., Monahan 1981; Monahan 1984; Monahan & Steadman 1994;

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1 Future dangerousness of a criminal defendant is an important consideration in eight states' capital sentencing provisions, and in Oregon and Texas a finding of dangerousness is an essential requirement for the imposition of the death penalty (Worrell, 1987).
Otto 1992) and naturalistic experiments (see Marquart, Ekland-Olson, & Sorensen, 1989) have demonstrated that mental health clinicians are not particularly accurate in making dangerousness assessments. Furthermore, many legal scholars have posited that jurors place undue weight on a mental health practitioner’s unreliable dangerousness predictions because “...a scientific witness has a special aura of credibility.” (Imwinkelreid, 1981 at 37) The unreliability and potential bias of mental health clinicians’ dangerousness predictions have caused many critics within and outside the fields of psychology and psychiatry to charge that mental health professionals are incapable of offering truly “expert” testimony in this area, and that those practitioners that do testify are engaged in unscientific and unethical practice (Lavin & Sales, 1998; Faust & Ziskin, 1988).

In a landmark case exploring the validity of mental health practitioners’ predictions of dangerousness, Barefoot v. Estelle 463 US 880, 103 Sct 3383 (1983), the United States Supreme Court refused to overturn the death sentence of a criminal defendant in a Texas trial in which dangerousness testimony was offered. Under Texas’ state law, if the defendant is to be executed, the jury has to unanimously find beyond a reasonable doubt that “...there is a probability that the defendant would commit criminal acts of violence that would constitute a continuing threat to society” (Tex. Crim. Proc. Code art.

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2 A recent study has demonstrated that clinicians may be fairly accurate in predicting dangerousness when they are confident of their dangerousness assessment and when their prediction concerns an inpatient psychiatric population over a relatively short period of time (McNeil, Sandberg, & Binder 1998). This research does not, however, support the idea that clinicians are accurate in predicting the long-term dangerousness of a criminal defendant.
The defendant's fourteenth amendment due process challenge was based on the potentially constitutionally inappropriate admission of two clinicians' predictions of his future dangerousness. The clinicians testified that there was "100% chance" that the defendant would continue to be dangerous and that they were absolutely certain their prediction was correct (Barefoot v. Estelle, 1983).

An amicus curiae brief submitted by the American Psychiatric Association served as the evidentiary justification for the defendant's constitutional claim. The brief detailed the then existing empirical research on the accuracy of mental health practitioners' dangerous predictions, indicating that mental health clinicians erred in their predictions two out of three times (Amicus Curiae Brief for the American Psychiatric Association, in Barefoot v. Estelle, 1983, citing Monahan (1981) who found in his review of the five then existing studies on clinical predictions of dangerousness that clinicians making these decisions had error rates between 65-85%). The United States Supreme Court

3 At the time of the Barefoot decision, in order for the defendant to receive the death penalty in Texas, two other questions must also have been unanimously answered in the affirmative by a jury. These questions pertained to: (1) whether the conduct of the defendant that caused the death of the deceased was caused deliberately and with the reasonable expectation that the death of the deceased or another would result and (2) if raised by evidence, whether the conduct of the defendant in killing the deceased was unreasonable in response to provocation, if any, by the deceased (Tex. Crim. Pro. Code art 3701b (1985)). These questions were not in issue in the Barefoot case. Research has demonstrated that the dangerousness question is the pivotal issue in the vast majority of death penalty cases (Marquart et al., 1989; Constanzo & Constanzo, 1994). The above Texas death penalty instructions were later found unconstitutional by the Supreme Court in Penry v. Lynaugh, 1989, and have since been modified by the Texas legislature to allow for the presentation of mitigation evidence by the defendant. However, the current Texas death penalty instructions still require a showing of dangerousness before a defendant can be executed.
unconvinced by this evidence, upheld the death sentence of the defendant. Justice White writing for the majority stated that "the suggestion that no psychiatrist’s testimony may be presented with respect to the defendant’s dangerousness is somewhat like asking us to disinvent the wheel" (Barefoot v. Estelle p. 3396), and that "we are not persuaded that such testimony is almost entirely unreliable and that the fact finder and the adversary system will not be competent to uncover, recognize, and take due account of its shortcomings." (Barefoot v. Estelle p. 3398) (emphasis added).

The Barefoot decision not only did not end, but apparently has fueled the controversy surrounding mental health practitioners’ clinical predictions of dangerousness. This research was intended to explore how the factfinder and the adversary system deal with and take due account of the shortcomings of expert testimony on dangerousness. To accomplish this goal, this project was designed to: (1) examine the critical empirical assumption (noted in bold above) underlying the Court’s pronouncements in Barefoot, (2) inform the psychological and legal literature on the impact of expert testimony on juror decision-making, and (3) influence legal policy regarding the admissibility of expert testimony and scientific evidence. Specifically, this project empirically investigates: (1) whether mock jurors are influenced by expert testimony on dangerousness in capital sentencing, (2) whether mock jurors differentially rely on clinical opinion expert testimony in comparison to actuarial based expert testimony in their decision-making, (3) whether

\[\text{Actuarial prediction refers to any estimation method that utilizes combinations of}\]
traditional adversary procedures (cross-examination and a competing expert) can remove bias caused by unreliable expert testimony offered by a clinical expert, and (4) by what decisional processes the different types of expert testimony affect juror decision-making.

Before addressing the methodology of this study, the legal and psychological scholarship that pertains to these issues will be discussed. The relevant aspects of the legal literature on the admissibility of expert testimony and scientific evidence, the social and cognitive psychological literature on expertise and its effects on jury decision-making, the human judgement and decision-making literature on cognitive biases and clinical predictions of dangerousness, and the recent developments in the risk assessment literature of actuarial dangerousness prediction instruments will be reviewed.

**Expert Testimony and the Admissibility of Scientific Evidence**

Because of the inaccuracy of clinically based predictions of dangerousness and their potential for misuse by the jury, legal and scientific controversy has surrounded the evidentiary admissibility of these predictions both before and subsequent to the *Barefoot* decision (Melton et al., 1997; Shuman & Sales, in press; Faust & Ziskin, 1988). Prior to *Barefoot*, several legal commentators suggested that clinicians' inaccuracy in predicting dangerousness should prohibit the court from admitting this testimony because it was not scientifically based and it was prejudicial to the defendant (Ennis & Litwack, 1974; Giannelli, 1980; Morse, 1978). More recently, Shuman and Sales (in press) argued that empirically verified risk factors taken from research on large groups of dangerous individuals.
mental health clinicians' dangerousness predictions fail to meet the newly developed scientific evidentiary standards announced in Daubert v. Merrell Dow Pharmaceuticals Inc., 504 US 579 (1993). In order to understand these criticisms, it is first necessary to examine the Federal Rules of Evidence which govern the admissibility of evidence, expert testimony, and scientific evidence in 38 states, including Texas (Imwinkelreid, 1994).

Under the Federal Rules of Evidence, evidence is admissible if it is relevant and not prejudicial (Fed. R. Evid. 401 & 403). Relevant evidence is any evidence that makes a fact in issue more or less probable while non-prejudicial evidence is evidence which is more probative than it is prejudicial. For example, in most circumstances, a criminal defendant’s past crimes have been judged to be prejudicial and are inadmissible in the determination of whether the defendant has committed the act for which he or she is being tried. Courts have assumed that the admission of such evidence will cause the trier of fact to place undue weight on the defendant’s past criminal behavior rather than the defendant’s actual behavior in deciding guilt in the present case.

Additional evidentiary constraints are placed on the admission of expert testimony because courts have reasoned that jurors lack the requisite knowledge to make an intelligent decision on this evidence, and as result, may place excessive weight on it regardless of its veracity (Strong, 1995; Daubert v Merrell Dow Pharm. Inc., 1993). Individuals presenting expert testimony and scientific evidence have been granted broader

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5 This evidence, however, may be admissible for evidentiary purposes other than showing a defendant’s guilt. See Fed R. Evid 404(b).
leeway in presenting their testimony. Unlike other witnesses, experts are allowed to offer opinions concerning behavior they have not directly observed and to offer opinions not based on admissible evidence (see Fed R. Evid. 702 & 703). Expert testimony, however, is only admissible if it is evidence that will assist the jury to understand other evidence or determine an important fact (Fed. R. Evid. 702).

Similarly, expert testimony on scientific evidence has been subject to heightened scrutiny by federal and state courts (Strong, 1995). Prior to 1993, a wide variety of standards were used to adjudicate the admissibility of expert testimony presenting scientific evidence (Strong, 1995). The most commonly used of these tests was the Frye test, based on a 1923 Washington D.C. circuit court case concerning the admission of an interpretation of an early polygraph (Melton et al., 1997). The Frye court ruled that expert testimony on scientific evidence is admissible if it is "sufficiently established to have gained general acceptance in the particular field to which it belongs" (Frye v. United States, 293 F. 1013 (D.C. 1923)). By this standard, it is not clear whether clinical predictions of dangerousness would be admissible. The Frye test, however, has not served as an effective bar to the admission to clinical predictions of dangerousness by mental health professionals (Melton et al., 1997), and some have argued that this standard has not actually been applied to clinical predictions of dangerousness (Shuman, 1994).6

In Daubert v. Merrell Dow Pharmaceutical Inc., 504 US 579 (1993), the United

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6 Shuman contends that courts have admitted clinical predictions of dangerousness based on relevancy and prejudice standards, and not subjected this testimony to the more rigorous Frye standard. Further elucidation of this argument is provided later in this paper.
States Supreme Court interpreted rule 702 of the Federal Rules of Evidence as imposing additional requirements on the admissibility of expert testimony concerning scientific evidence. The *Daubert* court emphasized that evidentiary reliability or scientific validity was the major concern in evaluating scientific evidence, and that the judge held the responsibility for evaluating the evidentiary reliability of the evidence before it was presented to the jury. The Court suggested judges consider four factors in determining the admissibility of expert testimony regarding scientific evidence: (1) whether the theory or hypothesis is falsifiable or testable and has been tested, (2) whether the evidence has been subject to peer review, (3) whether there is a known or potential error rate for the evidence, and (4) whether the technique or method is generally accepted within the field (*Daubert v. Merrell Dow Pharm. Inc.*, 1993).

The exact impact of the *Daubert* decision on the admissibility of expert testimony evidence is still unknown (Goodman-Delahunty, 1997). Although 38 states have adopted the Federal Rules of Evidence, none are bound by the *Daubert* decision because it involves an interpretation of an evidentiary rule and does not involve a constitutional issue (Goodman-Delahunty, 1997; Melton et al., 1997; Shuman & Sales, in press). As of 1997, five states had expressly rejected *Daubert*, eleven had adopted it, and the rest of the states were still deciding (Goodman-Delahunty, 1997; Melton et al., 1997). Further clouding the situation is the inexact relationship between social scientific evidence, expert opinion
testimony offered by clinicians, and the scientific evidentiary rules of admissibility. The Daubert case involved the admissibility of novel statistical methodology and did not expressly address social science research. Some have argued that scientific evidentiary standards are only applicable to "hard" science evidence while rules of relevancy and prejudice should control the admissibility of "softer" social science data (Goodman-Delahunt, 1997; Moore v. Ashland, 1998). Many courts have explicitly rejected this proposition; since 1995, 17% of the federal cases mentioning Daubert have examined social science research (Richardson, Ginsburg, Gatowski, & Dobbin, 1995, but see Moore v. Ashland, 1998 for a review of courts that have not applied Daubert criteria to social science research). Additionally, several courts have refused to admit expert testimony on the inaccuracy of eyewitness identification because it failed to meet Daubert's criteria for admissibility while others courts have remanded cases back to trial courts to apply Daubert standards to the testimony of these same experts (Penrod, Fulero, & Cutler, 1995).

With regard to the applicability of Daubert admissibility requirements to expert clinical opinion testimony, the relationship is even less clear than with social science research. Shuman & Sales (in press) argued that some courts, including the Supreme Court, have made a distinction between expert clinical opinion testimony and expert

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7 Expert clinical opinion testimony refers to expert testimony which is offered by a member of the scientific community but is not necessarily based on any empirical research. This expert testimony generally offered by clinicians reflects their clinical judgement regarding an issue with regard to an individual person and may or may not be supported by any current scientific study.
They contend that clinical opinion testimony (i.e., testimony like that which was presented in Barefoot--expert testimony based on the clinician’s years of experience rather than scientific evidence or research) has not been subject to the more stringent scientific evidence standards. There is persuasive evidence in Florida and California for their claims (see State v. Flanagan, 1993; People v. McDonald, 1984). In both State v. Flanagan, 620 SO2d 827 (Fla. 1993) and People v. McDonald 690 P2d. 709 (Cal. 1984), state courts have explicitly held that expert clinical opinion testimony does not have to meet scientific evidence admissibility standards to be admitted in trial (e.g., Frye or Daubert). These courts have assumed that jurors will weigh expert clinical opinion evidence differently than expert testimony based on scientific evidence in reaching decisions. In contrast to these rulings, Shuman and Sales’ contention that the United States Supreme Court implicitly endorses this distinction between clinical opinion expert testimony and scientific expert testimony is more controversial.

8 There is some support for their distinction in the Daubert case. The United States Supreme Court was explicit in stating that the Daubert criteria only applied to scientific evidence and did not apply to technical or specialized knowledge (also grounds for expert testimony under rule 702). It is possible that the court might view clinical opinion testimony as not being scientific evidence and subject it to different standards of admissibility. At present, this question remains unanswered. The Supreme Court is currently reviewing a case, Carmichael v. Samyang, 1997, which addresses the applicability of Daubert criteria to the expert testimony of a tire failure expert. The resolution of this case may answer both the questions of whether Daubert requirements apply to clinical opinion testimony and if Daubert applies, which of its’ requirements should be used in evaluating this type of expert testimony.

9 They claim that the United State Supreme Court’s failure to address the Texas’ Supreme Court’s application (or non-application) of any scientific evidence standard to the clinical expert testimony presented in Barefoot and the Court’s failure to mention
Other courts seemed to have adopted an intermediate position in applying *Daubert* to expert testimony (see *Moore v. Ashland*, 1998 for a review of different jurisdictions policies). These courts, including Texas' appeal courts, have applied a modified *Daubert* standard to both clinical opinion testimony and "softer" scientific testimony. These jurisdictions have applied some but not all of the *Daubert* criteria to determine admissibility of the proffered evidence or have created new criteria to assess the reliability of the proffered information (*Moore v. Ashland*, 1998). Under the Texas scientific evidence admissibility standard, the appropriate *Daubert* questions for clinical opinion testimony are: (1) whether the field of expertise is a legitimate one, (2) whether the subject matter of the expert's testimony is within the scope of that field, and (3) whether the expert's testimony properly relies upon and/or utilizes the principles involved in the field (*State v. Nenko*, 1998). Whether the Texas *Daubert* standard will remain as it is or

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*Barefoot* explicitly in *Daubert*, is implicit support for their position. There is, however, strong evidence for an alternative interpretation of the Court's rulings. The failure of Supreme Court to mention the *Barefoot* case in the *Daubert* decision may have occurred because *Daubert* involved an interpretation of the Federal Rules of Evidence while *Barefoot* involved constitutional review of Texas' own evidentiary admissibility standard. Generally, the United States Supreme Court has no jurisdictional basis for reviewing the evidentiary rulings of a state court unless the state court ruling raises questions of federal statutory law or a constitutional issue. As a consequence, the Supreme Court in *Barefoot* did not consider whether the state court evidentiary standard had been applied properly in admitting the expert clinical opinion testimony; the only question before the court was whether the state court ruling to admit the testimony violated the defendant's constitutional rights (see *Barefoot v. Estelle*, FN 6 for explicit support of this interpretation). Given the jurisdictional limits faced by the Supreme Court, a highly plausible conclusion is that the Supreme Court has not yet made a clear distinction between the evidentiary admissibility standard for clinical opinion testimony and more scientific testimony.
whether the Texas Supreme Court will modify it in accordance with a future United States Supreme Court stance remains to be seen.

Regardless of the current state of the law, Shuman & Sales’ argument identifies circumstances in which psychological testimony could lead to unjust outcomes. Their analysis demonstrates that inaccurate expert clinical opinion testimony based solely on a clinician’s years of experience could be admitted into evidence at trial under the more lenient relevancy or a modified *Daubert* standard while more scientifically accurate evidence might be excluded from the same trial because of its failure to meet the more stringent *Daubert* or *Frye* requirements (Shuman & Sales, in press). With respect to predictions of dangerousness, this evidentiary paradox would permit courts to allow mental health clinicians to freely offer dangerousness predictions based on their years of clinical experience while at the same time prohibiting more accurate dangerousness predictions.

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10 This statement assumes that scientific evidentiary rules apply to sentencing. Some jurisdictions, including Texas, apply their evidentiary rules to the sentencing process (Kelly, 1992). However, not all states do. Jurisdictions differ widely in this regard. Generally, sentencing hearings allow a greater breadth of information to be presented than is allowed during the trial. As a consequence, it is possible that some jurisdictions might not impose strict scientific evidence standards (e.g., *Daubert* or *Frye*) on scientific evidence presented during sentencing. Irrespective of current practices, a strong case could be made for the imposition of scientific evidence standards in sentencing when capital punishment is an issue.

11 A full discussion of the inaccuracies of clinical opinion expert testimony, especially in the area of dangerousness prediction, will be explored in Section III of this paper. This section will also highlight research suggesting that actuarial predictions of dangerousness are likely to be more accurate than clinical ones.
assessments based on scientific research and data. The first part of this paradox is already occurring in Texas. In State v Nenno, expert clinical opinion testimony on the future dangerousness of a child molester was admitted at a capital sentencing hearing under a modified Daubert admissibility standard. The court reasoned that the clinician’s prediction of future dangerousness was reliable even though there was no evidence presented that the clinician or any clinician had the ability to predict future dangerousness of this defendant or other child molesters (State v. Nenno, 1998).

This admissibility practice by courts could lead to biased outcomes unless, as the McDonald and Flanagan courts assume, jurors are capable of: (1) distinguishing expert clinical opinion testimony from expert testimony based on scientific evidence when they have the opportunity to hear such evidence and (2) weighing expert clinical opinion testimony differently than other expert scientific testimony. Under these circumstances, unjust verdicts could only be avoided if adversary procedures (cross-examination and a competing expert) could correct this potential juror bias. Whether jurors can perform (1) and (2) and, if not, whether the adversary process can correct for this bias are unanswered empirical questions and the focus of this research study. Empirical studies on expert testimony and juror decision-making suggest however, that assumptions (1) and (2) are

12 To combat this problem, Shuman & Sales propose that expert clinical opinion testimony must meet the higher Daubert or Frye standard when scientific evidence concerning the reliability of the expert opinion is available. This is the case with regard to clinical predictions of dangerousness, and Shuman & Sales would argue that such testimony should not be admitted because it cannot currently meet the Daubert or Frye standard.
Research on Expert Testimony's Influence on Juror Decision-Making

Psychological empirical research on expert testimony and juror decision-making has been primarily influenced by two theoretical perspectives: heuristic models of persuasion and Hastie, Penrod, and Pennington's story model of juror decision-making. Each has contributed important ideas to the understanding of jurors' perception of and use of expert testimony in reaching verdicts. The heuristic model of persuasion implies that juror decision-making may be unduly influenced by the credentials of an expert rather than by the quality of his or her testimony (Brekke & Borgida, 1992; Cooper, Bennet, & Sukel, 1996; Schuller & Vidmar, 1992). The theory posits that persuasiveness of a message is usually a product of the quality of the argument (Golberg, 1968; Petty & Caccioppo, 1986). However, when the message is difficult to comprehend or complex, individuals rely on cognitive short-cuts or heuristics to evaluate the value of the communication (Chaiken, 1987; Petty & Caccioppo, 1986). This peripheral processing or heuristic short-cut focuses the individual on the perceived expertise and trustworthiness of

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13 There are, in actuality, two major distinct heuristic models: Chaiken's heuristic model of persuasion and Petty and Caccioppo's elaboration likelihood model of persuasion. For simplicity, they are treated here as one model because they share similar predictions concerning expert testimony's influence and the mechanism by which this influence occurs. Both models suggest that complicated information is evaluated peripherally through heuristic short-cuts while less complex information is interpreted centrally by focusing on the content of the message.

14 The models are not mutually exclusive, and expert testimony's influence on juror decision-making is likely a product of both models.
the communicator rather than the quality of the message. In the courtroom, it is hypothesized that a heuristic method of evaluation is used to interpret expert testimony or scientific evidence because of the testimony's complexity and jurors' pre-existing willingness to rely on the opinion of experts (Cooper, Bennett, & Sukel, 1996; Schuller & Vidmar, 1992).

Hastie, Penrod, & Pennington's story model (1981) suggests a more global view of expert testimony. Expert testimony influences juror decision-making through its relationship with the stories the juror constructs about other evidence and testimony presented during the trial. The fit between the expert testimony, the juror's preexisting views concerning the issues, and the juror's final story determines the weight placed on the proffered expert testimony in decision-making. As a consequence, for expert testimony to be effective it must be specifically linked to other evidence in the trial (Sundby, 1997).

Both the story model and the heuristic model of juror decision-making have garnered empirical support. Empirical research on expert testimony and juror and mock juror decision-making has demonstrated that psychological expert testimony strongly affects final outcomes when it is presented on: (1) the fallibility of eyewitness identifications (Cutler, Penrod, & Dexter, 1989; Fox & Walter 1986; Hosch, Beck, McIntrye, 1980; Loftus 1986; Wells, 1986; Wells, Lindsay, & Tousignant, 1980), (2) clinical syndromes (i.e., battered wife syndrome, rape trauma syndrome, child sexual abuse

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15 Although see Sundby (1997) for a more skeptical view of the influence of expert testimony on juror decisions in capital sentencing.
syndrome, and repressed memory syndrome) (Brekke & Borgida, 1988; Brekke, Enko. Clavet, & Seelau, 1991; Ewing, 1987; Gaboras, Spanos, & Joab, 1993; Kovera, Gresham, Borgida, Gray, & Regan, 1997; Schuller & Vidmar, 1992; Walker, 1990 but see Finkel. Meister, & Lightfoot, 1991; and Follinstad, Polek, Hause, Deton, Bugler, & Conway 1989 for evidence of an indirect effect of expert testimony on juror decisions), (3) insanity (Rogers, Bagby, & Chow, 1992; Rogers, Bagby, Crouch, & Cutler, 1990; Wursten. 1986), and (4) future dangerousness of a defendant (Morier, 1987). Although expert testimony can affect juror thinking, the mechanism by which it accomplishes this is poorly understood. Psychological empirical research on expert testimony has, nonetheless, successfully highlighted a number of substantive factors that are important in influencing juror decision-making.\textsuperscript{16} These factors have bearing on the methodology of this study.

The complexity of the testimony presented by the expert and the expert’s credentials have been found to affect mock juror decisions (Cooper et al., 1996; Wursten. 1986). As predicted by the heuristic model, the complexity of the expert testimony given is directly related to the juror’s reliance on an expert’s credentials in reaching a decision, and juror’s decisions are not related to the content of the expert’s testimony (Cooper et al., 1996). This effect may occur even when the expert testimony is not particularly complex (i.e., where supposedly simple non-complex testimony is difficult to understand).

\textsuperscript{16} The social psychology literature has also documented a number of physical factors (i.e., attractiveness, age, demeanor, etc) that affect the persuasiveness of an expert, but they will not be discussed here. Attempts were made to control these factors in this experiment.
Wursten (1986), in a simulated insanity trial, found that jurors were influenced more by medical expert testimony than by psychological expert testimony even when the testimony presented by each expert was identical in form and complexity. Consequently, the level of complexity of testimony and the credentials of the expert should be controlled in experiments not directly examining these issues, and were controlled in the present experiment.

The type of information presented by the expert may also influence the persuasiveness of the testimony. Case study information (i.e., information that originates from one case or one event) has been demonstrated in a number of persuasion experiments to be more influential in decision-making than more statistically based information (i.e., information that is presented as a statistical summary of a large number of events) (O'Keefe, 1994). The cause of this bias is unclear. Individuals may have a special affinity for case information, a distrust of statistics, or bias against complex information, but this effect occurs even though case specific information is often more inaccurate than statistical information. This experimental finding is particularly important in the present study because this experiment compares more case specific testimony (i.e., clinical opinion testimony) to more actuarial or statistical testimony (i.e., actuarial testimony). In this experiment, the statistical nature and complexity of the actuarial testimony were minimized so that this bias would be lessened, but this effect may still influence juror decisions.

Psychological research investigating juror skepticism and juror sensitivity contributes further information concerning the relationship between jurors' use of heuristic
processes and the influence of expert testimony on juror decisions. Generally, these studies examine whether jurors attempt to understand the content of expert testimony and the testimony’s link to facts of the case (juror sensitivity) or simply favor the side that has the expert or the more credentialed expert regardless of the content of the expert’s testimony (juror skepticism\textsuperscript{17}). Studies examining the effect of expert testimony on the fallibility of eyewitness identification in mock juror decision-making have demonstrated that mock jurors do not simply base final decisions on the credentials and side of the expert (i.e., juror skepticism). These studies have discerned that on a variety of variables, mock jurors exhibit sensitivity to expert testimony by basing their verdicts on the fit between the expert testimony and the facts of the case (Cutler et al., 1989). For example, mock jurors have shown that an expert presenting testimony suggesting that lighting may affect the accuracy of an eyewitness identification is only relied upon in juror decisions when lighting problems are present in the case before them. This effect is contrary to predictions based on a heuristic model of processing, and favors the story model of juror decision-making because jurors are focusing on the fit between the expert testimony and the evidence.

\textsuperscript{17} Juror skepticism appears a misnomer for this phenomena, but is nevertheless accurate because the original empirical studies were performed within the context of eyewitness identification. In this paradigm juror skepticism referred to juror disbelief of any eyewitness following presentation of expert testimony on the inaccuracy of eyewitness identification. In contrast, juror sensitivity referred to jurors evaluating the accuracy of the eyewitness based on the factors the experts stated would either hinder or help an accurate identification. In other words, skeptics would disbelieve any witness following expert testimony on the issue while sensitive jurors would only discount the eyewitness testimony of someone who was plagued by circumstances that would likely reduce the eyewitnesses accuracy.
presented in trial. The heuristic model would predict that this scientific testimony would focus jurors on the credentials of the expert rather than the content of the testimony.¹⁸

Juror sensitivity, however, may not exist for all aspects of expert testimony. The spurious relationship between witness confidence and accuracy has not always produced a sensitivity effect, even when expert testimony is presented explicitly on this issue (Cutler, Penrod, & Stuve, 1988; Cutler et al., 1989). Survey and empirical research has demonstrated that jurors strongly believe that witness confidence in identification is related to accuracy of identification (Fox & Walter, 1986; Loftus, 1982; Wells, 1986), even though they are actually only weakly correlated (Bothwell, Deffenbacher, & Brigham, 1987). In several studies, expert testimony on this issue was discounted or ignored because it did not fit with the mock jurors’ strongly held preconceived notions (Cutler et al., 1988; Cutler et al., 1989). A similar finding was made by Wursten (1986) who discerned that expert testimony on insanity did little to change mock jurors’ attitudes and final decisions when the mock jurors held strong beliefs concerning the insanity defense prior to the trial. These strong prior-beliefs mock jurors were also found to be less likely to engage in heuristic biases (i.e., expert credentials had less effect on their decisions).

Jurors’ prior beliefs have also influenced the interpretation of expert testimony in actual death penalty cases in California (Sundby, 1997). Jurors expressly stated that they ignored the testimony of experts when it differed significantly from their preconceived

¹⁸ This assumes that the lighting expert testimony is sufficiently complex to warrant peripheral processing of the information by jurors. This may not be the case.
notions of a phenomenon. The story model of juror decision-making offers an explanation for these results and highlights the importance of measuring jurors' pre-trial beliefs.

Past empirical research has demonstrated that mock jurors do hold strong beliefs concerning the ability of clinicians to accurately predict future dangerousness (Morier, 1987). Individuals were found to believe that clinicians were capable of predicting future dangerousness at a far more accurate rate than empirical studies suggested. This belief may cause jurors to be unfairly biased by the expert clinical opinion testimony condition in the current experiment and to discount expert testimony and cross-examination which disagrees with their beliefs.

Psychological research has also found that expert testimony specifically linked to the facts of a case is more influential in mock juror decisions than more general expert testimony (Fox & Walters, 1986; Kovera et al., 1997; Schuller, 1982; Saks & Kidd, 1980, but see Cutler et al., 1989 for an incongruous result). This finding has been replicated in interviews with actual jurors in death penalty cases (Sundby, 1997). Sundby found that jurors rated experts who made a connection between their expert testimony and the specific facts of the case as more credible and influential. These results too are consistent with the story model of juror decision-making and its emphasis on relating expert testimony to other evidentiary facts.

As already noted, an expert's confidence in his opinion and the influence this
confidence has on jury decisions has also been explored by psychological research. Surprisingly, one empirical study directly addressing this issue found that moderate levels of confidence had greater effect on mock juror decision-making than higher or lower levels of confidence. In a simulated insanity case, mock jurors were more influenced by an expert’s proffered 80% confidence in his opinion than by 100% or 60% confidence (Rogers et al., 1992.) In contrast, survey data has suggested that for judges, jurors, and lawyers, confidence in expert testimony opinions is crucial. Judges and lawyers rated experts’ failure to state definitive conclusions as the most troubling aspect of their relationship with experts while jurors rated experts who conveyed low confidence as a signal for strong concern (Champagne, Shuman, & Whitaker, 1992; Shuman, Whitaker, & Champagne, 1994). The incongruity of the experimental and research results might be explained by the fact that firm expert conclusions are likely to be most important when jurors are using heuristic processing of testimony, but overly confident expert conclusions may be less influential when jurors are evaluating the content and context of the testimony. Regardless of the exact relationship between expert confidence and juror decisions, expert confidence in their opinions was equal in all conditions in this experiment.

Deliberation conditions may also affect the impact of expert testimony on juror decision-making. Although the effects of deliberation conditions on jury verdicts remain in dispute in the jury research literature (Diamond, 1997), one study has demonstrated

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19 This question is directly relevant to the Barefoot situation, in which the experts stated that they were 100% confident.
differential effects for expert testimony pre- and post-deliberation (Brekke et al., 1991). One-sided (clearly advocating one party’s position) expert testimony was viewed more favorably than balanced testimony by jurors’ pre-deliberation, but this effect disappeared post-deliberation. This finding may indicate that deliberation influences juries to avoid heuristic evaluations of the expert by allowing them to more actively explore the content of an expert’s testimony. Time pressures and testimony complexity have been noted in the literature as contributing to heuristic processing (Petty & Caccioppo, 1986). Having more time to explore the content of expert testimony through multiple viewpoints makes it more likely that the complexity of expert testimony will be reduced. Jury studies that fail to use a deliberation condition may mistakenly overvalue the importance of heuristic processing in juror decisions.

Taken as a whole, psychological research on the influence of expert testimony on juror decision-making suggests the importance of controlling for or evaluating the effects of: (1) the physical appearance of the expert, (2) the expert’s credentials, (3) the complexity of the expert’s testimony, (4) the jurors’ prior beliefs concerning the facts in issue, (5) the specific link between the expert testimony and the facts of the case, (6) the confidence of the expert in his or her opinion, and (7) the deliberation of jurors. With the exception of (7) all these factors were accounted for in the current investigation. In

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20 The Brekke et al. study also found differences between adversarial testimony v. court appointed testimony pre and post deliberation. This result is not explored because non-adversarial experts will not be used in this experiment (see Brekke, et al., (1991) and Crowley, O’Callaghan, & Ball (1994) for a discussion of the impact of non-adversarial experts).
addition, several findings from psychological research on expert testimony and jury
decision-making suggest important direct effects in this experiment. First, jurors’
preconceived notions that clinicians are capable of accurately predicting dangerousness
may cause mock jurors to overly weigh clinical opinion testimony while discounting
information from cross-examination and competing experts that disagrees with their
position. Secondly, jurors bias towards case-specific information over more statistical
information may cause mock jurors to be more influenced by clinical opinion testimony
than actuarial testimony.

Cognitive Biases in Clinical Predictions of Dangerousness

A large body of literature suggests that, as clinicians, mental health practitioners
exhibit an unimpressive ability to make accurate future predictions of dangerousness
(Grisso & Appelbaum, 1992; Faust & Ziskin, 1988; Hart, Webster, & Menzies, 1993;
Lidz, Mulvey, & Gardner, 1993; Melton et al., 1997; Monahan, 1981; Monahan &
Steadman, 1994; Otto, 1992; Showalter, 1990; Shuman & Sales, in press ). Recent
developments in risk assessment research and methodology indicate, however, that the
clinical judgement of practitioners may not be as inaccurate as originally believed
(Mossman, 1994).21 Monahan’s (1981) review of the literature, which was presented in
the American Psychiatric Association amicus brief in Barefoot, estimated clinical
prediction error rates between 65-85%. These estimates of accuracy, however, appear to

21 In fact, one recent study suggest that clinicians may be quite accurate in making
short-term predictions of dangerousness under certain conditions, (see McNeil et al.,
1998).
have been artificially low, artifacts of the low base rates of violence (2-5%) found in the early clinical dangerousness prediction studies (Borum, 1996; Monahan & Steadman, 1994). Later studies of dangerousness assessment, with base rates for violence between 25-50% (Borum, 1996; Klassen & O’Connor, 1988; Otto, 1992; Monahan & Steadman, 1994), find error rates closer to 44% (Otto, 1992). The difference between the base rates of violence of the early and later studies is thought likely attributable to improved outcome measures of violence and more appropriately selected samples (Borum, 1996; Melton et al., 1997).22

Early studies of clinical predictions of violence also suffered from a number of other methodological problems, including using administrative rather than clinical decisions to determine the release of patients and substantial portions of patients never being released into the community (Melton et al., 1997). The most recent estimates of the ability of mental health practitioners to predict dangerousness using more sophisticated statistical analysis techniques suggest that mental health practitioners are moderately better than chance in predicting future dangerousness (Gardner, Lidz, Mulvey, & Shaw, 1996; Mossman, 1994). Mossman’s (1994) review of fifteen clinical opinion prediction data sets, analyzed by receiver operating characteristics (ROC) curves, found significantly

22 Studies began to include self-reports of violence, hospitalization, and reports of collateral sources as evidence of violence instead of just re-arrest for violent crimes (Monahan & Steadman, 1994).
higher than chance predictive accuracy (AUC=.6718). Nonetheless, the accuracy of mental health practitioner's predictive assessments based upon their expertise and experience are still significantly below those achieved using actuarial methods of estimation (AUC=.7130) (Gardner, Lidz, Mulvey, & Shaw, 1996; Mossman, 1994).

Irrespective of their inaccuracy, mental health practitioners have continued to assert their expertise in court (e.g. Melton et al., 1997; Faust & Ziskin, 1988).

A myriad of reasons have been advanced for mental health practitioner deficits in predicting dangerousness. The two most common explanations are: (1) mental health practitioners lack specific training and knowledge in risk assessment and (2) mental health practitioners rely on cognitive biases or inappropriate heuristics when they attempt these predictions. These two explanations are not distinct, as it is likely that lack of training leads to more excessive use of cognitive biases. To date, there exists no consensus on appropriate standards of training or assessment for mental health practitioners interested in dangerousness assessment (Borum, 1996). Staying informed about the most promising developments in dangerousness assessment is also difficult because the relevant literature is extremely complicated and disjointed (Lidz & Mulvey, 1995). Furthermore, current understanding of dangerousness is far from complete. Even if more effective training were

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23 ROC analysis is based on graphs of true hit rates (sensitivity) as a product of the false alarm rates (1-specificity), and has been shown not to be susceptible to changes in base rates (Rice & Harris, 1995). The area under the curve or (AUC) is simply the likelihood that a randomly selected violent patient would have been predicted to be more violent than a randomly selected non-violent person (this is also known as a common language effect size (Gardner et al., 1996; Mossman, 1994; Rice, 1997; Rice & Harris, 1995).
available, it is not clear that it would improve clinical predictions of dangerousness. In a number of areas other than violence prediction, more intensive clinical training and experience has yet to produce greater predictive accuracy (Arkes & Hammond, 1986; Goldberg, 1968; Grove & Meehl, 1996; Smith & Frank, 1997).

This conclusion is not surprising. In addition to relying on cognitive biases and heuristics that affect the judgements of ordinary people under conditions of uncertainty (Kahneman, Slovic, & Tversky, 1982), mental health practitioners have been found to poorly combine information, use irrelevant information, and inappropriately vary the information they use in formulating predictions for an individual (Einhom, 1974; Gaeth & Shanteau, 1984; Grove & Meehl, 1996). Worse, their propensity for gathering excessive and irrelevant information also likely leads mental health practitioners to have greater confidence in their conclusions than is warranted (Arkes & Hammond, 1986; Shuman & Sales, in press).

Mental health practitioners' dangerousness estimates are undoubtedly also plagued by a number of systematic distortions inherent to their task (Shuman & Sales, in press).

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24 This is especially troubling because laypersons have failed to make competent decisions in this area. Marquart et al., (1989) compared 107 criminal defendants, judged to be dangerous by capital sentencing juries, who later had their sentences commuted, with 92 criminal defendants who were not adjudicated dangerous by capital sentencing juries. They found no differences between the two groups in prior offenses (number and violence level), severity and type of present offense, or future acts of violence both within and outside the prison environment (Marquart et al., 1989). Unfortunately this study did not directly examine the effects of expert testimony, but it did indicate that this testimony was one of the three major factors (expert testimony, present offense, and past criminal record) used by the jurors in answering the dangerousness question and that it was frequently presented in these sentencing hearings.
The fundamental attribution error\(^{25}\), which causes individuals to incorrectly perceive that another's behavior is based on stable dispositions (i.e. traits) rather than situational contexts, is likely to bias clinical predictions of dangerousness. As a result of this error, mental health practitioners tend to view an individual's past or present violent acts as stable character traits and not as environmentally caused events, leading them to incorrectly predict future acts of violence based on violent disposition. This misattribution may even be enhanced in clinicians who are specifically trained to investigate the stable psychic features of individuals rather than the effects of the environment on their behavior (Smith & Frank, 1997). \(^{26}\)

Clinical estimates of dangerousness may also be fouled by a representativeness bias or heuristic (Melton et al., 1997; Shuman & Sales, in press; Tversky & Kahneman, 1974). This bias causes the clinicians to compare the individuals they are assessing for dangerousness to their stereotypical conceptualization of a dangerous individual and construct a prediction based on similarity. Unfortunately, the stereotypes that mental health practitioners have of dangerous individuals are likely to be inaccurate and contain many attributes that are not linked to future violence (Shuman & Sales, in press). As a

\(^{25}\) Shuman & Sales (in press) have termed this bias an inability to attribute causality appropriately.

\(^{26}\) The existing actuarial instruments also suffer from this problem. They emphasize the importance of stable characteristics of the individual over the environmental constraints which may have led to violence. In the actuarial instruments, however, the stable psychic characteristics used in violence prediction have been empirically demonstrated to predict violence while the characteristics utilized by clinicians in their violence predictions often have not been empirically tested.
consequence, their predictions of violence are likely to be based on poor correlates of future violent behavior and, therefore, are likely to be erroneous. Yet, even if mental health practitioners' representation of a dangerous person were accurate, their predictions would still falter because "humans simply cannot assign optimal weights to variables, and are not consistent in applying their own weights" (Grove & Meehl, 1996 p. 315).

Mental health practitioners also exhibit tendencies to ignore base rates of violence and to select information based on their initial assessment while ignoring disconfirming evidence in making assessments of dangerousness (Monahan, 1981; Monahan & Steadman, 1994). Base rates of violence, which refer to calculations of how common violent behavior is within a specific population, must be taken into account in estimating violence for any individual. Numerous studies have demonstrated that if base rates are low, as they are in the occurrence of violent behavior, and are not utilized in estimating the occurrence of event, subsequent predictions will greatly overpredict the likelihood of a future violent event for an individual (Melton, et al., 1997). Yet, mental health practitioners have been shown to be unaware of the relevance of this information, and, when made aware, have failed to incorporate it into their predictions. This failure leads to clinicians to greatly overestimate the likelihood that a specific individual will commit future violent acts (Monahan & Steadman, 1994).

Another systematic distortion of information processing that can produce overestimates of dangerousness is the propensity of mental health practitioners to ignore evidence that disconfirms their initial opinion, while they continue to select information
that supports it (Melton, et al., 1997). This overestimation bias may occur as a result of the saliency and recency of the criminal defendant's present violent criminal offense (Melton et al., 1997). The death penalty would not be at issue if the individual had not been convicted of committing a serious violent criminal act.

In sum, the literature suggests three central facts: (1) mental health practitioners inaccurately make future violence predictions, (2) mental health practitioners lack training in making violence predictions, (3) mental health practitioners’ dangerousness predictions are biased by their reliance on a number of cognitive heuristics which causes them to overestimate rates of future violence. Although the cognitive errors clinicians make in assessing dangerousness are not directly manipulated in this study, the weight jurors grant to these inaccurate opinions are examined. Additionally, the causes of clinical inaccuracy in dangerousness prediction are incorporated in the cross-examination and competing expert conditions of this experiment.

**Recent Developments in Risk Assessment & Violence Prediction**

The development of actuarial instruments specifically designed to forecast risk of future dangerousness has significantly improved the accuracy of predictions of future violence (Borum, 1996; Gardner, et al., 1996; Mossman, 1994; Rice & Harris, 1995). Actuarial instruments are created from empirically established risk factors (i.e., past history of violence, psychopathic tendencies, prior arrest, etc. for dangerousness prediction), which have been demonstrated to predict the appropriate outcome (i.e., violence) across groups within the selected population (Monahan & Steadman, 1994).
These risk factors are then statistically weighted in a way that maximizes the power of the instrument to predict a specified outcome.

A small number of actuarial instruments developed during the 1970s, 1980s, and 1990s exist to predict future violence (Borum, 1996). Their construction was initiated after research demonstrated the unreliability of pure clinical opinion predictions (Melton et al., 1997; Monahan & Steadman, 1994). The development of these actuarial instruments is not surprising given that actuarial prediction has been found to outperform clinical opinion in a large number of areas. Grove & Meehl (1996) found, in a review of 136 studies in which clinical and actuarial predictive accuracy was compared, that actuarial assessments were significantly superior to clinical predictions in 64 studies while clinicians were more accurate only in 8 instances. As a group, actuarial dangerousness prediction instruments have been demonstrated to significantly outperform pure clinical predictions, with some instruments substantially outperforming others (Gardner et al., 1996; Mossman, 1994; Rice, 1997; Rice & Harris, 1995).

Borum (1996) reviewed the existing dangerousness prediction actuarial instruments with a standardized scoring system, and reported promising results for the Violence Risk Assessment Guide (VRAG) (classification accuracy ~75%) (Rice & Harris, 1995), promise for the HCR-20 (Webster, Eaves, Douglas, & Wintrup, 1995), and poor results for the Dangerous Behavior Rating Scale (DBRS) (Webster & Menzies, 1995). Currently, the MacArthur Risk Assessment group is validating an actuarial instrument comprised of over 30 assessment measures at five sites across the United States (Monahan...
& Steadman, 1994). This theory-driven instrument contains variables representing demographic, personality, personal history, contextual, and clinical domains.

Actuarial dangerousness screening instruments and decisional trees have also been advocated by psychologists to formulate more successful violence predictions. Gardner et al. (1996) demonstrated encouraging results for several screening instruments which significantly outperformed the accuracy of pure clinical opinion predictions of dangerousness (AUC=.618 for clinical, AUC=.736 for full screen). Surprisingly, in Gardner et al.'s (1996) study, a screening instrument based on historical behavior alone (prior incident of violence and seriousness of violence) performed no differently than an instrument that contained those variables plus a variety of other measures (age, hostility measured on the Brief Symptom Inventory, drug use, and a thought disorder measure). Gardner et al. (1996) has also advocated the use of a dangerousness assessment decision tree which has demonstrated some success in predicting violence. It is based on hostility ratings, age of first offense, the number of prior violent offenses, and drug use. Melton et al., (1997) have also recently proposed a decision tree for the assessment of dangerousness in their handbook for mental health professionals who perform evaluations for the courts. For this instrument, risk is a product of scores on a psychopathy instrument (PCL-R), age of delinquency, adult criminal record, and clinical diagnosis. No reliability or validity data is currently available for this instrument. Surprisingly, none of the above mentioned instruments (actuarial or decisional) are frequently used by clinicians in their everyday practice to predict future violence (Gardner et al., 1996).
Actuarial dangerousness prediction instruments are not without their critics. Psychology commentators have criticized these instruments for ignoring case specific information (Melton et al., 1997). For example, it is possible that some attribute of the individual not assessed by the instrument greatly reduces his or her chance of committing a future violent act (e.g., a brain tumor or being paraplegic) or some factor not assessed by the instrument protects the individual from committing a future violent act (e.g., a stable marital relationship). In such instances an assessment based on the instrument would undoubtedly lead to an unjust outcome for that individual. Forensic experts have also suggested that actuarial evidence might be difficult to present effectively in court so that jurors can appropriately weigh it in their decision-making (Melton et al., 1997). As mentioned previously, jurors clearly have difficulty evaluating and interpreting complex statistical information, and may process it in a biased fashion (i.e., based on the expert’s credential and final opinion rather than on the content). Alternatively, legal commentators have posited that jurors might rely too heavily on actuarial testimony in their decision-making. For example, Tribe (1971) expressed concern that “when risk estimates are expressed in numerical form, the trapping of precision and objectivity may suppress appropriate doubts about validity and certainty of prediction.” This criticism is unsubstantiated by empirical evidence. If anything, the weight of evidence suggests that jurors place less weight on statistical measures than on other testimony, especially clinical evidence (Melton et al., 1997; Smith, Penrod, Otto, & Park, 1996.)

In sum, a review of the risk assessment literature indicates that the VRAG is the
most reliable and valid dangerousness assessment instrument currently available. As a consequence, it was the actuarial method of prediction used in this study.

**Research Hypotheses**

The various research literatures summarized above do not directly address the question of the effect of psychological expert dangerousness testimony on juror decision-making, nor do these literatures answer the question of the tenability of the assumptions underlying the United States Supreme Court’s *Barefoot* decision (i.e., that adversary procedures will remove the bias caused by inaccurate expert dangerousness opinions in juror decisions). They do, however, underscore the importance of these issues. The current investigation directly examines the effects of expert dangerousness testimony on juror decision-making in capital sentencing. To accomplish this goal, a simulated capital sentencing case was presented to mock jurors using both written and videotape materials, and the influence of expert testimony on final mock juror dangerousness decisions was assessed using a number of dependent measures.

In this experiment, a 2 X 4 factorial crossed design was employed (see table 1 for the eight different groups employed). The type of expert testimony presented on dangerousness was varied (clinical vs. actuarial) and adversarial procedures were manipulated (ineffective\(^\text{27}\) cross-examination, effective cross-examination, competing expert of the same type as the first expert, and competing expert of a different type than

\(^{27}\) Lawyers have been routinely criticized for their inability to effectively cross-examine psychology experts (Melton et al., 1997).
the first expert). Each subject made assessments concerning: (1) pre-experiment beliefs concerning the death penalty, (2) beliefs about and confidence in the criminal defendant’s dangerousness following presentation of the written materials, (3) belief about and confidence in the criminal defendant’s dangerousness following presentation of expert testimony, (4) evaluation of the expert’s credibility, level of scientific knowledge, and persuasiveness, (5) weight placed on the present offense, past offense, and expert testimony by the mock juror in reaching his or her decision and (6) re-evaluation of questions (1-5) after the experimental adversarial manipulations (i.e. cross-examination or competing expert).

The following effects were predicted:

I. Expert testimony, regardless of type, will influence mock jurors’ dangerousness ratings.

II. The influence of clinical opinion expert testimony on mock jurors’ dangerousness rating will be equal to or will exceed the effects of actuarial expert testimony both immediately after presentation of this testimony and after the presentation of the adversary procedures (cross-examination or competing expert).

III. The adversarial manipulations will negatively influence mock jurors’ final dangerousness ratings and their ratings of the first expert’s credibility, persuasiveness, level of science, and influence.

IV. The various adversarial manipulations will have a differential negative effect on the final dangerousness rating made by mock jurors. The ineffective cross-examination should have the weakest negative effect on mock jurors’ final evaluations of dangerousness while
the competing expert conveying a different type of testimony than the first expert should have the strongest negative effect on mock juror's final evaluations of dangerousness.
METHODOLOGY

Subjects

208 University of Arizona psychology undergraduates, 123 women (59%) and 85 men (41%), were participants in this study. All participants were seeking required research credits for their undergraduate psychology classes. 67% of the participants self-described themselves as Caucasian, 21% as Hispanic, 7% as Asian, and 5% as African-American. Participants ranged in age from 18 to 45 (M= 20.9, SD= 1.98). Approximately 25 students were run in each of the eight possible conditions. Mock juries ranged in size from 4-15 people. Prior to the administration of any materials, subjects rated their initial beliefs concerning the death penalty and recorded their demographic characteristics. (see Appendix A pre-screening instrument.)

Procedures

Participants took part in a simulated capital sentencing hearing based on procedures and instructions used in Texas. Participants were first led into a courtroom and were

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28 27% of the participants described themselves as not politically affiliated, 39% of the participants described themselves as Democrats, 22% of the participants described themselves as Republicans, 11% of the participants described themselves as Independents, and 1% described themselves as libertarians. 23% of the participants had been called for jury duty while 76% of the participants had not participated in jury duty. In the study, no statistically significant differences in mock jurors’ dangerousness ratings were found based on sex, age, ethnic background, political affiliation, age, or participation in jury duty. Consequently, these variables will be ignored in later analysis of the data.
questioned about their views concerning the death penalty. Participants then filled out a questionnaire detailing their demographic characteristics. After completing the questionnaire, they were seated in the jury box of the courtroom. They were subsequently handed an envelope which contained simulated jury instructions for capital sentencing based on dangerousness as they appear in Texas (see Appendix B juror instructions) and were given a written summary of a modified capital sentencing case. The participants were allowed time to read the materials contained within the envelope and to ask any questions that they might have. They were told not to discuss the case with any other jury members, and were told that it was important that they make all their decisions as if they were participating in a real death penalty case. After reading the written material, subjects rated their beliefs concerning the criminal defendant's dangerousness and their confidence in that belief (Time 1 or Baseline—see Appendix A written materials assessment).

The initial expert testimony (either actuarial or clinical) was then presented via videotape, and the subjects re-evaluated the criminal defendant's dangerousness and their confidence in that belief, and rated the expert's level of scientific knowledge, persuasiveness, credibility, and the influence the expert's testimony had on their decision. They also weighted the influence of three factors on their decisions (past criminal history.

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29 Any student morally opposed to the death penalty, who could not offer a fair and impartial decision concerning this issue, was excused (see Witherspoon v. Illinois, 391 US 510 (1968)).

30 Diamond (1997) detailed the importance of rating both the decision of jurors (e.g., guilt or innocence, dangerousness or not dangerousness) and the confidence jurors have in their decisions.
present offense, and expert testimony), (Time 2-see Appendix 4, post-expert testimony).

These evaluations were placed in their envelopes and then the adversary experimental manipulations were presented via videotape (ineffective cross-examination, effective cross-examination, competing expert of the same type as expert 1, or a competing expert of a different types than expert 1). Subsequently, the participants reassessed the same measures they had previously completed, (Time 3-see Appendix A post-adversary procedures assessment), and were debriefed (see table 2 for a visual presentation of the outline of the experiment).31

Experimental Conditions

The action depicted in the videotape occurred in a courtroom, with all the roles played by actual lawyers and clinical psychologists. In order to simulate the conditions of a real trial, mock jurors viewed the videotape in a law school courtroom and sat in an actual jury box while reading and reviewing the evidence and making their decisions.

Experimental Stimuli

The Case

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31 The repeated presentation of the study's measures may have sensitized the mock jurors to the measures and influenced their decision-making process. One study has found increased reliance on evidence as result of its repeated assessment (Faigman & Baglioni, 1988 while another study has demonstrated the opposite effect (Pennington & Hastie, 1992). A high correlation between mock jurors' dangerousness ratings at Time 1, Time 2, and Time 3 (Time 1-Time 2, r=.856, p<.01; Time 1-Time 3, r=.837, p<.01; Time 2-Time 3, r=.912, p<.01) suggests that the repeated measures design may have decreased variability in participants ratings over the three time periods. Follow-up research should vary the presentation of dangerousness ratings to determine if the repeated measures design significantly contributed to or detracted from the experimental results.
The simulated capital sentencing materials were based on a Texas death penalty case, *Moore v. State*, 542 S.W.2d 664 (Tex.Cr.App.1976). In this case, the criminal defendant was found dangerous and received the death penalty. The description of the crime was taken directly from the reported case with some slight modifications (i.e., names were changed, etc.). The severity of the crime was altered so that it would not appear too heinous (i.e., descriptions of a sexual assault were removed).

A confession contained in the reported case was also included in the written materials as was a synopsis of the defendant’s past criminal history. The four past crimes reported in the stimulus materials were based on Marquart et al.’s, (1989) study of capital sentencing in Texas. They reported past criminal histories for 102 criminal defendants adjudicated dangerous by capital sentencing juries. The modal number of crimes for these defendants was 3-5, with no past serious violent offenses (Marquart et al., 1989) (see Appendix B written materials).

**Expert Testimony**

*Clinical Opinion Expert*. The clinical opinion expert testimony on dangerousness was based on actual testimony presented in capital sentencing trials in Texas. The credentials of the expert were created by the experimenter to approximate those held by actual experts in capital sentencing in Texas. The expert testimony consisted of statements of: (1) his experience and education, (2) his interview of the defendant, (3) his opinion that the defendant is a severe sociopath, and (4) his belief based on his years of experience that the defendant definitively represents a continuing danger to
Expert Actuarial Testimony. The initial actuarial testimony was presented by an identical psychologist with the same experience and training as the clinical opinion expert. This expert testimony consisted of statements of: (1) his experience and education, (2) his interview of the defendant, (3) his description of the VRAG assessment instrument, (4) his use of VRAG with the criminal defendant, and (5) his belief based on the VRAG that the defendant represents a continuing danger to society.

Adversary Manipulations Cross-Examination and Competing Experts

Ineffective Cross-Examination. In the ineffective cross-examination condition the attorney attacked the credibility of the expert, but not the content of his testimony. Ineffective cross-examination did not differ across conditions and was

32 The Violence Risk Assessment Guided (VRAG) which was relied upon in this experimental condition consists of twelve variables (The Hare Psychopathy Checklist (PCL-R), elementary school maladjustment, age of present offense, diagnosis of personality disorder (DSM-III), separation from parents under the age of 16, failure in prior conditional release, criminal history for property offenses, marital status, diagnosis of schizophrenia (DSM-III), victim injury in present offense, history of alcohol abuse, and female victim in present offense). The VRAG was normed on 618 men who committed at least one serious offense, and who were followed for 10 years (31% committed a violent act over this time). It accurately predicted dangerousness in 74% of the cases and demonstrated an AUC=.76, R=.44, sensitivity= 60%, and specificity=78% at a 10 point cut-off (Rice & Harris, 1995). It was revalidated on 868 men possessing similar characteristics and results were substantially the same: clinical accuracy=70%, AUC=.74, sensitivity=62%, and specificity= 72% at a 10 point cut-off (Rice & Harris, 1995). The instrument has also demonstrated some success with prediction of dangerousness in sex offenders (Rice, 1997).

33 This part of the videotape testimony was the same footage as that used in the clinical opinion expert testimony condition.
presented by the same lawyer. The ineffective cross-examination highlighted that: (1) the expert was not a medical doctor, (2) the expert worked for the state and was being compensated for his testimony, and that (3) the expert often testified in these trials.

Effective Cross-Examination of the Clinical Opinion Expert. In the effective cross-examination condition, the attorney attacked the content of the expert’s testimony. The effective cross-examination of the clinical expert highlighted that: (1) the dangerousness predictions made by clinicians are often wrong, (2) there is a consensus of experts in dangerousness prediction that clinicians have no special ability to predict dangerousness, (3) the testifying expert has not received any special training in dangerousness prediction, (4) clinical opinions tend to overestimate future violence and are based on faulty reasoning, (5) the testifying expert was unaware of base rates of violence of this criminal population, (6) actuarial techniques of dangerousness assessment have shown much higher validity than clinical instruments, and (7) the confidence the testifying expert has in his opinion has not been linked to accuracy in long-term dangerousness predictions.  

Effective Cross-Examination of the Actuarial Expert. In the effective cross-examination condition, the attorney attacked the content of the expert’s testimony. The effective cross-examination condition of the actuarial expert questioned: (1) the use of the

\[ \text{This is true for empirical studies concerning long-term prediction of a criminal populations' dangerousness and violence. A recent short-term study of a psychiatric population has demonstrated that confidence can be linked to accuracy of clinical predictions of future dangerousness (McNeil, et al., 1998).} \]
VRAG on a population on which it is not validated,\(^{35}\) (2) the error rate of the instrument, and (3) the failure of the VRAG instrument to take into account case-specific information.

**Competing Experts**

In all conditions, the competing expert was portrayed by the same actor, whose credentials, training, and experience were similar to that of the original expert.\(^{36}\)

**Competing Expert Clinical Opinion Testimony Against Initial Clinical Opinion Expert** In this condition, the competing expert disagreed with the conclusion of the first expert. His expert testimony consisted of statements of: (1) his education and credentials, (2) his interview of the defendant, (3) his belief that the criminal defendant was not a severe sociopath, and (4) his belief based on his years of experience that the criminal defendant was not a continuing danger to society.

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\(^{35}\) The VRAG’s validation on a serious violent offender population makes it the most appropriate instrument for criminal defendants facing capital sentencing. The VRAG, however, has not been validated on a population in the United States, and this may limit its generalizability to an American criminal population.

\(^{36}\) Statistical analysis suggested that this was, in fact, the case. A t-test comparing the first expert to second expert demonstrated no significant differences overall between the two experts on a composite factor score (a factor score composed of participants’ ratings of the level of science, persuasiveness, influences, and credibility of each expert and his testimony). Some differences between the experts were found on individual variables. The first expert was rated as initially more influential by mock jurors than the second expert (d.f.=107, p=.036 two-tailed) while the second expert was initially rated as more scientific than the first expert (d.f= 107, p=.010 two tailed) regardless of the type of testimony delivered by the expert. After the presentation of the adversary manipulations, the second expert was also evaluated by the mock jurors as more scientific than the first expert (d.f.=107, p=.001), but no other differences between the experts were discerned. The two experts were rated by the mock jurors as contributing the same amount to their final decisions on dangerousness (d.f.=105, p=.517).
Competing Expert Actuarial Testimony Against Initial Actuarial Expert. In this condition, the competing expert disagreed with the conclusion of the first expert. This expert's testimony reproduced (1) and (2) from the first competing expert condition, and added statements concerning: (3) his use of the VRAG to assess this criminal defendant, and (4) his opinion based on the VRAG that the defendant does not represent a continuing danger to society.

Competing Expert Clinical Opinion Testimony Against Initial Actuarial Expert. In this condition, the competing expert disagreed with the first expert's conclusion and attacked the content of the first expert's testimony. The responses of this expert were identical to those of the first competing expert for (1) and (2). This expert's testimony differed in that he repeated the statements in the effective cross-examination of the actuarial expert (1-3) and added statements to the effect that: (6) he did not believe in actuarial predictions of dangerousness, (7) he believed no instrument can predict dangerousness better than a trained professional, and (8) he believed based on his years of clinical experience that the defendant did not represent a continuing danger to society.

Competing Expert Actuarial Testimony Against Initial Clinical Opinion Expert. In this condition, the competing expert disagreed with the first expert's conclusion and attacked the content of the first expert's testimony. This expert's testimony repeated statements (1) and (2) from the first competing expert condition, included testimony concerning all the statements presented in the effective cross-examination of the clinical opinion expert (1-7) condition, and added statements consisting of: (10) his description of
the VRAG, (11) his use of the VRAG for this criminal defendant, and (12) his opinion based on the VRAG that the defendant did not represent a continuing danger to society.

**Dependent Measures**

A series of dependent variables were collected at different times throughout the experiment: (1) prior to presentation of written materials, (2) after the presentation of the written material (Time 1 or Baseline), (3) after the presentation of the expert testimony (Time 2), and (4) after the presentation of the adversary manipulation (Time 3). These measures were designed to assess: (1) the mock jurors' prior beliefs concerning the death penalty, (2) mock jurors' beliefs regarding the dangerousness of the defendant, (3) the mock jurors' perception of the expert testimony, and (4) the basis of mock jurors' decision about dangerousness.

**Mock Jurors' Prior Beliefs.** Prior to the presentation of the stimuli written materials, the attitudes of all mock jurors toward the death penalty were measured by: (1) a yes/no response to whether they favored the death penalty and (2) the strength of that belief on a scale of 1-8. These two responses were combined to form a composite prior beliefs score from -8, strongly opposed, to 8, strongly in favor of the death penalty. Participants scores ranged from -6 to 8 (M= 3.58, SD= 3.32).37

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37 This measure was correlated with later ratings of dangerousness (death penalty rating and Time 1 dangerousness, $r=.226$, $p<.05$; death penalty rating and Time 2 rating of dangerousness, $r=.185$, $p<.05$; death penalty rating and Time 3 rating of dangerousness, $r=.192$, $p<.05$). This measure did not explain, however, a significant amount of variance in Time 2 and Time 3 ratings of dangerousness when Time 1 ratings of dangerousness were taken into account in statistical analyses. Thus, mock jurors' death penalty ratings were only linked to their initial ratings of the dangerousness of the defendant and were
Mock Jurors' Dangerousness Beliefs. Mock jurors' beliefs regarding the defendant's dangerousness were measured at three separate times: (1) after reading the stimulus materials (Time 1 or Baseline), (2) after the presentation of the first expert testimony (Time 2), and (3) after the cross-examination or second competing expert (Time 3). At each of these junctures, mock jurors' beliefs concerning dangerousness were assessed by (1) yes/no decision on dangerousness and (2) the mock juror's confidence in that decision (1-8). The mock jurors' responses to these questions were transformed into a scale ranging from -8, very confident the criminal defendant is not dangerous, to 8, very confident that the criminal defendant is dangerous.

Mock Jurors' Perceptions of the Expert. Mock jurors also rated the credibility, influence, persuasiveness, and level of science of the first expert's testimony on two separate occasions. Each juror's assessment of the expert testimony was completed after the testimony of the first expert (Time 2) and after either the cross-examination of the expert or after the testimony of the second expert (Time 3). Additionally, in those conditions in which a competing expert was used, subjects also rated the second expert testimony on credibility, influence, persuasiveness, and level of science (Time 3). Each juror's perception of the expert was assessed by their answers to the following questions:

not related to their dangerousness ratings following expert testimony and adversary procedures. Since Time 1 ratings of dangerousness were used as a covariate in all analyses because of initial group difference in dangerousness ratings following the presentation written materials, death penalty ratings were not used in later statistical analyses.
(1) How scientific do you feel the expert was (1-10)?, (2) How persuasive do you feel the expert was (1-10)?, (3) How credible do you feel the expert was (1-10)?, and (4) How influential do you feel the expert was (1-10)?.

**Basis of Mock Jurors' Decision on Dangerousness.** Mock jurors also rated what they believed constituted their decision on dangerousness at two separate times. They rated the percentage that expert testimony, the past offense, and the present offense (0-100%) contributed to their estimates of the defendant's dangerousness after the first expert (Time 2), and after either the cross-examination or competing expert condition (Time 3). In the experimental conditions including a competing expert, mock jurors also rated the contribution (0-100%) of the testimony of the competing expert to their view of the defendant's dangerousness (Time 3).

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38 For all scales, a rating of a 1 signified that the mock juror did not believe that the expert testimony was persuasive (or credible, scientific, etc) and a 10 represented that the mock juror believed that the expert testimony was completely persuasive (or credible, scientific, etc).
RESULTS

Mock Jurors’ Ratings of Dangerousness

To determine if significant changes were occurring in mock jurors’ dangerousness assessments throughout the course of the experiment, a series of within-subjects, repeated measures analysis of variances (ANOVAs) were performed on the mock jurors’ dangerousness ratings (see Figure 1 for a graphic presentation of mock jurors’ mean dangerousness ratings at Time 1 (post-written materials), Time 2 (post-expert testimony), and Time 3 (post-adversarial manipulations). Statistical significant differences in rating were found for all within-subjects, repeated ANOVAs (see Table 3 for a summary of this data) with the exception of Time 1-Time 3. These results support hypothesis I that expert testimony, regardless of type, influenced the mock jurors’ dangerousness ratings. They also support the first part of hypothesis III that the cross-examination and competing expert conditions negatively influenced mock jurors’ dangerousness ratings.

The Effect of Type of Expert Testimony on Dangerousness Ratings

After the presentation of the first expert testimony (Time 2), mock jurors’ ratings of dangerousness were analyzed in an one-way analysis of covariance (ANCOVA)\(^{39}\), with type of expert testimony (actuarial or clinical) as the factorial variable, to determine if the type of expert testimony mock jurors received produced significant differences in their

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\(^{39}\) ANCOVA analysis was performed because there were initial differences in baseline measures of the defendant’s dangerousness between groups following presentation of the stimulus materials. This baseline or Time I dangerousness rating was used as the covariate in all subsequent analyses unless otherwise noted.
dangerousness ratings. Clinical opinion expert testimony was determined to be more effective in increasing mock jurors' initial dangerousness ratings than actuarial expert testimony (Time 2, M-clinical=2.92 and M-actuarial=2.34, F(1,205)=12.017, p=.001, pow=.932). A within-subjects ANOVA of both the clinical opinion expert testimony conditions (Time 1 to Time 2, M=.68 to 2.92, F(1,103)=40.851, p<.000, pow=1.0), and the actuarial expert testimony condition (Time 1-Time 2, M=1.58 to 2.34, F(1,103)=13.705, p<.000, pow=.956) demonstrated that each type of testimony had significant effects on mock jurors' post-expert rating of dangerousness. Figure 2 represents these findings graphically in terms of change scores from Time 1 to Time 2.

The former findings supports hypothesis II that expert clinical opinion testimony is more effective than actuarial expert testimony in changing mock jurors' dangerousness ratings while the latter finding lends further support to hypothesis I and the notion that expert testimony, regardless of type, will influence mock jurors' dangerousness ratings.

The Effects of Type of Expert Testimony and Adversary Procedures on Dangerousness Rating

After presentation of both expert testimony and the adversary manipulations (Time 3), a 2 (type of testimony) X 4 (adversary manipulations) ANCOVA was performed to determine the singular and joint effects of the experimental manipulations. A statistically significant main effect was found for type of testimony (Time 3, M-clinical=1.58, M-actuarial=1.25, F(1,199)=6.354, p=.012, pow=.708), and a main effect for the adversary manipulations (cross-examination or competing experts) approached significance (Time 3,
F(3, 199)= 2.261, p=.083, pow=.563). No significant effect for the interaction of type of testimony and adversary manipulation was demonstrated (Time 3, F (3, 199)= 1.078, p=.360). Additionally, a within-subjects ANOVA of mock jurors’ dangerousness assessments based on the type of testimony presented revealed that clinical opinion expert testimony influenced mock jurors’ dangerousness ratings throughout the entire sentencing hearing to a greater extent (Time 1- Time 3) than did actuarial expert testimony (clinical, M=.68 to 1.58, F(1,103)=7.074, p=.009, power .750; actuarial, M= 1.58 to 1.25, F(1,103)= 1.102, p=.296. See Figure 1 for graphic presentation of the effects of clinical and actuarial testimony on mock jurors’ rating of dangerousness throughout the sentencing hearing.) These findings suggest that the influence of expert clinical opinion testimony on mock jurors’ ratings of dangerousness is greater than that of expert actuarial testimony even after adversary procedures occur, lending support for hypothesis II.

A one-way ANCOVA with group (clinical with ineffective cross-examination, actuarial with ineffective cross-examination, clinical with effective cross-examination, actuarial with effective cross-examination, actuarial with actuarial 2nd expert, clinical with clinical 2nd expert, actuarial with clinical 2nd expert, and clinical with actuarial 2nd expert) as the factorial variable was also performed at on mock jurors’ rating of dangerousness at Time 3, to determine if any group difference existed in mock jurors’ final judgements of dangerousness (see Figure 3 & 4 for visual presentation of the group means at Time 1, Time 2, & Time 3). Between group differences were demonstrated on dangerousness ratings at Time 3 (F (7, 199)=2.344, p=.025, pow=.845).
The Effect of Adversary Procedures on Mock Juror's Dangerousness Ratings

A one-way ANCOVA with adversarial manipulations (ineffective cross-examination, effective cross-examination, competing expert of the same type as the first expert, and competing expert of a different type as the first expert) as the factorial variable and Time 2 ratings of dangerousness as a covariate was performed on dangerousness ratings at Time 3 to determine if the adversary manipulations, after removing the influence of type of expert testimony, had a significant effect on mock jurors' ratings of dangerousness. A statistically significant effect was found for the adversary manipulations (F(3, 203) = 3.489, p = .017, pow = .845). When a one-way ANCOVA with adversary manipulations (effective cross-examination, competing expert of the same type as the first expert, and competing expert of a different type as the first expert) as the factorial variables and with Time 2 dangerousness ratings as a covariate was performed to determine if there was a significant effect for the adversarial manipulations when the ineffective cross-examination condition was excluded, no significant effect for the adversary manipulation was found (F(2, 156) = .475, p = .623). This finding suggests that the ineffective cross-examination conditions was the major cause of differences between the adversary procedures in final mock jurors' dangerousness ratings. When this condition was excluded, the other three manipulations (effective cross-examination, a competing expert offering the same type of testimony as the original expert, and competing expert offering a different type of testimony than the original expert) had equivalent influence on mock jurors' final dangerousness ratings. This empirical finding undermines hypothesis IV.
by demonstrating that mock jurors did not differentially weight various types of adversary procedures in reaching their final dangerousness ratings. Moreover, it discredits the idea that jurors pay attention to the content of competing expert testimony when it is presented. Instead it supports the position that jurors are simply influenced by the presence of a competing expert regardless of the content of that testimony.

**The Effect of Type of Testimony on Mock Jurors Ratings of the Expert’s Credibility, Influence, Persuasiveness, and Level of Science**

A one-way MANCOVA with type of testimony (actuarial or clinical) as the factorial variable was performed on all four dependent measures (credibility, influence, persuasiveness, and level of science) at Time 2. Multivariate statistical analysis indicated that clinical opinion expert testimony was rated more favorably on these constructs than actuarial expert testimony (F(4,202)=2.548, p=.041, pow=.714). Clinical opinion expert testimony was found to be statistically superior to actuarial expert testimony on mock jurors' rating of influence (F(1,205)= 6.328, p=.013, pow=.707), and approached statistical superiority for persuasiveness (F(1,205)= 3.177, p=.076, pow=.426). Mock jurors did not differentiate to a statistically significant degree between clinical opinion expert testimony and actuarial expert testimony with respect to its credibility or level of science (F(1,205)=.504, p>.479, and F(1,205=.027, p=.869, respectively). These finding

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40 There was high correlation between ratings of each of these measures (see Table 4), and factor analysis produced only one significant factor. Due to this problem, multivariate statistical analyses was performed on these measures. Future research is needed to determine if mock jurors are in actuality rating one construct or many.
suggest that at least on some measures, jurors respond similarly to expert clinical opinion testimony and actuarial expert testimony, while on other measures they tend to respond more favorably to clinical opinion expert testimony. This effect is the opposite direction of what many courts have supposed jurors would do when confronted with clinical opinion expert testimony, but supports hypothesis II of this study, that jurors are more influenced by clinical opinion expert testimony than actuarial testimony.

The Effect of Adversary Procedures on Mock Jurors’ Ratings of the Expert’s Credibility, Influence, Persuasiveness, and Level of Science

A series of within-subjects repeated measures ANOVAs were performed on all four dependent measures (credibility, persuasiveness, influence, and level of science) and their change from Time 2 to Time 3. Statically significant effects were found for all measures (credibility, M= 6.4 to 5.5, F(1,205)= 76.007, p<.000, pow=1.0; influence, M= 5.9 to 5.2, F(1,205)= 37.692, p<.000, pow=1.0; persuasiveness, M= 5.6 to 5.1, F(1,205)= 26.429, p<.000, pow=1.0; level of science, M= 5.2 to 4.7, F(1,205)= 23.828, p<.000; pow=1.0). Adversary manipulations effectively altered mock jurors' ratings on all of these measures. This is further support for the strength of the cross-examination and competing experts in negatively changing mock jurors' views of the first expert, and further support for hypothesis III, that adversary procedures lessen the influence of expert testimony.

The Effect of Type of Testimony and Adversary Procedures on Mock Jurors’ Ratings of the Expert’s Credibility, Influence, Persuasiveness, and Level of Science

A 2 (type of testimony) X 4 (adversary procedures) MANCOVA was performed
on all four dependent measures at Time 3. Multivariate analysis produced statistically significant main effects for type of testimony (F(4, 196)= 3.554, p=.008, pow=.863), and adversary manipulation (Wilks’ Lambda F(12, 519)= 2.172, p=.012, pow=.912). The interaction of these two sets of variables approached significance (Wilks’ Lambda F(12, 519)= 1.658, p=.073, pow=.795). The individual effects of these measures are presented in Table 5. Effective cross-examination appears to have lowered mock jurors’ final ratings of the first expert’s credibility and persuasiveness regardless of whether actuarial or clinical opinion expert testimony was first presented (overall credibility M= 5.5, effective cross-examination M= 4.6, ineffective cross-examination M=5.1; overall persuasiveness M=5.1, effective cross-examination M= 4.5, and ineffective cross-examination M= 4.7).

In addition, mock jurors’ final ratings of the level of science of the testimony of the first expert seem to be most negatively affected when clinical opinion expert testimony is followed by effective cross-examination and most positively affected when clinical opinion testimony is followed by a second clinical expert (overall M= 4.7, effective cross-examination M= 3.5, and competing clinical expert M= 6.0)

**Type of Expert Testimony Effect on the Basis for Mock Jurors’ Ratings of Dangerousness (Influence of the Present Offense, Past Offense, and Expert Testimony)**

A one-way MANCOVA with type of testimony (actuarial or clinical) as the between subjects variable was performed on the weight mock juror’s believe they assign to all three dependent measures (present offense, past offense, and expert testimony) in their dangerousness ratings at Time 2. No statistically significant differences were found
for any of the measures based on the type of expert testimony first presented ($F(3, 187) = .967, p = .410$). The most striking of these non-significant findings is the failure of mock jurors to claim they weight clinical opinion expert testimony more strongly than actuarial expert testimony (actuarial $M = 23.8\%$, $SD = 15\%$, and clinical $M = 26.9\%$, $SD = 19.1\%$) even though earlier statistical analyses demonstrates that they are more influenced in actuality by clinical opinion expert testimony than actuarial expert testimony. This suggests that mock jurors' may not be cognizant of the fact that they are more influenced by clinical opinion expert testimony over actuarial expert testimony.

**The Effect of Adversary Procedures on the Basis for Mock Jurors' Ratings of Dangerousness (Influence of the Present Offense, Past Offense, and Expert Testimony)**

Within-subjects, repeated measures ANOVAs were performed on all three dependent measures (present offense, past offense, and expert testimony) from Time 2 to Time 3. The degree to which mock jurors reported they relied on the first expert's testimony and the past offense in reaching their dangerousness determination was significantly negatively affected by the adversary manipulations (Expert Testimony, $M= 25.4\%$ to $20.4\%$, $F(1, 189) = 30.233$, $p<.000$, $pow=1.00$; Past Offense, $M= 20.8\%$ to $18.9\%$, $F(1, 189) = 10.428$, $p<.001$, $pow=.895$) while the weight mock jurors granted to the present offense positively increased after the adversary manipulations (Present Offense, $M= 21.0\%$ to $22.9\%$, $F(1, 189) = 12.808$, $p<.000$, $pow=.945$).\(^{41}\)

\(^{41}\) Part of this change in these dependent scores may be due to an additional rating of the second expert's influence on final dangerousness rating in the four competing expert conditions. In these four groups, mock jurors' weighted four factors in their decisions.
The Effect of Type of Testimony and Adversary Procedures on the Basis for Mock Jurors' Ratings of Dangerousness (Influence of the Present Offense, Past Offense, and Expert Testimony)

A 2 (type of testimony) X 4 (adversary manipulation) MANCOVA was performed on the mock jurors' ratings of the influence the present offense, the past offense, and the expert testimony exerted on their final decision-making about dangerousness (Time 3). A multivariate main effect was found for adversary manipulation (Wilks' Lambda F (9, 453) = 12.539, p < .000), but no statistically significant main effect was demonstrated for type of testimony (F (3, 186) = 1.931, p = .126) or the interaction term (Wilks' Lambda F (9, 452) = .994, p = .444. See Table 6 for individual ANCOVA effects of type of testimony, adversary procedures, and their interaction on the weight mock jurors report they place on the present offense, the past offense, and expert testimony in mock jurors' final ratings of dangerousness).

(present offense, past offense, expert I, and expert II). No significant effects were noted in any of these measures when the four groups who rated four factors (i.e., only the other four groups that had cross-examination were used in this analysis) were removed from analyses.
DISCUSSION

Hypothesis I: Expert testimony will influence mock jurors' dangerousness ratings.

Similarly to previous empirical research investigating the influence of psychological expert testimony on mock juror decision-making, (Cutler, Penrod, & Dexter, 1989; Fox & Walter 1986; Brekke & Borgida, 1988; Ewing, 1987; Schuller & Vidmar, 1992; Walker, 1990), this experiment demonstrated that psychological expert testimony on the dangerousness of a criminal defendant significantly influenced mock jurors' decisions on this issue. Following the presentation of the videotaped psychological expert testimony concluding that the defendant was dangerous, mean mock jurors' ratings of a defendant's dangerousness increased substantially. This effect occurred regardless of whether actuarial testimony or clinical opinion testimony was presented. This increase in mock jurors' dangerousness ratings clearly results from the presentation of the psychological expert testimony, and offers strong support for the proposition that expert testimony, regardless of type, influences mock jurors' decisions.

Although the effects of adversary procedures (cross-examination or competing experts) appear, at first glance, to have eliminated the influence of the initial expert testimony on final mock juror's dangerousness ratings in this experiment (mock jurors' initial dangerousness ratings of the criminal defendant were not statistically different from their final ratings of the defendant's dangerousness following the adversary manipulations), three lines of evidence point to the continued influence of psychological expert testimony on dangerousness after the adversary manipulations. First, mock jurors'
self-report indicates that the importance of the initial expert testimony in their decision-making was still considerable when they made their final dangerousness assessments. Second, significant between subjects effects for the influence of initial clinical opinion expert testimony on mock jurors' dangerousness ratings were found after the presentation of the adversary manipulations. Third, initial clinical opinion expert testimony was determined to have significant within subject effects when initial mock juror dangerousness assessments (Time 1) were compared to final dangerousness evaluations (Time 3). Taken together, these results highlight the influence of expert testimony on mock jurors' decisions throughout the entire sentencing hearing.

Hypothesis II- Clinical opinion expert testimony will have greater influence on mock juror decision-making than actuarial expert testimony

In this experiment, clinical opinion expert testimony was demonstrated to be more influential on mock jurors' dangerousness decisions than actuarial expert testimony. Mock jurors were found to be more influenced by clinical opinion expert testimony in their dangerousness ratings both directly after its presentation and after adversary manipulations designed to reduce that influence. Additionally, a bias in favor of the clinical opinion expert testimony was supported by mock jurors' ratings of the two types of testimony on a number of characteristics (credibility, influence, level of science, and persuasiveness). The mock jurors rated the clinical opinion expert testimony as more influential and persuasive and of equivalent level of science and credibility to the actuarial expert testimony. This supports the view that the mock jurors found the clinical opinion expert
testimony more generally influential than the actuarial testimony, and that juror differences in perception of the two types of expert testimony may have led them to grant greater weight to the clinical opinion testimony when they made their dangerousness evaluations.

The findings of this study of a positive bias toward clinical opinion expert testimony are not inconsistent with the dominant psychological theories of persuasion. Both the heuristic processing and story models of persuasion offer possible explanations for mock jurors' initial (i.e., before the adversary procedures) preference for clinical opinion expert testimony. The heuristic processing model of persuasion suggests that the clinical opinion testimony would be more influential because the actuarial expert testimony's use of statistics and statistical measures caused the actuarial testimony to be perceived as more complex and complicated than the clinical opinion testimony. This complexity may have, in turn, caused the actuarial information to be processed peripherally by mock jurors rather than centrally. The existing literature on peripheral processing suggests that when individuals peripherally process information, they evaluate and weight it by less effortful means (i.e., heuristics) than would be the case if they analyzed its content. Research has demonstrated, in such instances, that individuals' preexisting beliefs about the world have more influence (O'Keefe, 1990).

42 Interestingly, mock jurors may not have been consciously aware of their bias in favor of clinical opinion expert testimony. Mock jurors' ratings of the weight they granted to the two different types of expert testimony demonstrated no statistically significant differences between the two types of testimony.
In this experiment, several pre-existing biases may have served as heuristics which mitigated the impact of the actuarial expert testimony. These include: a preexisting belief that actuarial instruments are incapable of explaining the complexities of future dangerousness behavior (several participants in the experiment voiced this belief during the debriefing phase of the experiment); a preexisting belief that clinicians are much more accurate than they have been empirically demonstrated to be in predicting future dangerousness (Morier, 1987); or a preexisting bias in favor of clinical information over more statistical information (O'Keefe, 1990). If these heuristics were used to weight the actuarial expert testimony in decision-making, mock jurors may have ignored the content of the actuarial expert testimony and instead unfairly relied on pre-existing biases against such testimony. As the results of the current study suggest, this may have led to more influence from the less accurate clinical opinion expert testimony and less weighting of the more scientific actuarial expert testimony in mock jurors' dangerousness decision-making.

The story models offers a similar rationale as to why mock jurors might be initially more influenced by clinical opinion expert testimony. As previously indicated, the story model proposes that jurors construct stories about cases based on, the fit between the expert testimony, the juror's preexisting views concerning the issues, and the juror's final story determines the weight that should be granted to proffered expert testimony in the juror's decision-making. With regard to this model, the same preexisting beliefs (i.e., beliefs that instruments are incapable of predicting dangerousness, that clinicians are fairly accurate in predicting dangerousness, and a bias toward clinical information over
statistical) made it more likely that clinical opinion expert testimony would more adequately fit with the mock jurors’ preexisting beliefs and their stories concerning the case.

While both of these models offer potential explanations for this study’s empirical findings of mock jurors’ dangerousness ratings following the initial presentation of expert testimony, neither model proposes a compelling reason as to why the clinical opinion expert testimony should have maintained its favorable bias in mock jurors’ dangerousness assessments after the adversary procedures. This experiment was not designed to produce results that would specifically test the assumptions of these theoretical models. Clearly, future research is necessary to determine if the proposed mechanisms to account for the differential influence of actuarial and clinical testimony are the ones actually occurring in this experimental paradigm.

**Hypothesis-III** Adversary procedures (cross-examination or a competing expert) will negatively influence mock jurors’ dangerousness rating and evaluation of the first expert.

The presentation of cross-examination or a competing expert had a clear effect on mock jurors final ratings of dangerousness. Overall, adversarial procedures lowered mean dangerousness ratings significantly. In fact, following the presentation of the adversary manipulations, mock jurors’ dangerousness ratings did not substantially differ from their

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43 In fact, experimental attempts were made to limit the effects of these biases. For example, the actuarial expert testimony was scripted so that very little statistical or complex information would be presented to the mock jurors.
original pre-expert dangerousness ratings (Time 1).

In effect, adversary procedures clearly reduced the influence of the expert testimony upon mock jurors' final dangerousness ratings to levels that existed before expert testimony was introduced.

Adversary procedures also had a substantial impact on mock jurors' final ratings of the first expert and his testimony (Time 3). After the presentation of cross-examination or a competing expert, mock jurors evaluated the first expert as less credible, less influential, less persuasive, and less scientific than they had evaluated him before the adversary manipulations (Time 2). Taken together, these findings suggest that adversary procedures had significant influence on both the weight mock jurors granted to psychological expert testimony and their final perception of expert psychological testimony. Nonetheless, while adversary procedures had an impact on both types of expert testimony, their influence was significantly less on the clinical opinion expert testimony. Adversary procedures failed to return mock jurors' who received clinical opinion expert testimony to their initial dangerousness rating level.

Hypothesis IV-The type of adversary procedures will have differential negative effects on mock jurors' final dangerousness ratings and evaluation of the first expert.

Limited empirical support was garnered for the proposition that mock jurors will be differentially discount expert testimony based on the kind of adversary procedure presented. However, they did, however, differ for the mock jurors who were initially presented with clinical opinion expert testimony, regardless of the type of adversary procedures presented. This suggests that clinical opinion expert testimony may be less susceptible to adversary procedures than other forms of expert testimony.
presented. In this experimental design, four levels of adversary procedures were proffered (ineffective cross-examination, effective cross-examination, a competing expert who disagreed with the first expert, and a competing expert who disagreed and attacks the content of first expert’s testimony). With the weakest negative effect predicted for ineffective cross-examination and the strongest negative effect predicted for the competing expert who both disagrees and discounts the first expert’s testimony. On mock jurors’ final ratings of dangerousness (Time 3), an effect for the type of the adversary procedure was demonstrated, but this effect disappeared when the influence of ineffective cross-examination was statistically controlled. This finding suggests that mock jurors differentiated between ineffective cross-examination and other adversary procedures, and were less negatively influenced by the ineffective cross-examination condition. The mock jurors were, however, equally negatively influenced by the other three conditions in their final dangerousness ratings.

Mock jurors’ final evaluations (Time 3) of the credibility, influence, persuasiveness, and level of science of the first expert also do not support the notion that mock jurors were differentially influenced by the type of adversary procedures. While the ineffective cross-examination conditions tended to cause the smallest drop in mock jurors’ final ratings of the characteristics of the first expert (the predicted relationship), the effective cross-examination conditions’ negative impact on mock jurors’ evaluations of the first expert with regard to credibility, influence, persuasiveness, and level of science was stronger than either of the two competing expert conditions (the opposite effect was
predicted). Thus, the hypothesis that mock jurors would be least influenced by ineffective cross-examination and most influenced by a competing expert who disagrees and discounts the first expert’s testimony was only partially supported by this study.

The existing psychological literatures on jury decision-making and the heuristic processing model of persuasion both offer insight as to why the predicted effect did not occur. Empirical studies of juror skepticism and sensitivity have demonstrated that jurors sometimes pay attention to the content of expert testimony and sometimes weight their decisions solely on the basis of the presence of an expert regardless of content of the expert testimony (Cutler et al., 1988; Cutler et al., 1989). The heuristic processing model of persuasion suggests that this effect is most likely to occur when information is peripherally processed. In this study, the complexity of expert dangerousness testimony or the difficulty of evaluating and weighing the strength of two competing experts’ inconsistent arguments may have caused the mock jurors to peripherally process this information. As a result of this peripheral processing, mock jurors ignored the content or quality of the competing expert’s disagreement with the first expert, but rather simply weighted the testimony of both experts equally (in the two expert condition). This might potentially account for the return to baseline ratings levels (i.e., Time 1 levels) of mock jurors final dangerousness ratings (Time 3) following the presentation of either competing expert condition. Under this theory, the testimony of the two competing experts was

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45 One might view juror skepticism as simply involving situations in which peripheral processing occurs and juror sensitivity as involving situations in which more central, content-based processing occurs.
simply viewed as equivalent by the mock jurors based on the expert's credentials, and the mock jurors weighted the two competing expert's testimony equally (i.e., one expert canceled the other expert) in their final decisions.

Peripheral processing on the part of the mock jurors might also explain why effective cross-examination had greater negative effects on their evaluation of first expert's credibility, persuasiveness, influence, and level of science than a competing expert condition that contained all the same elements of the effective cross-examination and was delivered by an expert in the field. As mentioned above, the difficulty mock jurors had in balancing two expert's inconsistent opinions may have caused them to peripherally process the testimony, and therefore, ignore the content of the testimony in the competing expert conditions. In the cross-examination conditions, however, the mock jurors may have encountered less difficulty in evaluating the complexity of the expert testimony presented (they had to evaluate and weight only one expert), and thus, were able to centrally process the content of the cross-examination. This central processing of the cross-examination would allow the mock jurors to focus on the content and quality of cross-examination and discount the first expert based on the quality of the cross-examination. Again, it should be noted that this experiment did not intend to directly examine the effects of peripheral and central processing of expert testimony, and, in fact, tried to minimize the impact of this problem. As a consequence, this post-hoc explanation for empirical results should be taken as conjecture. Future research in this area should attempt to examine at what point and under what conditions certain types of testimony become more centrally or
peripherally processed by jurors.

Limitations of Research

Before discussing the broader policy implications of the results of this investigation, it is important to note some of the limitations of this study. First, college students rather than actual jury members participated in this experiment. Actual jurors may have reacted differently to the experimental conditions. One ought to view this investigation as Phase I research (Diamond, 1997). It should be replicated and further refined on a more representative population before any policy decisions are made on the basis of its results. In a similar view, it should be remembered that although considerable effort was expended to mimic a capital sentencing hearing, attempted control of the experimental variables and possible confounds may have caused experimental conditions to fall short of verisimilitude on a number of dimensions. These include: (1) the selection of jury members, (2) the absence of the guilt phase of trial before the sentencing hearing, (3) the brevity of the sentencing hearing itself (it lasted approximately an hour, and did not include testimony other than the expert, cross-examination, or a competing expert), (4) the simplicity of the capital sentencing hearing instruction (the instructions were re-written and focused only on the dangerousness component of the Texas penalty instruction to avoid the confusion that is often found in understanding sentencing instructions), (5) the lack of a deliberation condition, (6) the use of one particular capital sentencing case, (7) the use of scripted testimony, (8) the absence of both cross-examination and competing expert testimony which occur together in most trials and most importantly, (9) the lack of
consequence (i.e., no one dies). In other words, perhaps the greatest weakness of the study is that it simulates the process by which life or death capital sentencing decisions are made using an unrepresentative population in a experimental situation that clearly did not convey the gravity and finality of reality.

**Future Directions and Conclusions**

Even after taking into account the weakness in this research design, this study's empirical findings do have several important legal and policy implications that require further empirical exploration. Most importantly, the research findings strongly point to the possibility that jurors weigh clinical opinion expert testimony more heavily than actuarial expert testimony, and that adversarial procedures may be insufficient to remove this bias. If this is indeed the case, the Supreme Court may have taken an incorrect view concerning the constitutionality of dangerousness predictions in *Barefoot* when they stated that "...we are not persuaded... that the fact finder and the adversary system will not be competent to uncover, recognize, and take due account of its shortcomings." (*Barefoot v. Estelle*, 1983). At least in the one capital sentencing case explored in this experiment, mock jurors failed to fully uncover the weaknesses of the less accurate clinical opinion expert testimony that was presented. Although mock jurors in the clinical opinion expert testimony were influenced by adversary procedures, these jurors were less influenced by these procedures than mock jurors who received actuarial expert testimony. Unlike the mock jurors who received actuarial expert testimony, mock jurors receiving clinical opinion expert testimony did not return to their initial ratings of dangerousness.
levels following adversary procedures.

The persuasive advantage that clinical opinion expert testimony holds over actuarial expert testimony in influencing juror decision-making has implications that extend far beyond capital sentencing in Texas. Courts in Florida and California have assumed that jurors routinely differentiate between clinical and other forms of expert testimony and have assumed that jurors consider clinical opinion expert testimony to be less influential than other testimony (State v. Flanagan, 1993; People v. McDonald, 1984). In contrast, this research suggests that the opposite may, in fact, be true. Jurors not only do not appear to consciously discriminate clinical opinion expert testimony from other forms of expert testimony, they may also weigh less accurate clinical expert testimony more heavily than more accurate actuarial expert testimony in their final decisions. In these jurisdictions, such a bias could lead to juror decisions, in a variety of different contexts, that are unfairly based on jurors' predilection for less accurate clinical opinion testimony.

These research findings may also have bearing on the evidentiary Daubert paradox suggested by Shuman & Sales⁴⁶ and on the appropriate legal admissibility standard for clinical opinion expert testimony. If clinical opinion expert testimony is further demonstrated to be inappropriately more heavily weighted by jurors than other testimony, the Daubert standard and its less than stringent or non-application by a number of

⁴⁶ This refers to their theory that the Daubert scientific evidence criteria may not be applied to clinical opinion expert testimony or applied to this testimony in a less stringent manner as several jurisdiction have done (see State v Nenno, and Moore v. Ashland, 1998) and might lead to clinical opinion expert testimony being admitted while more scientific expert testimony might be excluded under more stringent Daubert analysis.
jurisdictions to clinical opinion expert testimony may inadvertently make it easier for the clinical opinion expert testimony to be admitted. In this case, clinical opinion expert testimony would not face the same admissibility requirements as more scientific and accurate expert testimony, and might not be perceived as any less scientific than other expert testimony, but may well be more heavily weighted by jurors in their decision-making. 47

Future empirical research will be especially important in determining how adversary procedures could eliminate or minimize the unfair advantage that accrues to clinical opinion expert testimony. Alternatively, factors other than adversary procedures (e.g., a judicial instruction to jurors suggesting the inaccuracy of clinical predictions or application of Daubert criteria to the admissibility of all expert testimony), should be investigated to limit the impact of inaccurate clinical opinion testimony. Finally, future research should also explore ways in which actuarial based testimony might be presented to laypersons so that it is more appropriately weighed by jurors.

47 The exact legal regulation of how clinical opinion expert testimony will be handled by the courts will have to wait for the resolution of the Kumho v. Carmichael (under review by the Supreme Court this term), and its subsequent progeny.
**Table 1** Different Groups Represented in 2 X 4 Experimental Design

Adversary Manipulations

<table>
<thead>
<tr>
<th>Type of Expert Testimony</th>
<th>Ineffective cross-examination</th>
<th>Effective cross-examination</th>
<th>Competing Expert same as 1st expert</th>
<th>Competing Expert different from 1st expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Opinion</td>
<td>Clinical-Ineffective cross</td>
<td>Clinical-Effective cross</td>
<td>Clinical-Clinical</td>
<td>Clinical-Actuarial</td>
</tr>
<tr>
<td>Actuarial</td>
<td>Actuarial-Ineffective cross</td>
<td>Actuarial-Effective Cross</td>
<td>Actuarial-Actuarial</td>
<td>Actuarial-Clinical</td>
</tr>
</tbody>
</table>
Table 2 Chronological Experimental Sequence

<table>
<thead>
<tr>
<th>Demogra. written materials presented</th>
<th>Time 1 or Baseline</th>
<th>1&lt;sup&gt;st&lt;/sup&gt; expert testimony presented</th>
<th>Time 2</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; expert or cross-examine</th>
<th>Time 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjects' rate strength of prior beliefs concerning death penalty</td>
<td>Subjects' rate strength of belief concerning dangerousness of the defendant</td>
<td>Subjects' rate: (1) strength of belief concerning dangerousness of the defendant, (2) influence of expert in decision-making, and (3) expert's testimony</td>
<td>ineffective or effective cross-examine OR clinical or actuarial competin g expert</td>
<td>Subjects' rate: (1) strength of belief concerning dangerousness of the defendant, (2) influence of both experts in decision-making (if applicable), and (3) both expert's testimony (if applicable)</td>
<td></td>
</tr>
</tbody>
</table>
### Table 3 Overall Within-Subjects ANOVAs of Mock Jurors' Dangerousness Ratings Throughout the Capital Sentencing Hearing

<table>
<thead>
<tr>
<th>Times Involved</th>
<th>Mean Dangerousness Rating</th>
<th>Degrees of Freedom</th>
<th>F-Value</th>
<th>Significance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1 - Time 2 - Time 3</td>
<td>1.13-2.63-1.42</td>
<td>2, 206</td>
<td>80.189</td>
<td>p&lt;.000</td>
</tr>
<tr>
<td>Time 1 - Time 2</td>
<td>1.13-2.63</td>
<td>1, 207</td>
<td>51.477</td>
<td>p&lt;.000</td>
</tr>
<tr>
<td>Time 2 - Time 3</td>
<td>2.63-1.42</td>
<td>1, 207</td>
<td>50.109</td>
<td>p&lt;.000</td>
</tr>
<tr>
<td>Time 1 - Time 3</td>
<td>1.13-1.42</td>
<td>1, 207</td>
<td>1.522</td>
<td>p= .219</td>
</tr>
</tbody>
</table>
Figure 1 Mock Juror's Dangerousness Ratings
Figure 2 Change in Dangerousness Ratings Following Presentation of Expert Testimony
Figure 3 Mock Jurors' Dangerousness Rating With Different Types of Expert Testimony and Different Levels of Cross-Examination
Figure 4: Mock Jurors' Dangerousness Ratings With Different Type of Expert Testimony and Various Types of Competing Experts.

- Clinical Expert - Clinical Competing Expert
- Clinical Expert - Actuarial Competing Expert
- Actuarial Expert - Actuarial Competing Expert
- Actuarial Expert - Clinical Competing Expert

Dangerousness Ratings

Post-Reading | Post-Expert | Post-Adversary Procedures
Table 4 Correlations Between Mock Jurors’ Ratings of the First Expert’s Credibility, Influence, Persuasiveness, and Level of Science

<table>
<thead>
<tr>
<th></th>
<th>Credibility</th>
<th>Influence</th>
<th>Persuasiveness</th>
<th>Level of Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credibility</td>
<td>1.00</td>
<td>.753***</td>
<td>.753***</td>
<td>.729***</td>
</tr>
<tr>
<td>Influence</td>
<td>.753***</td>
<td>1.00</td>
<td>.831***</td>
<td>.650***</td>
</tr>
<tr>
<td>Persuasiveness</td>
<td>.820***</td>
<td>.831***</td>
<td>1.00</td>
<td>.719***</td>
</tr>
<tr>
<td>Level of</td>
<td>.729***</td>
<td>.650***</td>
<td>.719***</td>
<td>1.00</td>
</tr>
<tr>
<td>Science</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** significant at p<.000
Table 5 Individual ANCOVA Effects of The Type of Testimony, Adversary Manipulations, and their Interaction on Mock Jurors' Final Ratings of the First Expert's Credibility, Influence, Persuasiveness, and Level of Science

<table>
<thead>
<tr>
<th>Between Subject Variables</th>
<th>Final Rating of first expert (Time 3)</th>
<th>Degrees of Freedom</th>
<th>F-value</th>
<th>Significance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of Expert Testimony</strong></td>
<td>influence</td>
<td>1, 199</td>
<td>2.76</td>
<td>p&lt;.10 *</td>
</tr>
<tr>
<td></td>
<td>persuasiveness</td>
<td>1, 199</td>
<td>2.52</td>
<td>p&gt;.10</td>
</tr>
<tr>
<td></td>
<td>level of science</td>
<td>1, 199</td>
<td>.52</td>
<td>p&gt;.10</td>
</tr>
<tr>
<td></td>
<td>credibility</td>
<td>1, 199</td>
<td>.02</td>
<td>p&gt;.10</td>
</tr>
<tr>
<td><strong>Adversary Manipulations</strong></td>
<td>influence</td>
<td>3, 199</td>
<td>1.75</td>
<td>p&gt;.10</td>
</tr>
<tr>
<td></td>
<td>persuasiveness</td>
<td>3, 199</td>
<td>2.67</td>
<td>p&lt;.05 **</td>
</tr>
<tr>
<td></td>
<td>level of science</td>
<td>3, 199</td>
<td>3.82</td>
<td>p&lt;.05 **</td>
</tr>
<tr>
<td></td>
<td>credibility</td>
<td>3, 199</td>
<td>3.98</td>
<td>p&lt;.001 ***</td>
</tr>
<tr>
<td><strong>Interaction</strong></td>
<td>influence</td>
<td>3, 199</td>
<td>1.44</td>
<td>p&gt;.10</td>
</tr>
<tr>
<td></td>
<td>persuasiveness</td>
<td>3, 199</td>
<td>.98</td>
<td>p&gt;.10</td>
</tr>
<tr>
<td></td>
<td>level of science</td>
<td>3, 199</td>
<td>3.38</td>
<td>p&lt;.05 **</td>
</tr>
<tr>
<td></td>
<td>credibility</td>
<td>3, 199</td>
<td>.42</td>
<td>p&gt;.10</td>
</tr>
</tbody>
</table>
Table 6 Individual ANCOVA Effects of Type of Testimony, Adversary Manipulations, and their Interaction on the Weight Given to the Present Offense, Past Offense, and Expert Testimony in Mock Jurors' Final Decision on Dangerousness

<table>
<thead>
<tr>
<th>Between Subject Variables</th>
<th>Decision Based</th>
<th>Degrees of Freedom</th>
<th>F-value</th>
<th>Significance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Expert Testimony</td>
<td>present offense</td>
<td>1, 188</td>
<td>.08</td>
<td>p&lt;.10</td>
</tr>
<tr>
<td></td>
<td>past offense</td>
<td>1, 188</td>
<td>2.06</td>
<td>p&gt;.10</td>
</tr>
<tr>
<td></td>
<td>expert testimony</td>
<td>1, 188</td>
<td>3.52</td>
<td>p&lt;.10*</td>
</tr>
<tr>
<td>Adversary Manipulations</td>
<td>present offense</td>
<td>3, 188</td>
<td>2.34</td>
<td>p&gt;.10</td>
</tr>
<tr>
<td></td>
<td>past offense</td>
<td>3, 188</td>
<td>.520</td>
<td>p&lt;.10*</td>
</tr>
<tr>
<td></td>
<td>expert testimony</td>
<td>3, 188</td>
<td>7.15</td>
<td>p&lt;.001 ***</td>
</tr>
<tr>
<td>Interaction</td>
<td>present offense</td>
<td>3, 188</td>
<td>.86</td>
<td>p&gt;.10</td>
</tr>
<tr>
<td></td>
<td>past offense</td>
<td>3, 188</td>
<td>.38</td>
<td>p&gt;.10</td>
</tr>
<tr>
<td></td>
<td>expert testimony</td>
<td>3, 188</td>
<td>1.73</td>
<td>p&gt;.10</td>
</tr>
</tbody>
</table>
APPENDIX A-Measures

Pre Screen

Age:

Sex:

Occupation:

Ethnic Background:

Political Affiliation:

Have you ever been called for jury duty? (circle your answer) yes  no

What are your feelings concerning the death penalty?  favor  oppose  neither

Please circle the number that best represents how strong your feelings are for or against the death penalty.

Not very strong  Moderately strong  Very strong
1  2  3  4  5  6  7  8
Post Reading

Do you believe the client is dangerous, and therefore should be executed? yes no

Please circle the number that best represents how confident you are with your decision.

Not very confident Fairly confident Extremely confident

1 2 3 4 5 6 7 8
Expert Testimony 1

1. Do you believe the defendant is dangerous, and therefore should be executed? yes no

2. Please circle the number that best represents how confident you are with your decision.
   Not very confident  Fairly confident  Extremely confident
   1      2      3      4      5      6      7      8

3. Please indicate what percentage each factor played in reaching your judgment (when added they should equal 100 %)?
   Present offense     Past offense     Expert testimony

4. Please circle the number that corresponds to how influential you felt the expert testimony was.
   Not very influential  Moderately influential  Very influential
   1      2      3      4      5      6      7      8      9      10

5. Please circle the number that corresponds to how scientific you felt the expert testimony was.
   Not very scientific  Moderately scientific  Very scientific
   1      2      3      4      5      6      7      8      9      10

7. Please circle the number that corresponds to how persuasive you felt the expert testimony was.
   Not very persuasive  Moderately persuasive  Very persuasive
   1      2      3      4      5      6      7      8      9      10

8. Please circle the number that corresponds to how credible you felt the expert testimony was.
   Not very credible  Moderately credible  Very credible
   1      2      3      4      5      6      7      8      9      10
Post Expert Testimony 2

1. Do you believe the defendant is dangerous, and therefore should be executed? yes no

2. Please circle the number that best represents how confident you are with your decision.
   Not very confident   Fairly confident   Extremely confident
   1  2  3  4  5  6  7  8

3. Please indicate what percentage each factor played in reaching your judgment (when added they should equal 100%)?
   Prior offense   Present offense   Expert #1   Expert #2

Expert 1
4. Was the first expert influential in your decision making process? yes no

5. If you answered yes to the last question, please circle the number that corresponds to how influential you felt the first expert testimony was.
   Not very influential   Moderately influential   Very influential
   1  2  3  4  5  6  7  8  9  10

6. Please circle the number that corresponds to how scientific you felt the first expert testimony was.
   Not very scientific   Moderately scientific   Very scientific
   1  2  3  4  5  6  7  8  9  10

7. Please circle the number that corresponds to how persuasive you felt the first expert testimony was.
   Not very persuasive   Moderately persuasive   Very persuasive
   1  2  3  4  5  6  7  8  9  10

8. Please circle the number that corresponds to how credible you felt the first expert testimony was.
   Not very credible   Moderately credible   Very credible
   1  2  3  4  5  6  7  8  9  10

Expert 2

9. Please circle the number that corresponds to how influential you felt the second expert testimony was.
   Not very influential   Moderately influential   Very influential
10. Please circle the number that corresponds to how scientific you felt the second expert testimony was.

<table>
<thead>
<tr>
<th>Not very scientific</th>
<th>Moderately scientific</th>
<th>Very scientific</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3</td>
<td>4 5 6</td>
<td>7 8 9 10</td>
</tr>
</tbody>
</table>

11. Please circle the number that corresponds to how persuasive you felt the second expert testimony was.

<table>
<thead>
<tr>
<th>Not very persuasive</th>
<th>Moderately persuasive</th>
<th>Very persuasive</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3</td>
<td>4 5 6</td>
<td>7 8 9 10</td>
</tr>
</tbody>
</table>

12. Please circle the number that corresponds to how credible you felt the second expert testimony was.

<table>
<thead>
<tr>
<th>Not very credible</th>
<th>Moderately credible</th>
<th>Very credible</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3</td>
<td>4 5 6</td>
<td>7 8 9 10</td>
</tr>
</tbody>
</table>
**Post Cross Examination**

1. Do you believe the defendant is dangerous, and therefore should be executed? yes no

2. Please circle the number that best represents how confident you are with your decision.

Not very confident  Fairly confident  Extremely confident
1  2  3  4  5  6  7  8

3. Please indicate what percentage each factor played in reaching your judgment (when added they should equal 100%)?

Present offense  Past offense  Expert testimony

4. Please circle the number that corresponds to how influential you felt the expert testimony was.

Not very influential  Moderately influential  Very influential
1  2  3  4  5  6  7  8  9  10

5. Please circle the number that corresponds to how scientific you felt the expert testimony was.

Not very scientific  Moderately scientific  Very scientific
1  2  3  4  5  6  7  8  9  10

6. Please circle the number that corresponds to how persuasive you felt the expert testimony was.

Not very persuasive  Moderately persuasive  Very persuasive
1  2  3  4  5  6  7  8  9  10

7. Please circle the number that corresponds to how credible you felt the expert testimony was.

Not very credible  Moderately credible  Very credible
1  2  3  4  5  6  7  8  9  10
Sentencing Instruction

The defendant has been found guilty of 1st degree murder. The only question before you is whether he should be sentenced to death. It must be shown beyond a reasonable doubt that there is a probability that the defendant would commit criminal acts of violence that would constitute a continuing threat to society. If this is shown, then the defendant will be sentenced to death. If this is not shown the defendant will be sentenced to life in prison.
State v. Jones cr-125117

On the night of November 13, 1973, Gail Roark, a secretary for Rand Insurance Company on Rushford Avenue in Dallas, was working alone in the office. Steve Jones, a janitor at the building, picked up Peter Keating at 11 p.m. and went to the building. When he entered the office where Roark was, she appeared startled and Steve Jones left. Later, Steve Jones and Keating discussed robbing 'the girl in the office' and returned and apparently took money from the petty cash box. Steve Jones told Keating that Roark had recognized him and they had to take her with them. Keating was ordered to put Roark in the trunk of her car, and he drove that car to the Cinco River bottoms. Steve Jones followed in another car. After an unsuccessful attempt to sink the car, Steve Jones shot the deceased with a .410 shotgun.

The autopsy showed four gunshot wounds, including one to the chest area of the heart and one the right side of her face, destroying it. Bruises about her face were consistent with being struck repeatedly with a fist or the butt end of a gun.

Officer Elsworth Toohey of the Dallas Police Department found the car and the body while on patrol the next day. Six spent shotgun shells were recovered in the vicinity of the car.

Steve Jones was asked and voluntarily agreed to go to the police station at 12:30 p.m. on November 16, 1973. He permitted his fingerprints to be taken at 1:30 p.m. At 2 p.m. it was learned that his prints matched those on the victim’s automobile. At this point Steve Jones was arrested for homicide. Steve Jones was later given the warnings required by Miranda v. Arizona. At 9:00 p.m. he gave the confession contained on the following page.
**Prior Offenses**

Name: Steve Jones  
Age: 24  
Ethnic background: Caucasian  
Marital Status: Single  

**Past Criminal offenses**  
shoplifting at age 15  
Caucasian  
disorderly conduct at age 17  

**Currently on probation for:**  
joyriding at age 22  
Class 6 felony  
possession of marijuana at age 22  
Class 2 felony  

Education: GED  
Address: Apt 1235 Mockingbird Lane  
Profession: Janitor
Confession

Last Tuesday I dropped Peter Keating off at his job and got to work about 5:00 pm. I worked at my job at 1010 Rushford Ave until about 6:00 P.M., when I left and David left with me. I helped my girlfriend's sister move. I had a .410 gauge shotgun under the trunk of my car. It was an old rusty thing. I went by and picked Peter Keating up about 11:00 and went back over to 1010 Rushford and I opened the door and went into the building. I saw a girl in an office. I went into her office because I saw a light on. The girl acted scared and I said I was sorry. Me and Peter left and went to a little club on Prince Street. We left there and went back to 1010 Rushford. On the way back we was talking about robbing the girl in the office. When we got there Peter got the .410 shotgun out of the trunk. He had a stocking over his face. We went in and the girl screamed. We asked her for her money but she said she didn't have any. I told Peter she had seen me and would know who I was. I told Peter that I would finish my work, then we would take her with us. I finished up my work and put everything away. I went back to the office and told Peter to bring her out. I turned out the lights so nobody would see us. I told Peter to put her under the trunk of her car and he did. Then he drove her car. It was a little red Dart with a black vinyl top. Peter drove ahead of me and I followed him. We went down under the bridge at the Cinco River over Highway 155. When we got there we tried to drive it off into the water. Peter put it into drive and it went off the bank into the water, but would not go down. Peter said it won't go down, we are going to have to shoot her. Peter opened the trunk lid and I shot her about twice with the bolt action .410 shotgun and one of us closed the lid and we left and went straight home. We got home about 2:00 in the morning.
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