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Juror Perceptions of Trial Testimony as a Function of the Method of Presentation: A Comparison of Live, Color Video, Black-and-White Video, Audio, and Transcript Presentations

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*Gerald R. Williams, Larry C. Farmer, Rex E. Lee, Bert P. Cundick, Robert J. Howell, and C. Keith Rooker**

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I. INTRODUCTION

A. Uses of Videotape in the Litigation Process

Since the first commercial use of videotape in 1956, it has found practical applications across an increasingly wide spectrum of uses in the fields of entertainment, industry, and education. Yet there can be little doubt that we are only on the threshold of potential beneficial uses of this medium. During the past 5 years, for example, there has been increasing discussion in legal, social-psychological, and communications literature recommending a variety of interesting applications of videotape technology to the judicial process.¹ A number of judges, lawyers, and researchers have taken the lead in experimenting with these possible applications² and in exploring the legal and procedural ramifications of the use of videotape in the

¹See, e.g., NATIONAL BUREAU OF STANDARDS, POTENTIAL USES OF COURT RELATED VIDEO RECORDING (1972); Barber & Bates, *Videotape in Criminal Proceedings*, 25 HASTINGS L.J. 1017 (1974); Kornblum, *Videotape in Civil Cases*, 24 HASTINGS L.J. 9 (1972); Roth, *Videotape in the Courts: Its Use and Potential*, 3 RUTGERS J. COMPUTERS & LAW 279 (1974); Taillefer, Short, Greenwood & Brady, *Video Support in the Criminal Courts*, 24 J. COMMUNICATIONS, Summer 1974, at 112; Thornton, *Expanding Video Tape Techniques in Pretrial and Trial Advocacy*, 9 FORUM 105 (1973); Williams, *Quiet in the Court—You're on Television*, 5 EDUC. & INDUS. TV, Aug. 1973, at 20; Comment, *Judicial Administration—Technological Advances—Use of Videotape in the Courtroom and the Stationhouse*, 20 DEPAUL L. REV. 924 (1971).

²See, e.g., ADMINISTRATIVE OFFICE OF THE ILLINOIS COURTS, INTERIM REPORT TO THE SUPREME COURT OF ILLINOIS, EXPERIMENTAL VIDEO-TAPING OF COURTROOM PROCEEDINGS (1968); Symposium—*First Videotape Trial: Experiment in Ohio*, 21 DEFENSE L.J. 266 (1972); McCrystal & Young, *Pre-Recorded Videotape Trials—An Ohio Innovation*, 39 BROOKLYN L. REV. 560 (1973); Muftay, *Comments on a Video Tape Trial*, 45 OHIO B.J. 25 (1972); Watts, *Comments on a Videotape Trial*, 45 OHIO B.J. 51 (1972).

resolution of legal disputes.³ This research has indicated at least four categories of potential use: facilitating prelitigation negotiations, recording oral depositions, preserving the trial record, and presenting evidence at trial. Although this article is primarily concerned with only one of these categories, media presentation of evidence at trial, the close relationships among the categories necessitate a brief overview of all four areas.⁴ The article will then review the findings of earlier research on media alternatives to the live trial, indicating that there is reason to believe that media presentations affect jurors differently than live presentations. The remainder of the article will describe the specific research design used to test for variance in juror reactions to five alternative methods of evidence presentation, concluding with a report on the findings of this research.

1. Prelitigation videotape uses

Because of videotape's potential for giving the parties and their lawyers a better appreciation of the strength of the evidence to be presented at trial, those advocating the use of videotape to record the evidentiary bases of a case at the prelitigation stage have suggested that it would provide those concerned with a more informed basis (and presumably a greater incentive) for out-of-court settlement. Additionally, prelitigation videotaping would facilitate more efficient allocation of the parties' resources by permitting the investigative leg work,⁵ such as premises inspection and witness interviews, to be done by someone other than the lawyers, who would then be free to review and evaluate the evidence at a later and more convenient time.⁶ Notwithstanding the advantages of videotape at

³See, e.g., Blews & Patterson, *On Trial: Videotape*, 46 FLA. B.J. 159 (1972); NATIONAL CENTER FOR STATE COURTS, VIDEO SUPPORT IN THE CRIMINAL COURTS: EXECUTIVE SUMMARY (1974) [hereinafter cited as VIDEO SUPPORT]; Note, *Video-Tape Trials: A Practical Evaluation and a Legal Analysis*, 26 STAN. L. REV. 619 (1974); Note, *Videotape Trials: Legal and Practical Implications*, 9 COLUM. J. LAW & SOC. PROB. 363 (1973).

⁴In addition to the uses suggested here, videotape has important potential in legal education, both in law schools and in continuing legal education of the Bar. For a discussion of the uses of videotape in legal education and recommendations for the physical arrangements for its use, see Whitman & Williams, *The Design of Videotape Systems for Legal Education*, *infra* this issue.

⁵See Panel discussion, *Aspects of Claims Handling by Video Tape Recordings*, 20 FED'N. INS. COUNSEL Q., Summer 1970, at 14, 19. This article contains a report by Mr. Marvin J. Hefner, Assistant Vice President of CNA/Insurance, concerning videotapes made of damage caused by hurricane Camille. In Mr. Hefner's view, documentation of Camille's damage by videotape permitted careful, detailed examination of the extent of the damage in the estimating procedure.

⁶This idea has been elaborated as follows:

Probably the most important factor in any case is the impression that a client or a witness may make. An attorney or claims supervisor must size up these people. Too frequently this task is left to inexperienced persons. A lawyer's evaluation is made at trial time when it could be too late. With a videotape recording available for ready reference, he can size up in advance his client, adversary and witnesses.

Merlo & Sorenson, *Video Tape: The Coming Courtroom Tool*, 7 TRIAL, Nov/Dec. 1971, at 55.

the prelitigation stage of legal controversies, its actual use to date in both civil and criminal contexts has been rather limited.⁷

2. Videotaped depositions

The deposition taken upon oral examination is the most widely used of the various discovery devices.⁸ The usual procedure for taking the deposition is to have the deposition recorded stenographically and transcribed.⁹ In 1970, however, the Federal Rules of Civil Procedure were revised to allow increased use of electronic recording of depositions.¹⁰ An example of procedures that may be followed under the amended federal rule is *Carson v. Burlington Northern, Inc.*,¹¹ in which the federal district court granted a defense motion allowing the deposition of the plaintiff to be taken by videotape at the blacksmith shop where the accident giving rise to the litigation occurred. Quoting Wright and Miller,¹² the court stated, "The finder of fact at trial often will gain greater insight from the manner in which an answer is delivered and recorded by audio-visual devices. Moreover, a recording, a videotape, or a motion picture of a deposition will avoid the tedium that is produced when counsel reads lengthy depositions into evidence at the trial."¹³

⁷See, e.g., Kane, *Video Tape Recording*, 50 JUDICATURE 272 (1967), discussing the use of videotape to record interrogations of suspects by the Santa Barbara Police Department as early as 1967. The Santa Barbara County District Attorney's Office hoped that the use of videotape would increase the number of guilty pleas; defendant's counsel, in a drunk driving case, for example, could see that the defendant really was drunk. It was recently reported that 1000 drunk driving arrestees will be videotaped without their knowledge at the jail following their arrests. This will be done as part of an experimental program by the Los Angeles Police Department under a 2-year \$100,000 grant from the U.S. Department of Transportation. L.A. Daily Journal, July 22, 1974, at 1. See Hicks, *Video Recording in Police Identification*, 59 J. CRIM. L.C. & P.S. 295 (1968).

⁸GOLDMAN & BARTHOLD, DEPOSITIONS AND OTHER DISCLOSURE 67 (1966).

⁹See *United States Steel Corp. v. United States*, 43 F.R.D. 447, 450-51 (S.D.N.Y. 1968).

¹⁰The Federal Rules of Civil Procedure now provide:

The Court may upon motion order that the testimony at a deposition be recorded by other than stenographic means, in which event the order shall designate the manner of recording, preserving, and filing of the deposition, and may include other provisions to assure that the recorded testimony will be accurate and trustworthy. If the order is made, a party may nevertheless arrange to have a stenographic transcription made at his own expense.

FED. R. CIV. P. 30(b)(4).

An earlier draft of the 1970 amendments to Rule 30 would have permitted the party to designate in the notice of taking deposition the means by which the deposition would be recorded, subject to the power of the court to make orders to assure that the recorded testimony would be accurate and trustworthy, but without the need of a formal court order in each instance authorizing the deposition to be recorded by other than stenographic means. COMMITTEE ON RULES OF PRACTICE AND PROCEDURE, JUDICIAL CONFERENCE OF THE UNITED STATES, PRELIMINARY DRAFT OF THE PROPOSED AMENDMENTS TO RULES OF CIVIL PROCEDURE FOR THE UNITED STATES DISTRICT COURTS RELATING TO DEPOSITION AND DISCOVERY (1967) (reported at 43 F.R.D. 211 (1968)). Such a permissive provision was in fact enacted in the Ohio Rules of Civil Procedure. OHIO R. CIV. P. 30(b)(3).

¹¹52 F.R.D. 492 (D. Neb. 1971).

¹²C. WRIGHT & A. MILLER, FEDERAL PRACTICE AND PROCEDURE § 2115, at 426 (1970).

¹³52 F.R.D. at 493.

3. *Electronic trial records*

The most intense controversy to date concerning the use of electronic recordings in the settlement of legal disputes has been generated over the issue of electronic recording of trial proceedings. Since the most extensive uses of electronic trial records have involved either single- or multi-track audiotape, the debate has centered principally on the merits of audiotape recordings versus live reporters.¹⁴ However, the few experiments which have been conducted with videotape trial records¹⁵ have indicated that many of the objections leveled at audiotape trial records would be overcome by the use of videotape.¹⁶

4. *Electronic presentation of evidence*

The electronic potential of greatest interest to the legal profession

¹⁴The State of Alaska has had extensive experience with electronic trial records. Motivated at least in part by an anticipated shortage of court reporters, Alaska wrote into its constitution at the time of statehood a provision for electronic trial records. Boyko, *The Case Against Electronic Courtroom Reporting*, 57 A.B.A.J. 1008 (1971); Reynolds, *Alaska's Ten Years of Electronic Reporting*, 56 A.B.A.J. 1080 (1970). The intensity of the debate over electronic records versus the traditional reporter's transcript is undoubtedly attributable in part to the reporter's self-interest. See, e.g., Rodebaugh, *Electronics in Court: Shorthand Reporters v. Recording Machines*, 39 A.B.A.J. 287 (1953). The reporters' point of view has also had supporters outside the ranks of the reporters, however. See Boyko, *supra*. Other intermediate positions have been argued, including a combination of both court reporter and electronic record. Houston, Holland & Beck, *Instant Replay for Appellate Courts*, 59 A.B.A.J. 153 (1973).

¹⁵Probably the most noted experiment with videotape trial records was conducted during September and October of 1968 in two separate courtrooms of the Illinois Circuit Court. The experiment was described by Judge Sullivan, Chief Judge of District Two, as follows:

For one full week, the official record in all court proceedings in Skokie was videotaped. On the following week, the equipment was moved to Evanston. The courtroom installation in each instance was about the same. One camera was situated directly behind the judge, and the other cameras were situated high on the side walls about halfway back in the courtroom. The camera behind the judge was fitted with a remote control feature, so that it could be turned from one part of the courtroom to another. Two other cameras were stationary. (None of these cameras had a zoom-type lens, but such an application is readily available, and it can be operated by remote control.)

Sullivan, *Court Record by Video-Tape Experiment—A Success*, 50 CHI. B. REC. 336, 337 (1969).

Each of the recording cameras used in this experiment is about the size of a law book. Madden, *Illinois Pioneers Video-Taping Trials*, 55 A.B.A.J. 457, 458, 459 (1969).

¹⁶A study and evaluation of various courtroom recording systems is reported in Short & Leight, *A Study of Court Reporting Systems*, 12 JURIMETRICS J. 211 (1972). The authors of that study express the following view:

Without considering cost or record production time, an audio-video recording system offers more faithful reproduction of courtroom events than is possible from other recording methods. The recording captures not only what was said but also the manner of expression, including gestures. If a printed transcript must be produced, the addition of the video to the recording minimizes the speaker identification problems associated with the audio recording alone. However, utility of this system appears to hinge on the acceptability of the audio video tape as the official record and perhaps on cost. Also, skilled operators would clearly be required.

Id. at 216.

is the use of videotape to present testimonial evidence at trial.¹⁷ This use was described and advocated as early as 1970¹⁸ and has been tried experimentally in the courts of several states.¹⁹ Moreover, the rules of procedure in some states have been revised to allow introduction of certain types of videotape testimony in trials,²⁰ and the Code of Judicial Conduct now expressly allows a judge to authorize use of electronic recordings in the courtroom in certain circumstances.²¹

The literature concerning the use of videotape for presenting portions or all of the evidence at trial has been generally optimistic and enthusiastic.²² In addition to the efficiencies and conveniences resulting to the individual litigants and their lawyers,²³ media presentation of evidence offers a realistic solution to one of the most severe problems facing our judicial system—congestion in the courts.²⁴

¹⁷Videotape may also be used to present nontestimonial kinds of evidence, such as views of the scenes of accidents or crimes, or other kinds of demonstrative evidence. See Stewart, *Videotape: Use in Demonstrative Evidence*, 21 DEFENSE L.J. 252 (1972).

¹⁸Morrill, *Enter—The Video Tape Trial*, 3 JOHN MARSHALL J. PRAC. & PROC. 237 (1970).

¹⁹A bibliography of cases in which videotaped evidence was used has been compiled by the National Center for State Courts. It lists 78 cases in which part or all of the evidence was presented by videotape. NATIONAL CENTER FOR STATE COURTS, III VIDEO SUPPORT IN THE CRIMINAL COURTS A-2—A-29 (1974) [hereinafter III VIDEO SUPPORT].

The first complete videotape trial, *McCall v. Clemens*—funded by a grant from the Ohio Judicial Conference—was held on November 18, 1971, in the courtroom of Judge James L. McCrystal. Such a trial had been suggested in an article by Judge McCrystal appearing earlier that year. McCrystal, *Video Tape Trials*, 44 OHIO B.J. 639 (1971). Comments on *McCall v. Clemens* by Judge McCrystal and the two lawyers involved are reported in *Symposium—First Video Tape Trial: Experiment in Ohio*, 21 DEFENSE L.J. 266 (1972).

²⁰See, e.g., OHIO SUPT. R. 15; NEV. R. CIV. P. 30(b)(4), (c), 32(a).

²¹Canon 3(A)(7) generally prohibits the use of photographic and electronic recording of court proceedings and then makes a series of exceptions to that general rule. The first exception allows "the use of electronic or photographic means for the presentation of evidence, for the perpetuation of a record, or for other purposes of judicial administration."

ABA CODE OF JUDICIAL CONDUCT, canon 3(A)(7)(a).

²²See, e.g., McCrystal, *The Videotape Trial Comes of Age*, 57 JUDICATURE 446 (1974); McCrystal, *Videotape Trials: Relief for Our Congested Courts*, 49 DENVER L.J. 463 (1973); Merlo & Sorenson, *Video Tape: The Coming Courtroom Tool*, 7 TRIAL Nov./Dec. 1971, at 55. The National Center for State Courts has compiled a bibliography of articles, newspaper accounts, and other references to the use of videotape in the courts. The bibliography contains approximately 83 entries, each with a short abstract describing the general content of the entry. III VIDEO SUPPORT B-2.

²³Perhaps one of the principal advantages would be increased availability of expert witnesses, resulting from at least two characteristics of videotaped evidence. First, by obviating the need for the expert to be physically present where the trial takes place, either at the time of the trial or at any other time, it will be possible to bring the testimony of truly eminent experts to virtually any part of the country. Second, the fact that the expert will not have to remain "on tap" for a period of several days during the pendency of the trial will mean greater convenience for the experts and reduced costs to the parties. See generally Morrill, *Enter—the Video Tape Trial*, 3 JOHN MARSHALL J. PRAC. & PROC. 237 (1970); Note, *Video-Tape Trials: A Practical Evaluation and A Legal Analysis*, 26 STAN. L. REV. 619 (1974).

²⁴The arguments that videotape trials would save court time are severalfold. First, by videotaping the evidence and then previewing this record in advance, the lawyers could probably agree on some disputed evidentiary points. The attention of the judge,

Logically, then, it would appear that there is much to commend such a movement. The use of media presentations allows trial testimony to be prerecorded at times convenient to both witnesses and attorneys and edited of objectionable material before being shown to jurors.²⁵ It should also broaden the availability of evidence by allowing the testimony of witnesses, who might otherwise be unwilling or unable to take several days to attend and testify at trial, to be recorded at a more convenient time.

The experimental and scholarly activities to date have laid the foundation for increasing trial applications of videotape recordings, leading one proponent to suggest that "the period of experimentation with videotape is now over."²⁶ This view, however, overlooks a major shortcoming in current experimentation and research: the failure to address the issue of whether the trier of fact may respond differently to a videotape presentation of testimony than to a live presentation of the same testimony. As one observer recently stated, "One overriding question remains. Will attending a (televised) movie instead of a trial affect the verdict?"²⁷ A comprehensive study by the National Center for State Courts examined this question and concluded that "[t]he impact of the video medium upon a jury's perceptions and decision making process compared with live trials needs to be extensively studied."²⁸ Indeed, general acceptability of the media presentation will undoubtedly depend upon the extent to which trial judges and trial lawyers satisfy themselves (1) that there are no significant differences in juror perceptions between live and media presentations, or (2) that if such differences exist, they will not affect the type or the amount of verdict that the jurors are likely to render, or (3) that if such differences exist, their effects can be

who need not be present during the taping of the evidence, could be turned directly to those portions of the tape that raise evidentiary questions. The judge would not have to be present during the presentation of the evidence to the jury. Jury time is also saved, principally by the elimination of delays while the court and counsel resolve evidentiary and procedural matters. It was estimated, for example, that in a normal trial setting, *McCall v. Clemens* would have required 2 to 3 days to try; the videotape trial was completed in 1 day, including live voir dire and closing argument.

An additional advantage of videotaped depositions is said to be the cost savings. It has been estimated, for example, that insurance companies alone spend in the vicinity of \$25,000,000 per year in reporters' fees for taking depositions in this country, and that the average deposition cost is between \$100 and \$125. Panel discussion, *Aspects of Claim Handling by Video Tape Recordings*, 20 FED'N INS. COUNSEL Q., Summer 1970, at 14. By contrast, "the cost of the average tape will run somewhere around \$33" so that "[y]ou stand to save yourself from \$60 to \$75 on every deposition that you take on T.V. video tape." *Id.* It should be noted, however, that these figures ignore the cost of videotape recording equipment and technicians to operate the equipment.

²⁵There is general skepticism among trial lawyers concerning the effectiveness of instructions cautioning the jury to ignore evidence of which they are aware. See generally Sue, Smith, & Caldwell, *Effects of Inadmissible Evidence on the Decisions of Simulated Jurors: A Moral Dilemma*, 3 J. APPLIED SOC. PSYCH. 345 (1973).

²⁶McCrystal, *The Videotape Trial Comes of Age*, 57 JUDICATURE 446, 449 (1974).

²⁷Johnson, *Just Because You Can't Televisе Trials Doesn't Mean You Can't Bring a Television To Court*, 4 JURIS DOCTOR, May 1974, at 25, 27.

²⁸VIDEO SUPPORT 22.

predicted in advance so that trial plans can be made responsive to them.

B. *A Review of the Research Literature*

Until the present time, direct experimental research examining the various alternatives to live trial testimony has been sparse in relation to the importance of the questions involved. In 1973, a pilot study was conducted at Arizona State University Law School comparing the reactions of student "jurors" to the testimony of a single witness presented live, by black-and-white videotape, by audiotape, and by read transcript.²⁹ While this study was subject to significant methodological limitations, it found that the monochromatic videotape presentation produced generally fewer positive ratings of the experimental witness than did the live testimony of the witness.

Additional research has been conducted over the past 2 years by Miller and Seibert at Michigan State University concerning the effects of videotape on the information processing and decision-making functions of jurors. This research, a report of which is included in this symposium,³⁰ was conducted in two phases. In the first phase, actors using a modified transcript of an actual trial were used to stage a trial in a Michigan courtroom. This staged trial was viewed by a group of jurors and was videotaped for later showings to other groups of jurors. All jurors filled out questionnaires designed to compare their reactions along five dimensions: (1) attribution of negligence, (2) amount of dollar award, (3) perception of attorney credibility, (4) retention of trial-related information, and (5) motivation and interest in the trial proceedings. The researchers concluded that there was no significant difference in juror response across any of the five dimensions tested. However, a reanalysis of these results by the authors of this article raised serious concerns about the finding of no significant difference in juror attributions of negligence. When the present authors grouped together all of the jury panels which viewed the trial on videotape and tested for differences, they found that the pattern of preferred verdicts resulting from the video trial was consistently different from that of the live trial verdicts.³¹

²⁹Butler, *The Use of Video Tape in the Courtroom to Convey Demeanor Evidence*, May 1973 (unpublished report on file at Brigham Young University Law School). The study was a student project at Arizona State University Law School conducted under the supervision of one of the authors of this article.

³⁰Miller *et al.*, *The Effects of Videotape Testimony in Jury Trials: Studies on Juror Decision Making, Information Retention, and Emotional Arousal*, section II, *supra* this issue [hereinafter cited as Miller].

³¹In the table below, the data reported in the original study is presented in the first two rows, and the results of all other reported video presentations of the trial is given in the additional rows. In 13 separate videotape presentations of the stimulus trial, there was not one outcome that was like the pattern of verdicts preferred after the live trial. In the live trial, only 30 percent of the jurors found Clark *negligent*. Proportionately more of the video trial jurors found Clark *negligent* after every single videotape presentation. This was true regardless of the demographics of "jurors," the degree of realism surrounding the videotape presentation, the setting in which the trial was

The second round of research conducted by the Michigan State group involved a comparison of (1) the respective amounts of information retained in live, color videotape, and black-and-white videotape presentations, (2) the amount of physiological arousal (as measured by the galvanic skin response test) induced by color videotape, and (3) the credibility of the trial participants on color videotape and black-and-white videotape. The findings were (1) that the jurors retained the highest amount of information with black-and-white videotape, followed by color videotape and live presentations respectively, and (2) that the jurors were more physiologically aroused by black-and-white videotape than by color videotape. The findings also indicated that, as compared to black-and-white videotape, color videotape had the effect of enhancing the apparent credibility of witnesses and attorneys.³² It may be noted here that the finding of significant differences in the level of information retention in the second round of research is at variance with the finding of no difference in the first round.

The finding of significant differences in the amount of information retained, in the degree of physiological response, and in the

shown, and the manipulations of the trial tape. The consistency of the different patterns of verdicts between the live trial and 13 videotape presentations of the trial strongly indicates a change in the direction of the jurors' preferred verdicts. To test the significance of this pattern, the jurors' verdicts in all the video trials that used real jurors were combined and compared to the live trial verdicts. A significant chi square resulted from this comparison ($\chi^2 = 12.67$, $df = 2$, $p < .001$). Technically, a combining of the results of separate studies conducted under varying stimulus conditions can be only suggestive and was only done in this case to point out the possibility of significant difference. The consistency of the shift in the judgment of Clark's negligence across all of the video presentations of the trial and the improbability of such a consistent shift brings into question the finding of "no difference" between the preferred verdicts of the jurors in the live and videotape trials. In fact, this reexamination of the data indicates just the opposite: a significantly different pattern for jurors' verdicts in the video trials.

Type of presentation	No. of jurors	Subjects	No. of separate presentations included in data	Percentage of jurors preferring each verdict		
				Clark not neg.	Both neg.	Clark neg.
Live trial	44	Jurors	1	43	27	30
Video trial	40	Jurors	1	35	18	47
Deletion of inadmissible testimony — video trials	117	Jurors	7	15	23	62
Split-full screen comparison — video trials	54	Members of a Catholic adult group	2	28	24	48
Deletion of inadmissible testimony — video trials	144	Students	3	29	30	41

³²Miller sections III-IV.

perceptions of attorney and witness credibility were interpreted by the Michigan State researchers as evidence that videotape has no deleterious effect on trials and that black-and-white videotape is superior to color videotape as a medium for evidence presentation. This is only one of two possible interpretations of the data, the other being that the differences in juror responses, whether positive or negative, constitute variations from an accepted norm and may affect the verdict or award. Regardless of how the differences are interpreted, however, the research does demonstrate that jurors do react differently to media presentations than to live presentations.

In 1973, Bermant, Chappell, and McGuire³³ surveyed the opinions and reactions of jurors serving in a California criminal trial in which all trial testimony was presented by videotape and found that in general the "reaction of the jurors to the technical aspects of videotape presentation was favorable. However, the jurors did have trouble viewing graphic material and thought that more breaks would be necessary when observing video tape testimony." The researchers also found that the "impersonal" quality of the videotaped presentation concerned a "number of the jurors."³⁴

Two additional studies have also suggested that the emotional content of trial testimony may be affected by electronic transmission. This finding is significant because emotional responses have typically been considered indicators of credibility and seem to affect jurors' reactions to witnesses. The first of these studies, conducted by Jorgenson and Howell,³⁵ used spontaneous emotional responses as

³³Bermant, Chappell & McGuire, *Liggons vs. Hanisko: Juror Reactions to Videotaped Trial Testimony in California, 1973* (unpublished manuscript, Battelle Memorial Institute, Seattle, Wash.) [hereinafter cited as Bermant, Chappell & McGuire]. See Bermant, Chappell, Crockett, Jacobovitch & McGuire, *Juror Responses to Pre-recorded Videotape Trial Presentations in California and Ohio*, 26 HASTINGS L.J. 975 (1975) [hereinafter cited as Bermant Juror Studies].

³⁴Bermant Juror Studies at 986-87.

A few of the jurors comments are contained in the following quotation.

One who was highly critical of the entire system of justice as well as the use of videotape, commented: "Feeling [for the witnesses] was definitely completely lost. I didn't have any more feeling for either one of those people... just of the words that they had said... which a friend of mine was arguing for, saying, well, that's good, you weren't influenced by their personalities. On the other hand, their personalities are why they are the people they are. It's really hard to tell where you draw the line in that kind of situation and what on TV should be acceptable and what should not be."

Or as another juror put it, "It's just very hard to explain.... [T]he human factor is needed.... [I]t's just [as] if all of a sudden we are all becoming numbers...."

On the other hand, several jurors viewed the perceived impersonality of the videotape presentation as an advantage. These people said they found fewer distractions watching television than participating in a live trial. Indeed, one juror became so involved in the medium that she said she had to keep reminding herself that this was a real trial and not merely another episode of a popular television program involving lawyers. She added, however, that the commercial program was far more exciting.

³⁵Jorgenson & Howell, *Judging Unposed Emotional Behavior*, 6 PSYCHOTHERAPY: THEORY, RESEARCH & PRACTICE 161 (1969).

a stimulus. It was found that the accuracy of the raters' evaluations of another person's emotions were dependent both upon the medium used and upon the person being rated.³⁶ When one considers the necessity for the medium used in the trial setting to be free of idiosyncratic biasing effects, this finding is potentially important. Many of the arguments in support of the adoption of videotape trial presentations have made the point that if media biasing effects exist, they will affect everyone alike. However, the results of this study indicate that the communication of emotions by media may be influenced by two factors: (1) the characteristics of the person experiencing the emotion, and (2) the type of medium used to convey the person's behavior to others.

A second study, by Burns and Beier,³⁷ found that the channel of communication a person uses to receive information may vary with his mood. Since the use of any given electronic medium may eliminate effective communication to jurors in certain moods, this finding supports the selection of videotape methods which convey as many channels of communication as present technology allows.³⁸

Although not directly related to the trial setting, educators in psychiatry, clinical psychology, counseling psychology, and teacher training have been conducting experiments to examine the effects of black-and-white videotape feedback as a teaching method. Some of the results of this research indirectly provide information concerning the general effects of black-and-white videotape replay on viewer perceptions.³⁹ Other studies have also examined similar effects of audiotape feedback.⁴⁰ In developing the design for the present re-

³⁶*Id.* at 165.

³⁷Burns & Beier, *Significance of Vocal and Visual Channels in the Decoding of Emotional Meaning*, 23 J. COMMUNICATION, March 1973, at 118.

³⁸A methodological investigation of the adequacy of the videotape medium for the observation of nonverbal behavior indicated that the videotape medium was adequate to convey human behavior that was somewhat subtle (e.g., smiling). However, the question of how adequately the medium conveys even subtler behavior (e.g., facial perspiration) remains to be determined. It is probable that there is a level at which videotape cannot adequately convey minute behavior because of the low resolution capabilities of the medium. This limitation of the image conveying properties of videotape may be important in the trial setting. Eisler, Hersen & Agras, *Videotape: A Method for the Controlled Observation of Nonverbal Interpersonal Behavior*, 4 BEHAVIOR THERAPY 420 (1973).

³⁹See Lamberd, Adamson, & Burdick, *A Study of Self-Image Experience in Student Psychotherapists*, 155 J. NERVOUS & MENTAL DISEASE 184 (1972); Walz & Johnston, *Counselors Look at Themselves on Video Tape*, 10 J. COUNSELING PSYCH. 232 (1963). These articles generally support the conclusion that the use of black-and-white videotape to present human behavior results in a lowering of the viewer's perceptions of the "warmth" dimensions of human behavior.

⁴⁰A 1971 study, for example, reports the results of a comparative study (largely impressionistic) of the use of black-and-white videotape and audiotape feedback techniques in a counselor education program at Boston University. The study compared the responses of two groups of students to video and audio feedback of their counseling sessions. One group of students received audio feedback while the other group received videotape (which included an audio component) feedback.

Videotape was found to provide more objective data around which to base discussion during the feedback sessions, but resulted in a distancing effect when compared to

search, the authors drew upon this growing body of video- and audio-tape feedback research for hypotheses concerning the effects of using these media to convey trial testimony.

II. THE RESEARCH DESIGN: RATIONALE AND DESCRIPTION

A. The Need to Assess the Impact of Videotape in the Litigation Process

The research reported here grew out of a concern that the legal literature treating videotape in the courtroom does not directly consider the possibility that videotape presentations of trial testimony may substantially affect the decision-making process of the jury. This is not to say that if there is such an effect it is necessarily bad or improper. Rather, the research reflects a concern that the issue should be raised and confronted in order to determine whether it presents a significant problem. The relevant literature from other disciplines suggests that black-and-white videotape gives rise to different perceptions than does live observation, and that audio-tape replay creates different perceptions than does videotape replay. The pilot study at Arizona State University and a reanalysis of the first phase of the Michigan State study also suggest that there may be important differences in juror perceptions between live testimony and videotape testimony. These different studies raised sufficient questions about the comparability of live and videotape presentations of testimony that it seemed advisable to conduct additional experiments to determine whether or not differences exist and, if so, what effects they might have on the outcome of jury verdicts. Our purpose, then, was to assess the potential seriousness of the problem rather than to provide a definitive resolution.

B. The Live Trial As a Standard of Comparison

It may be asked why videotape presentations should be compared with live presentations of testimony at all. Historically, the purpose of trial by jury has been to make the most reliable possible determination of factual truth and to arrive at a verdict or award based on that determination. Consequently, the ideal test of the merits of alternative approaches to the presentation of trial testimony would be to compare them with objective and articulated standards of truth and justice. Since such standards are presently unavailable, the traditional substitute is the live jury trial. Secopdarily, the extent to which videotape and other media will be utilized in the courtroom will depend in large part upon their acceptance by trial judges and lawyers whose natural tendency will be to compare any new format

audiotape responses. Yenawine & Arbuckle, *Study of the Use of Videotape and Audio-tape as Techniques in Counselor Education*, 18 J. COUNSELING PSYCH. 1 (1971) [hereinafter cited as Yenawine & Arbuckle].

for the presentation of trial testimony with the familiar live trial format.⁴¹

Given that the live presentation of testimony is an appropriate standard of comparison, it is not the only one. As previously noted, witnesses cannot always be physically present at trial to present their testimony, and it is therefore accepted procedure in both state and federal courts in appropriate cases to allow the presentation of a witness' testimony by read transcript. Since videotape could thus be used either to present the testimony of all witnesses or only the depositions of those witnesses who cannot appear at trial, videotape testimony should be compared not only with live testimony, but also with testimony presented by read transcript. In addition, audiotape is presently being used in Alaska as the official means of preserving trial testimony and as part of the record on appeal.⁴² Moreover, color videotape is now the preferred form of television in American homes and is becoming less expensive to reproduce. It would therefore appear that there are really five means of testimony presentation that should be compared: live, read transcript, black-and-white videotape, color videotape, and audiotape. The research reported here was designed to compare these five alternatives.

C. Description of the Research Design

Ideally, an actual jury trial should be used as the basis for this type of experimental study. However, because of the need to avoid possible interference with the rights and interests of litigants in an actual trial, it was decided that for the purposes of this research a method closely approximating a live jury trial would be adequate. Two approaches to the creation of such a stimulus trial were considered: (1) the dramatization of an edited trial transcript, and (2) the use of a previously settled dispute for presentation in an unrehearsed trial. The dramatized transcript method had the potential advantage of improving experimental control. However, because such a trial would only have been an enactment, it would have been difficult to assess the degree of success in realistically presenting the subtle emotions and complex interactions of a real trial. Consequently, this method was rejected in favor of using a carefully selected, previously settled dispute which was tried as though it had not been settled. By allowing experienced trial counsel to prepare and conduct the trial in the typical fashion, the presentations of the participants were spontaneous and unfolding (rather than memorized and affected). The subtleties of original testimony were present and the whole procedure had the suspense and uncertainty of a real trial. In addition, the original parties to the dispute could be used and thus the participants would

⁴¹There is also a concern that the community generally may feel some stake in the live presentation of testimony. See Doret, *Trial by Videotape—Can Justice Be Seen to Be Done*, 47 TEMP. L.Q. 228 (1974).

⁴²See note 14 *supra*.

have a genuine interest in the proceedings. For these reasons, the presentation of a previously settled dispute was viewed as superior to other alternatives for creating a realistic presentation of a trial.

1. The stimulus trial

The case selected for the stimulus trial was a land condemnation action. The condemning authority, the City of Provo, Utah, had taken approximately two-thirds of an acre in a prime residential area for street widening purposes. The land in question was near a prominent new building and was well known to most of the participating jurors. As in the typical condemnation jury trial, neither the right to take nor the amount of property necessary to accomplish the public purpose was ever at issue between the parties, and no claim was made for severance damages. Accordingly, the sole issue for the jury was the value of the property taken.

One witness was presented on each side. A co-owner of the property testified that the value of the property taken was \$15,960, based on a per acre evaluation of \$24,000. A realtor-appraiser who qualified as an expert witness testified on behalf of the city that the rounded amount of just compensation for the property taken was \$8,000, based on a per acre value of \$12,000. Both witnesses agreed that the highest and best use of the property, both before and after the taking, was future residential development, and both relied for their opinions principally upon what they considered to be comparable land transactions. The major difference in approach was that the witness for the city relied upon unimproved acreage transactions, and the land owner upon developed lot sales. Thus the major issue between the two witnesses was whether transactions involving unimproved acreages or developed lots were more comparable to the taking of the subject property. Although this issue was not precisely one of credibility, it did involve a difference of opinion as to the proper approach to the controlling issue of fact.

2. The trial participants

In addition to the landowner and the expert witness previously mentioned, the trial participants included counsel for the respective parties, a judge, a bailiff, and a separate panel of 26 to 28 jurors at each trial. Counsel for both the landowner and the city were experienced trial attorneys and had prepared for this case as they would have prepared for any other land condemnation trial. The bailiff normally assigned to the courtroom used in this study served as the court bailiff during each presentation of the stimulus trial, and two court reporters from the Fourth Judicial District Court participated in the read transcript trial. A law professor with previous judicial experience served as the trial judge.

Jurors were obtained from lists of persons who had previously served as district court jurors in Utah County. A letter requesting their participation in an experimental trial was sent to 244 of the

names on the jury panel lists over the signatures of the three members of the district court and the law school dean. The potential jurors were told that they would be compensated at the regular per diem rate of eight dollars. A preference form and a stamped return envelope accompanied the letter, and the potential jurors were asked to indicate all of the days listed on the preference form on which it would be convenient for them to participate. Of the 182 jurors who returned the preference forms, 165 (80 males, 85 females) stated that they would be able to attend at least one of the trials. From this pool of 165 potential jurors, 140 participated in some segment of the experiment, for an average of 28 per trial.

In short, the participants in this trial were people typically associated with jury trials serving in their usual courtroom roles.

3. *The physical setting*

The setting for the experiment was a courtroom located in the Fourth Judicial District Courthouse in Provo, Utah, made available through the cooperation of the judges of the Fourth District Court of Utah.⁴³ The courtroom had recently been remodeled and was a comfortable, pleasant room. It was large enough that all 28 jurors in attendance at the live trial could be conveniently seated in front of the bar dividing the court and the public sections. However, because the large number of jurors used could not be comfortably seated in the regular jury room, the nearby county commission chambers were substituted.⁴⁴

4. *A description of the different trial procedures*

The trials were held on five separate evenings over a period of a week and a half, and on each evening the entire proceeding occupied slightly more than 3 hours.⁴⁵ The first night, the trial was presented

⁴³The three judges assigned to the 4th Judicial District Court of Utah not only permitted access to lists of experienced jurors from past jury panels and to the evening use of the courtroom, but also assisted by jointly signing the letter that was sent to jurors requesting their participation.

⁴⁴The commission chambers had also been recently remodeled and were comfortable, well lit, and located immediately adjacent to the courtroom.

⁴⁵In summary, the procedure in each of the trials was as follows:

Procedures presented live and followed in all trials:

1. Jurors met and seated by the bailiff.
2. Bailiff announced the judge, all stand.
3. Judge made introductory remarks and explanations.
4. Jurors sworn by the bailiff for the voir dire examination.
5. Voir dire examination conducted by the judge.
6. Five minute recess for jurors.
7. Swearing of the jurors to try the case.

Procedures presented by media (except in live trial):

8. Opening statement by counsel for the city.
9. Opening statement by counsel for the landowner.
10. Testimony of the landowner.
11. Cross-examination of the landowner.
12. Testimony of the city's expert witness.
13. Cross-examination of the city's expert witness.

live and simultaneously recorded by high fidelity color videotape equipment. During successive nights, the voir dire examination and selection of jurors were handled live by the same attorneys and the same judge who participated in the live trial. Once these steps were completed, there was a brief recess during which the attorneys and the judge left the courtroom and were replaced by the alternative media. On successive nights, these were color videotape, black-and-white videotape, audiotape, and written transcript read by two experienced court reporters. The media presentation included the attorneys' opening statements, the direct- and cross-examinations of the witnesses, and the judge's instructions to the jury. At the conclusion of each presentation, the bailiff ushered the jurors into an adjoining room where they were asked to complete the questionnaire described below.

The various media presentations were all taken from the color video record obtained during the live trial. The black-and-white video presentation was made by turning off the color control switch on the color television monitors. Similarly, both the audiotape and the written transcript were made from the audio portion of the original color recording.

5. *The questionnaire*

A questionnaire was constructed to obtain (1) the jurors' pre-deliberation dollar award, (2) their ratings of each of the trial participants, and (3) their reactions to the trial procedure.⁴⁶ Before the questionnaire was filled out, the jurors were given two pages of instructions containing some sample ratings. Questions that arose during the course of filling out the questionnaires were handled by one of the experimenters.

The first portion of the questionnaire asked each juror to indicate what dollar amount should be awarded the landowner for the condemned property.

The second portion of the questionnaire consisted of a basic unit of 29 bipolar adjective scales selected on the basis of their relevance to the evaluation of witnesses and attorneys by jurors.⁴⁷ Each individual bipolar set of adjectives was arranged to yield a 9-point scale in the following manner:

14. Judge's instruction to the jury.

Procedures presented live and followed in all trials:

15. Bailiff takes jury to jury room.

16. Jurors receive instruction for completing the questionnaire.

17. Jurors complete questionnaire.

18. Jurors debriefed about the purposes of the trial, thanked, and dismissed.

⁴⁶The questionnaire used is reproduced in Appendix I of this article.

⁴⁷The use of bipolar adjectives, also called semantic differentials, is often used as a method of judging personality. See C. OSGOOD, G. SUCI & P. TANNENBAUM, *THE MEASUREMENT OF MEANING* (1957). The technique can be used with any adjectives where polarity can be described and it is easily used with subjects who have had minimal experience in responding to personality measures.

Cooperative : _____ : _____ : _____ : _____ : _____ : _____ : _____ : _____ : _____ : Uncooperative
 1 2 3 4 5 6 7 8 9

Jurors were asked to complete one full set of adjective scales for each of the witnesses and attorneys participating in the trial, for a total of four. The order in which the participants were rated was counter-balanced to insure that the ratings were not systematically influenced by order of occurrence.

The third portion of the questionnaire contained three questions requiring each juror to make a forced choice selection as to which of the two witnesses he would select as a friend, which of the two attorneys he would select as a friend, and which of the two attorneys he would prefer as an attorney for himself.

The final part of the questionnaire listed five 9-point, bipolar adjective scales designed to obtain juror reactions to the trial procedure along the dimensions of interest, understandability, clarity, level of fatigue, and stimulation.

III. THE RESEARCH RESULTS⁴⁸

The results of the research design described in the preceding section will be presented in the following order: (1) juror perceptions of the trial participants, (2) amount of the jurors' preferred dollar awards, (3) the relationship between the preferred dollar awards and juror perceptions of the participants, (4) juror preferences for individual participants, and (5) juror reactions to the alternative media presentations.

A. Juror Perceptions of the Trial Participants As Rated on the Bipolar Adjective Scales

As noted above, the witnesses and lawyers were rated in each of the five trials according to a set of 29 bipolar adjective scales. The task of comparing the live trial ratings to the media trial ratings required the computation of 28 rather complex variance analyses⁴⁹

⁴⁸For a more detailed discussion of the results and a more thorough explanation of the statistical analysis employed in this study, see L. Farmer, *Juror Evaluations as a Function of Live, Color Video, Black-and-White Video, Audio, and Transcript Presentations of Trial Testimony*, April 1975 (unpublished doctoral dissertation, Dept. of Psychology, Brigham Young University).

⁴⁹Analysis was by the factor analysis program in Version -5 of the Statistical Package for the Social Sciences (SPSS). This program computes a principal factor analysis and then performs a varimax rotation on the principal factor matrix. The ratings given after each of the five trials were included in the factor analysis. Factor scores were derived from the factor loadings that resulted from the varimax rotation.

The factor scores from the live trial were compared to the factor scores from each of the media trials by a four-way, mixed model analysis of variance design. To avoid the equal interval assumption required for the previous analysis, another analysis was designed which did not require the assumption of equal intervals between segments of the ratings scale. Of interest in this analysis was whether the participants individually and as a group were more positively or negatively rated in the live trial than in the various media trials.

in which all the adjectives that tended to be rated in the same relationship to each other were grouped together and identified as one factor.⁵⁰ Through this process, the set of 29 adjectives yielded five factors: (1) competency, (2) honesty, (3) friendliness, (4) appearance, and (5) objectivity.⁵¹ In addition, a possible sixth factor was suggested by the high correlation between two of the adjective pairs. However, for reasons discussed below, it was decided to analyze these pairs separately.

These five factors and the two additional adjective pairs were used as bases for comparing the juror reactions to each of the four participants and following those comparisons across all five trials.⁵² The results of these comparisons are easily shown in graphic form. For example, the graphic representation of the jurors' ratings of the *competency* factor for each of the trial participants in each of the five trials is illustrated by Figure 1. In that figure, ratings of the attorney for the city are represented by the white squares. His ratings for each of the trials are given sequentially and connected by a solid line, so that by following his ratings horizontally across the graph one may see how he was rated with respect to competency in each of the five trials.

The portion of this article that follows will illustrate and discuss the jurors' ratings on each of the five factors.

1. *Competency*⁵³

The competency factor is illustrated by such adjective pairs as "precise—vague," "confident—hesitant," "certain—uncertain," and "accurate—inaccurate." As indicated in Figure 1, the attorneys for both parties were rated quite similarly across all trial methods.⁵⁴ As

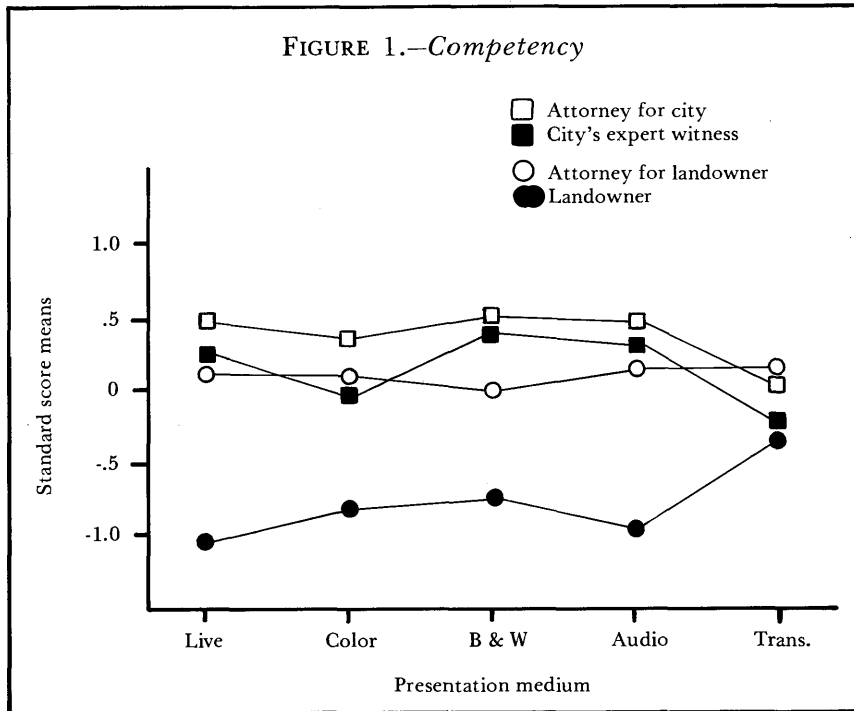
⁵⁰Two adjectives that are always rated in the same way are said to correlate at a 1.00 level. Two adjectives that are never found to be rated in the same way are said to correlate at a 0.00 level. Most relationships fall between these values. As noted in the text, all those adjectives that correlate most highly are grouped together and are called a factor. The factor is named by the researcher with a term that seems to best express the most salient dimension of the factor. The data from the adjective ratings were factor analyzed and yielded five factors.

⁵¹The adjective pairs combined in each of these factors are listed in Appendix 2.

⁵²In this study, a mean rating was computed for each trait in each media of presentation for each participant. For each participant, the mean rating on each trait in the live condition was compared with the mean rating of that trait in each of the alternate media trials. If the rating was higher in the live condition, a plus tally was given for the live condition. If the rating was higher in the media condition, a plus tally was given for that condition. Thus there was a total of 29 possible tallies for each person or a total of 116 tallies when summing across participants. The expected frequency of plus ratings should be equal in all experimental conditions if chance is the only basis for ratings. The difference between the obtained ratings and the theoretical chance distribution was analyzed for significance (utilizing a statistic called significance of proportions) and yielded a critical ratio.

⁵³In comparison to the other factors, the competency factor accounted for the greatest amount of variance (19.4 percent) in the jurors' ratings.

⁵⁴When comparing the difference between two means there is always the possibility that the difference can be attributed to the unique characteristics of the two groups sampled and may therefore not be attributed to the variable that the researcher may



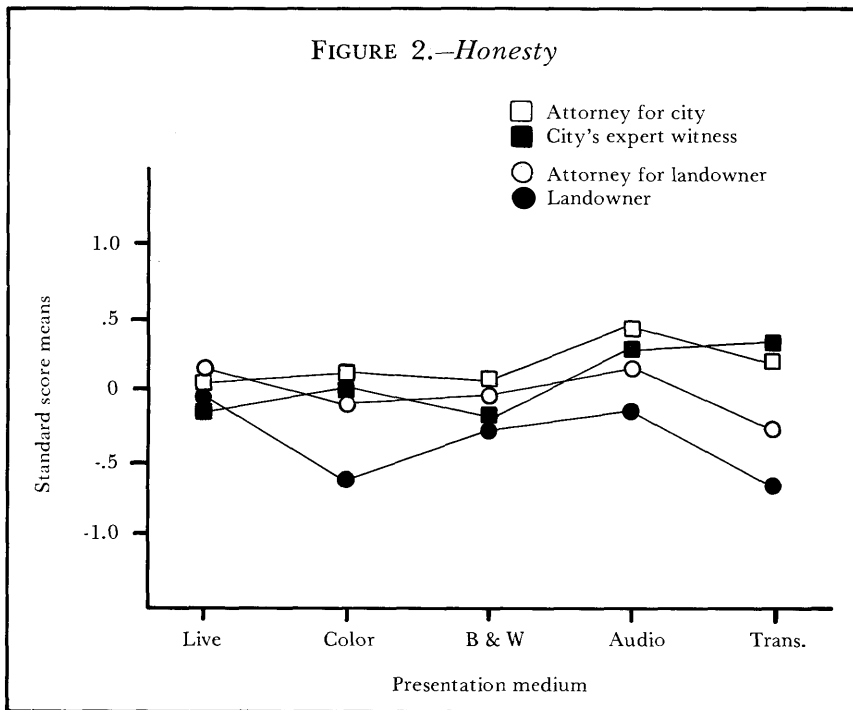
between the two witnesses, however, an important difference occurred between the live trial and the read transcript trial. Whereas the jurors rated the landowner as being less competent than the expert witness in both the live trial and the electronic media trials, in the read transcript trial they rated the landowner and the expert witness as being similarly competent. This would suggest that the read transcript presentation may have interfered with the ability of the jurors to evaluate the competency of the witnesses. To give a simplified summary of the significance of this data, if an attorney representing the landowner were to use these competency ratings as his sole criterion for choosing which method of testimony presentation he preferred, he would avoid the live appearance of his landowner-witness (because of his lower competency ratings) and also avoid the live

have assumed produced the difference between the means. By noting not only the difference between the means but also the variation of scores around the means it is possible to estimate how likely it is that the differences are real and would occur again if the same experimental procedure were reproduced. This is done by taking into account the number of persons who were involved in the two samples upon which the two means are based and the variation of scores in the two samples that occur around their means. The statistical tests that are used to compare mean differences utilize an *F* test or a *t* test, depending upon the number of mean differences being compared. If one finds that the differences could be obtained by chance only 5 times in 100, it is said that the results are significant at the .05 level. This significance statement is written thusly, $p < .05$. If the results could be obtained by chance only 1 time in 100, the statement is written, $p < .01$. If only 1 time in 1,000, the statement is written as $p < .001$. The results of the *F* test conducted on the competency ratings are summarized in the following table.

appearance of the city's expert witness (because of his high competency ratings). Instead, he would seek to have the testimony of both witnesses presented by read transcript in order to minimize the differences in juror perceptions of the competence of the two witnesses. Further, since videotaped trials and depositions are by definition prerecorded, in large cases it would be financially justifiable to use paid subjects acting as jurors to "test" the effects of the various media on juror perceptions of the testimony of key witnesses.

2. *Honesty*⁵⁵

The honesty factor is described by such bipolar adjectives as "trustworthy-untrustworthy," "telling truth-not telling truth,"



SUMMARY F-TABLE. — *Live and media trial comparisons of the competency ratings*

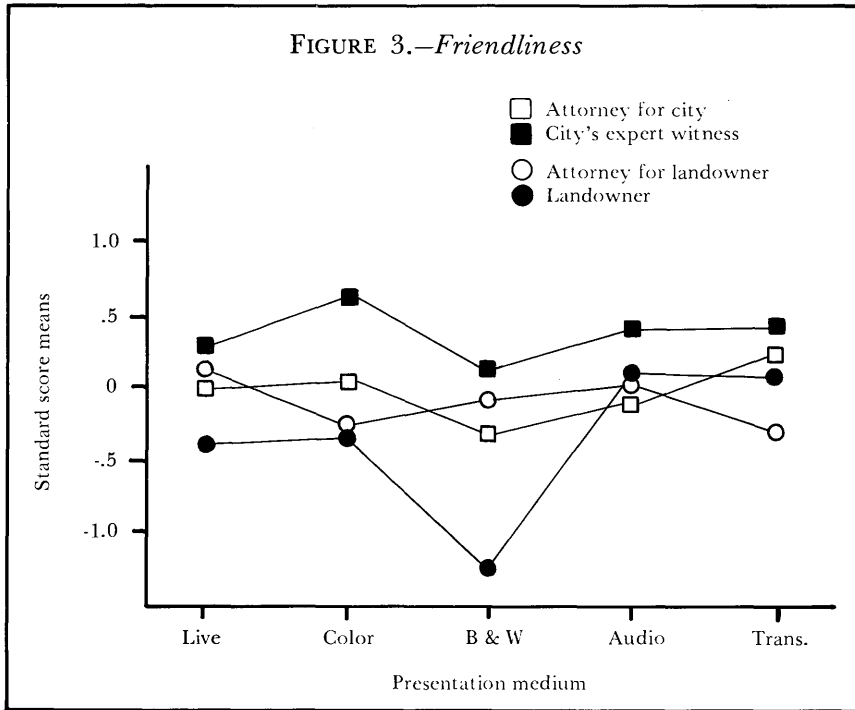
Source of variation	Live/ color	Live/ b & w	Live/ audio	Live/ trans.
A (media)	—	—	—	—
AC (media by participants)	1.03	—	—	7.81**
AC (witnesses)	3.62	—	—	19.11***
AC (attorneys)	—	—	—	1.06
AC (wit. v. atty.)	—	1.83	—	3.25
** <i>p</i> < .01				
*** <i>p</i> < .001				

⁵⁵The honesty factor accounted for the second highest proportion of the variance in the jurors' ratings (17.2 percent).

“sincere–insincere,” and “honest–dishonest.” Like the competency factor, the honesty factor was relatively stable across the various trials. The only differences that reached statistical significance were the ratings of the two witnesses.⁵⁶ As compared to the live trial results, the honesty of the landowner was viewed less positively in both the color and read transcript trials, while the testimony of the expert witness was rated about the same in the color trial and more positively in the read transcript trial.

3. *Friendliness*⁵⁷

The third factor to emerge was that of friendliness. This factor was



⁵⁶The results of the *F* test conducted on the honesty factors are summarized in the following table.

SUMMARY *F*-TABLE. — *Live and media trial comparisons of the honesty ratings*

Source of variation	Live/ color	Live/ b & w	Live/ audio	Live/ trans.
A (media)	1.67	—	1.94	—
AC (media by participants)	1.52	—	—	3.72*
AC (witnesses)	4.19*	—	2.24	9.05**
AC (attorneys)	—	—	—	2.11
AC (wit. v. atty.)	—	—	—	—

**p* < .05
 ***p* < .01

⁵⁷The friendliness factor accounted for 13.8 percent of the variation of the jurors' ratings.

described by bipolar adjectives such as "friendly-unfriendly," "warm-cold," "nice-not nice," and "well mannered-ill mannered." As shown in Figure 3, this factor reflected a dimension of juror perceptions that was very susceptible to media distortions.⁵⁸ The comparison between the live and black-and-white trials revealed that the participants as a group were rated significantly less friendly in the black-and-white trial than in the live trial, an effect most visible in the disproportionately low ratings of the landowner. In the color trial, distortions occurred in the ratings of the witnesses as compared to the attorneys. Finally, in the live trial-transcript trial comparison, the first significant difference in juror perceptions of the attorneys appeared. As shown in Figure 3, in the live mode the attorney for the landowner was seen as slightly more friendly than the attorney for the city, whereas in the transcript presentation the attorney for the city was seen as more friendly.

The sensitivity of the friendliness factor to media effects makes it an appropriate illustration for an additional question about the implications of media presentations of trial testimony. As Figure 3 suggests, differences occurred not only between the live and the media presentations, but also between the various media. This observation leads one to speculate about possible combinations of media presentations within a single trial designed to manipulate the jurors' perceptions with respect to different types of witnesses. For example, suppose that the landowner in the present case were to have another piece of property condemned and that the same expert witness were going to testify on behalf of the city at the trial. If the landowner had the option of having both his own and the expert witness' testimony electronically recorded before the trial, and had the further option of choosing the media by which they would be shown, he would want to choose the medium for himself that gave him the highest ratings with the jurors and the medium for the expert witness that gave him the lowest ratings with the jurors. This same type of manipulation may, of course, also be attempted as between live presentations and any one alternative medium of presentation.

⁵⁸The results of the *F* test conducted on the friendliness ratings are summarized in the following table.

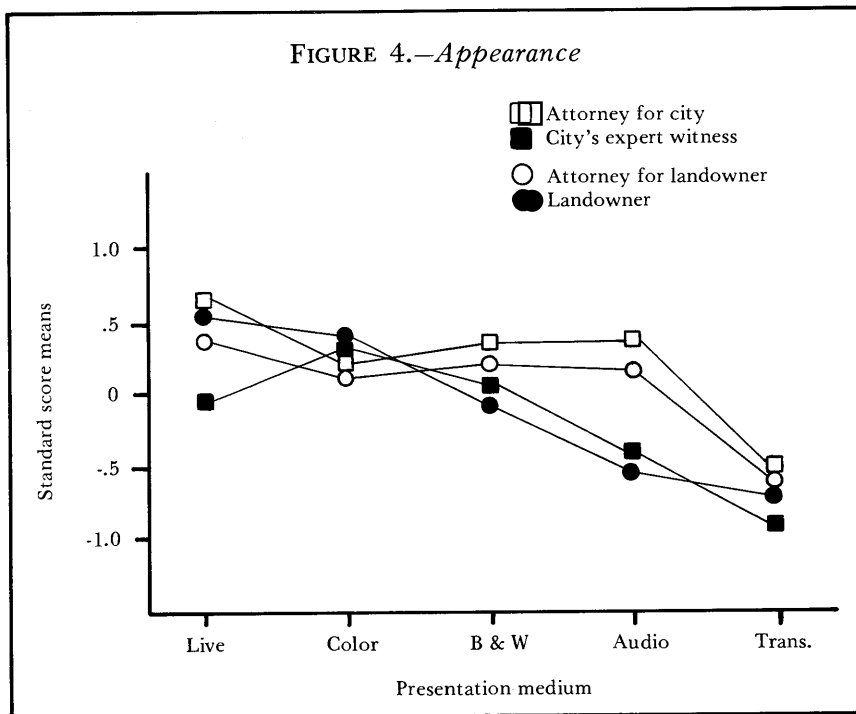
SUMMARY *F*-TABLE. — *Live and media trial comparisons of the friendliness ratings*

Source of variation	Live/ color	Live/ b & w	Live/ audio	Live/ trans.
A (media)	—	5.71*	—	—
AC (media by participants)	2.47	2.02	1.57	3.23*
AC (witnesses)	1.04	4.97*	—	1.04
AC (attorneys)	2.41	—	—	4.96*
AC (wit. v. atty.)	3.90*	1.03	3.81	3.68

**p* < .05

4. *Appearance*⁵⁹

The fourth factor, that of appearance, had only two adjective pairs, “well dressed—poorly dressed,” and “clean cut—unwhole-



some.” It should be noted that the color video trial was the only media trial that did not produce significant differences from the live trial on this factor. It is likewise notable that all of the trial participants were rated significantly more negatively in the read transcript trial, and that a similar but less dramatic drop occurred in the audio trial. These lower ratings are explainable by the fact that the audio and transcript trials provided the least number of cues upon which the jurors could base their appearance ratings.⁶⁰ Thus, the jurors’ lower ratings were probably more a reflection of uncertainty than an actual negative evaluation of the participants.⁶¹ There was also a significant crossover in the jurors’ evaluations of the witnesses between the live and the black-and-white trials. In both trials, the city’s

⁵⁹The appearance factor accounted for 7 percent of the variance in the jurors’ ratings.

⁶⁰The jurors had the option of marking the center square on a scale if they viewed it as inappropriate, neutral, or if the person they were rating fell half way between the two concepts. An analysis of the number of middle items that were marked indicated that significantly more of the middle spaces were marked in one of the major categories (clean cut—unwholesome), but not in the other category (well dressed—poorly dressed). Thus, uncertainty on the part of the jurors contributed to the lower appearance ratings.

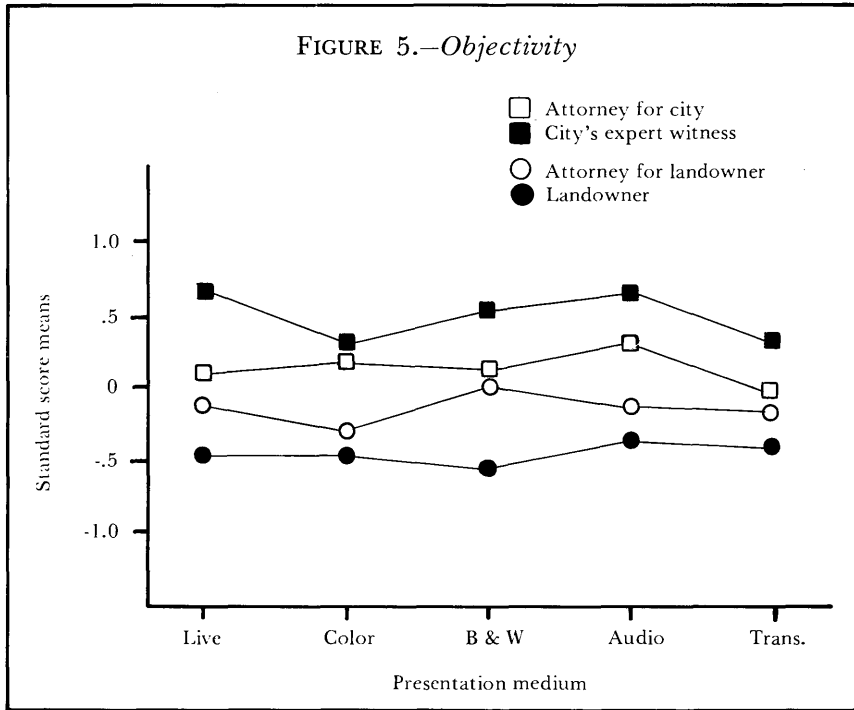
⁶¹The results of the *F* test conducted on the appearance ratings are summarized in the following table.

expert witness was rated essentially the same, while the landowner was rated more positively than the expert in the live trial and significantly lower in the black-and-white trial.

5. *Objectivity*⁶²

The fifth factor emerging from the analysis of the bipolar adjective pairs was named objectivity and included such terms as “unprejudiced—prejudiced,” “greedy—not greedy,” and “open—defensive.”

As shown in Figure 5, the jurors’ ratings of the participants on this factor were very stable between the live and media trials.⁶³ Of the



SUMMARY F-TABLE. — *Live and media trial comparisons of the appearance ratings*

Source of variation	Live/color	Live/b & w	Live/audio	Live/trans.
A (media)	—	1.44	7.68**	31.74***
AC (media by participants)	1.39	1.55	4.16**	—
AC (witnesses)	2.48	4.27*	3.72	1.24
AC (attorneys)	—	—	—	—
AC (wit. v. atty.)	1.45	—	8.77**	—

**p* < .05
 ***p* < .01
 ****p* < .001

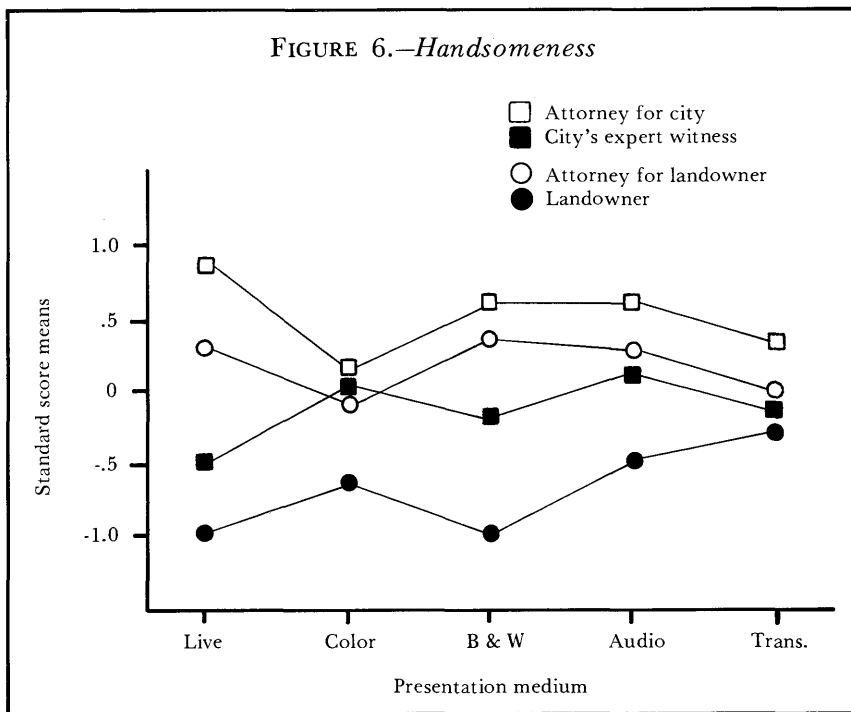
⁶²The objectivity factor accounted for 6 percent of the variance in the jurors’ ratings.

⁶³The results of the *F* test conducted on the objectivity ratings are summarized in the following table.

five factors examined in this study, perceptions of objectivity of the participants were least influenced by the manner of testimony presentation.

6. *Additional adjective pairs*

In addition to the factors discussed above, the bipolar adjective pair “handsome—plain” had a high negative correlation with the “calm—excited” pairing.⁶⁴ Because this correlation does not seem explainable beyond the idiosyncracies of the participants in this particular trial, these two ratings were analyzed separately rather than combined as a sixth factor. In each trial except the color, the attorneys were seen as more handsome than the witnesses. Figure 6 shows, however, that there were significant improvements in the ratings of the witnesses relative to the ratings of the attorneys in the color,



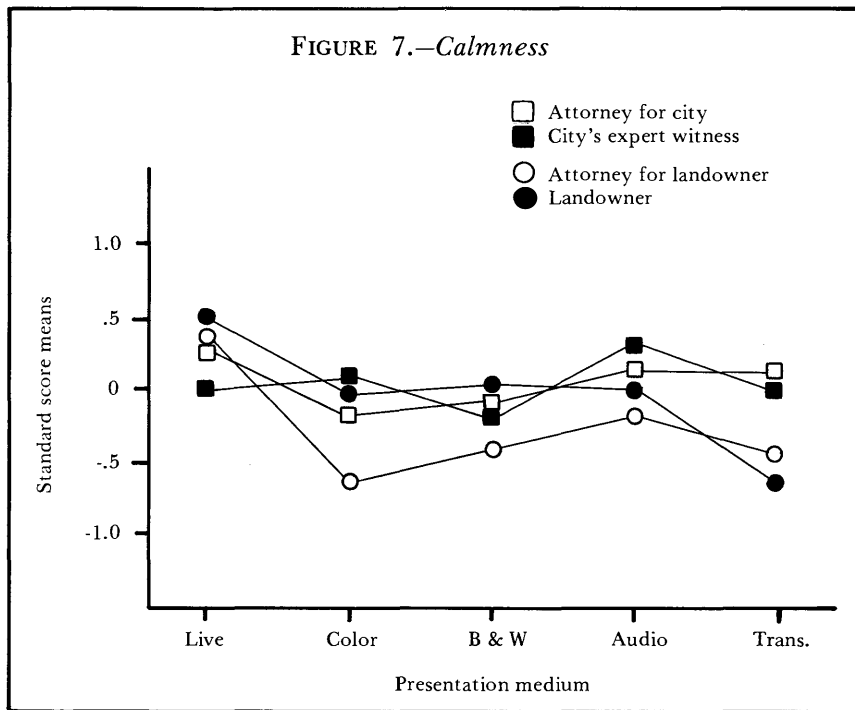
SUMMARY F-TABLE. — *Live and media trial comparisons of the objectivity ratings*

Source of variation	Live/color	Live/b & w	Live/audio	Live/trans.
A (media)	—	—	—	—
AC (media by participants)	—	—	—	—
AC (witnesses)	1.35	—	—	1.91
AC (attorneys)	—	—	—	—
AC (wit. v. atty.)	—	—	—	—

⁶⁴The correlation loading factor for “handsome-plain” was $-.634$ and for “calm-excited” was $.635$.

audio, and read transcript trials.⁶⁵ Thus, of all the modes of presentation, the black-and-white trial was rated most similar to the live trial on this dimension.

As can be seen in Figure 7, the trial participants were rated as significantly less calm in each of the media trials than in the live trial.⁶⁶ In addition, a variety of significant media/participant interactions occurred in the live/color, live/audio, and live/read transcript trial comparisons. These will not be discussed here, but can be considered by examining Figure 7.



⁶⁵The results of the *F* test conducted on the handsomeness ratings are summarized in the following table.

SUMMARY *F*-TABLE. — *Live and media trial comparisons of the handsomeness ratings*

Source of variation	Live/ color	Live/ b & w	Live/ audio	Live/ trans.
A (media)	—	—	—	—
AC (media by participants)	9.24**	1.19	5.37**	10.96***
AC (witnesses)	—	—	—	3.10
AC (attorneys)	1.04	—	—	—
AC (wit. v. atty.)	26.10***	1.82	15.69***	29.53***
** <i>p</i> < .01				
*** <i>p</i> < .001				

⁶⁶The results of the *F* test conducted on the calmness ratings are summarized in the following table.

B. The Amount of Compensation Awarded the Landowner

In each trial the jurors were asked to indicate their individual preferences as to the dollar amount that would justly compensate the landowner for the property taken. Figures 8 and 9 contain summary data on the individually preferred awards as well as four Dunnett's *t* ratios comparing the live trial awards with the four media trial awards.⁶⁷ Even though there were significant differences in juror perceptions between the live and media trials, none of the media trial awards were significantly different from the live trial awards, as indicated in Figure 8.

FIGURE 8.—*Mean dollar awards preferred by individual jurors in alternate conditions and t tests compared with live condition*

Trial	No. of jurors	Mean award	Standard deviation	Dunnett's <i>t</i> ratio with live condition
Live.....	28	\$ 9,815	\$2,073	--
Color	27	10,330	2,037	.84*
Black-and-white	26	10,635	2,283	1.34*
Audio	26	9,205	2,420	1.00*
Read transcript.....	27	10,497	2,387	1.12*

*No significant differences were found.

The finding of "no difference" in the awards between the live and media trials, while accurately reflecting the results of this study, can only cautiously be generalized. Such caution is necessary for at least

SUMMARY F-TABLE. — *Live and media trial comparisons of the calmness ratings*

Source of variation	Live/color	Live/b & w	Live/audio	Live/trans.
A (media)	18.31***	15.22***	4.07*	18.00***
AC (media)	3.82*	—	3.30*	5.12**
AC (witnesses)	2.53	1.15	7.01**	11.96**
AC (attorneys)	3.51	1.13	—	3.39
AC (wit. v. atty.)	5.43*	—	1.42	—
<p>*<i>p</i> < .05 **<i>p</i> < .01 ***<i>p</i> < .001</p>				

⁶⁷The jurors' preferences for the amount of compensation to be awarded the landowner were compared by the Dunnett's test. See B. WINER, *STATISTICAL PRINCIPLES IN EXPERIMENTAL DESIGN* 90-91 (1962). Dunnett's test was developed to allow for individual comparison of several experimental groups to a control group. In the present study, the live trial awards were compared to each of the media trial awards.

Chi square analyses were also computed comparing the distribution of awards made after each of the five trials. These analyses were performed because there is evidence that jury awards and verdicts are more related to the number of jurors preferring a certain outcome than to the mean amount of their preferences. See Kalven, *The Jury, the Law and the Personal Injury Damage Award*, 19 OHIO ST. L.J. 158 (1958).

two reasons. First, the strength of the city's case relative to the landowner's must be taken into consideration. The weight of the evidence and the arguments presented in the stimulus trial so favored the city's position that it would probably have taken dramatic shifts in juror perceptions to significantly alter the dollar awards. Thus the likelihood of concluding that no differences existed when they in fact did exist was increased by the one-sidedness of the trial. To obtain a more precise measure of the possible differences in juror verdicts resulting from live and media presentations of the same testimony, it would be necessary for the relative merits of the parties' cases to be essentially equivalent.

Second, while the jurors' predeliberation preferences after the live trial were not significantly different from those after the media trials, comparisons of the media awards showed a significant difference in the distribution of the audio trial awards vis-à-vis the distribution of the awards in the other media trials. As shown in Figure 9, a larger proportion of jurors preferred minimal awards (\$8,000) in the audio trial than in the other media trials—a difference which would appear to be related to the differential effects of the various media. This finding of award differences is supported by the reanalysis of the Michigan State data which, as discussed above, indicated that the preferred verdicts of the jurors participating in those trials may well have changed from the live trial to the videotape trials.

FIGURE 9.—*The number and percentage of jurors preferring various amounts of compensation to be awarded to the landowner*

Dollar award	Live		Color		Black-and-white		Audio		Read transcript	
	n	%	n	%	n	%	n	%	n	%
8000- 8999 . . .	13	46	8	30	7	27	19	73	8	30
9000- 9999 . . .	2	7	1	4	1	4	0	0	2	7
10000-10999 . . .	5	18	7	26	7	27	2	8	7	26
11000-11999 . . .	3	11	3	11	1	4	0	0	1	4
12000-12999 . . .	3	11	6	22	7	27	3	11	6	22
13000-16000* . . .	2	7	2	7	3	11	2	8	3	11
Totals	28	100	27	100	26	100	26	100	27	100

*Very few jurors preferred amounts above \$13,000; thus, these categories were combined.

Sufficient questions concerning the comparability of live and media trial awards and verdicts have been raised by the results of this study and the reanalysis of the Michigan State study to make an ultimate conclusion of "no difference" with regard to verdicts and awards premature. Further research needs to be completed before any definitive conclusions can be reached in this area.

C. The Relationship of the Dollar Awards to Juror Ratings of Trial Participants

As indicated by the foregoing analyses, there were significant changes in juror perceptions between the live and media trials. In light of the general assumption that significant changes in juror perceptions of the trial participants will influence both their evaluation of the evidence and the outcome of their verdict or award, the next step was to explore the potential relationships between the jurors' ratings of the trial participants and the jurors' preferred dollar awards.⁶⁸ When the ratings of each participant were correlated with the awards in each trial, an interesting pattern of significant correlations resulted. As demonstrated in Figure 10, the number of significant correlations for the opposing witnesses reversed between the live and the media trials. In the live trial, 7 of the 29 ratings of the expert witness correlated significantly with the awards of the jurors, while only 3 of the landowner's ratings were significantly correlated with the awards. This finding is not significant by itself, but when the pattern of correlations with the dollar award in all of the media trials was examined, a major shift was observed. Although this pattern does not hold exactly for the attorneys, combining the significant correlations for the corresponding witnesses and attorneys to produce the total number of significant correlations for each party resulted in a pattern similar to but more dramatic than that produced by the comparison of the witnesses.

FIGURE 10.—*The number of significant correlations of the jurors' ratings with the dollar awards**

	Live	Color	B & W	Audio	Transcript
Landowner.	3	9	16	14	10
Expert.	7	2	7	2	1
Attorney of the landowner. . . .	1	7	1	0	0
Attorney for the city.	8	1	4	1	3
Totals landowner	4	16	17	14	10
Totals for city . . .	15	3	11	3	4

*Correlations that were significant at, or beyond, the .05 level.

A multiple regression analysis was also computed in which the dollar awards for each trial were predicted from the jurors' ratings of the witnesses in the respective trials. Figure 11 provides percentage

⁶⁸Two types of correlation analyses were made to examine the relationships between the jurors' ratings of the trial participants and their preferred dollar awards. First, each of the 29 ratings of each participant were correlated with the dollar awards made after each trial. Second, a multiple linear regression analysis was computed using the raw scores of the jurors' ratings of the trial participants to predict the dollar awards made after each trial.

data on the amount of the predicted variance in juror awards attributable to the ratings of each of the witnesses and constitutes some of the most interesting data encountered in this study. The percentage of the predicted variance in dollar awards attributable to the ratings of the landowner was much greater in the media trials (64 to 85 percent) than in the live trials (19 percent). Correspondingly, the expert witness' ratings accounted for a far greater proportion of the predicted variance in the dollar awards in the live trial (81 percent) than in the media trials (15 to 36 percent). The primary importance of this data is that it demonstrates a rather striking shift of award-related ratings between the live trial and the media trials. While this shift did not result in a clearly significant difference in awards, it might have that effect in a trial in which the merits of the respective cases were more evenly balanced.

FIGURE 11.—Percentage of the predicted variance in the dollar award attributable to the ratings of the landowner and expert

	Live	Color	B & W	Audio	Transcript
Landowner	19%	85%	80%	64%	79%
Expert	81%	15%	20%	36%	21%

D. Juror Preferences for the Trial Participants

At the outset of this study it was hypothesized by one of the authors that the juror awards would vary with the relative personal appeal of the witnesses and attorneys to the jurors. To test this hypothesis, three forced-choice questions were asked of the jurors:

1. If you had to choose between the two witnesses, whom would you prefer to have for a friend?
2. If you had to choose between the two attorneys, whom would you prefer to have for a friend?
3. If you had legal difficulties and had to choose either the counsel for the city or the counsel for the landowner to represent you, whom would you select?

In general, the combination of which witness was selected as a "friend" and which attorney as "counsel" resulted in significant differences in the preferred awards. For example, the jurors awarded significantly more money to the landowner if they selected him as a "friend" in preference to the expert witness. Likewise, there was a tendency for the jurors to award more money to the landowner if they selected his counsel as a "friend" in preference to the city's counsel. Conversely, the jurors selecting the expert witness for a "friend" and the counsel for the city as "counsel" gave the lowest award to the landowner. Figure 12 lists the mean awards associated with the various combinations of juror preferences.⁶⁹

⁶⁹The following table presents an analysis of the variance results.

FIGURE 12.—*Mean dollar awards associated with various combinations of juror preferences*

	Dollar award when combination selected	Number selecting combination
Preferred witness as friend		
Landowner	11,604	23
Expert	10,409	111
Preferred attorney as friend		
Counsel for landowner	11,538	39
Counsel for city	10,475	95
Preferred attorney as counsel		
Counsel for landowner	11,458	36
Counsel for city	10,555	98
Preferred witness as friend, attorney as counsel		
Landowner + counsel for landowner . .	11,470	12
Landowner + counsel for city	11,737	11
Expert + counsel for landowner	11,436	24
Expert + counsel for city	9,372	87
Preferred friendship combination		
Landowner + counsel for landowner . .	12,220	12
Counsel for city	10,987	11
Expert + counsel for landowner	10,856	27
Expert + counsel for city	9,963	84
Preferred attorneys as friend and counsel		
Counsel for landowner + counsel for landowner	12,104	18
Counsel for landowner + counsel for city	10,812	18
Counsel for city + counsel for landowner	10,971	21
Counsel for city + counsel for city	10,138	77

The relationship between the dollar awards and the selection of witnesses and attorneys as friends and counsel

Source	df	MS	F	p
Witnesses as friends (A)	1	19,835,400	4.61	<.05
Attorneys as counsel (B)	1	11,356,200	2.64	
Attorneys as friends (C)	1	15,707,200	3.65	<.10
A × B	1	19,060,700	4.43	<.05
A × C	1	402,421	.09	
B × C	1	733,333	.17	
A × B × C	1	10,186,700	2.37	
Error	126	4,300,520		

The juror selections were also examined to determine if the number of jurors choosing the respective trial participants as "friends" and "counsel" across the various trials changed with the medium of presentation. As indicated in Figure 13, the number of jurors selecting either the expert witness or the landowner as a friend did not differ between the live trial and the media trials. However, in the black-and-white video trial, the number of jurors preferring the attorney for the landowner as a friend was significantly greater than in the live trial.⁷⁰ The attorney for the landowner was also preferred as counsel significantly more in both the black-and-white and the read transcript trials than in the live trial.⁷¹

FIGURE 13.—*Forced choice selections of the trial participants as friends and counsel in each trial*

	Number selected				
	Live	Color	B & W	Audio	Transcript
Witness as a friend					
Expert	22	24	22	23	21
Landowner . . .	6	3	4	3	6
Attorney as a friend					
Counsel city	24	22	13	17	23
Counsel landowner .	4	5	13	9	4
Attorney as counsel					
Counsel city	26	20	17	21	15
Counsel landowner .	2	7	9	5	12

It should be noted here that the witnesses generally made very different impressions upon the jurors—one was rated quite positively and the other comparatively negatively.⁷² On the other hand, the

⁷⁰ $p < .02$.

⁷¹Live compared with black-and-white, $p < .03$; live compared with read transcript, $p < .004$.

⁷²In addition to rating the participants, the jurors in each trial were asked to what extent they were influenced by the fact that Mr. Y--- was an expert at real estate evaluation. Jurors rated their responses on a 9-point scale and this data was analyzed in a one-way, unequal cell size analysis of variance across the trial. These ratings were also correlated with the dollar awards. The mean ratings and correlations with dollar awards are contained in the table below. The expert's ratings on this question were lowest (higher influence) in the live trial, but this difference was not significant. The only significant correlation between the responses to this question and the dollar awards occurred in the live trial. This result was consistent with the previous analyses which indicated that the relationship of the expert witness' testimony and the final

attorneys received quite similar and generally positive ratings in all trials. These results would indicate that media presentation methods will not distort jurors' friendship preferences when one person makes a qualitatively better impression than another in the live situation. However, when the stimulus persons are similarly perceived in the live situation, black-and-white videotape may significantly distort jurors' preferences with regard to friendship, and both black-and-white video and read transcripts may distort⁷³ jurors' perceptions of competency. Given the strength of the correlation between dollar awards and juror preferences for trial participants, the distortions in juror preferences occurring in the black-and-white trial are a cause for serious concern.

E. Juror Reactions to the Trials

The final portion of the questionnaire asked the jurors to rate the trial along five 9-point scales according to how stimulating they felt the trial to be, how interesting they perceived it to be, how easy it was to pay attention, how refreshing it was, and how clear it was. Figure 14 contains the results of these ratings as compared by Dunnett's *t* test. It should be noted that the transcript trial was rated as less desirable on all five dimensions than the live trial. Moreover, as compared to the live trial, the audio trial was rated as significantly less stimulating and the color trial as significantly less easy to attend. Thus, the black-and-white trial was the only trial in which no significant difference from the live trial occurred.

IV. DISCUSSION OF THE RESULTS

There are basically two ways in which videotape may be used to present evidence at trial. One is to present only depositions of witnesses unable to be present at trial. The other is to present all trial testimony, regardless of the availability of witnesses. Because read transcripts are already accepted substitutes for the live testimony of unavailable witnesses, the use of videotape to present deposition testimony involves different questions and different standards of

dollar award was different in the media trials than in the live trial.

Ratings of the degree to which the jurors perceived themselves as being influenced by the status of the expert witness

	Live	Color	B & W	Audio	Transcript
Mean rating	3.39	4.52	4.58	3.62	4.19
Standard deviation	2.55	2.79	2.70	2.14	2.54
Correlation of the ratings with the dollar awards	.44*	-.10	-.12	.22	.34
* <i>p</i> < .05.					

⁷³The term "distort" admittedly carries pejorative connotations and a value judgment. A more neutral term such as "vary" could be used, but as noted above, what occurs in a live jury trial is used herein as the desirable standard. See section II, *B* of text.

FIGURE 14.—*Comparisons of ratings of the media trials with the live trial*

	Mean ratings				
	Live	Color	B & W	Audio	Transcript
Stimulating- Tedious	3.89	4.19	3.54	4.50 ^a	5.74 ^a
Interesting- Dull	2.61	3.33	2.35	2.96	4.04 ^b
Easy to pay attention- Difficult to pay attention .	2.43	4.00 ^c	2.65	3.54	4.95 ^c
Refreshing- Fatiguing	5.04	4.70	4.31	5.31	6.07 ^d
Clear- Confusing	2.96	4.00	2.46	3.31	5.00 ^e

^asignificantly different from live condition (p transcript $< .001$, p audio $< .001$)

^bsignificantly different from live condition ($p < .05$)

^csignificantly different from live condition (p color $< .05$, p transcript $< .001$)

^dsignificantly different from live condition ($p < .01$)

^esignificantly different from live condition ($p < .01$)

comparison than does the use of videotape to present trial testimony which would ordinarily be given live. These two procedures will therefore be discussed separately below.

A. Comparative Merits of Deposition Presentation Methods

The primary question involved in the presentation of deposition testimony is whether read transcript or some form of electronic replay is the better substitute for the live appearance of a witness. This study tested the effects on juror perceptions of four alternative methods of deposition presentation: black-and-white videotape, color videotape, audiotape, and read transcript. In general, it was found that all three electronic methods of presentation were superior to the read transcript method in their ability to approximate juror perceptions of live testimony, though each of these methods demonstrated unique advantages and disadvantages when compared to the other two.

1. Read transcript

The read transcript procedure was rated by the jurors as less interesting, more difficult to pay attention to, less clear, more fatiguing, and more tedious than the live trial or the other media

trials. More, and typically larger, differences in the participants' ratings occurred in the live/read transcript comparisons than in any of the other live/media trial comparisons. In addition, the read transcript trial produced the only significant distortions in the participants' competency ratings. As a result, the proportion of jurors preferring either one or the other of the attorneys as counsel in the read transcript trial was significantly different than in the live trial. Only the black-and-white trial produced similar distortions in juror preferences. In light of these findings, juror perceptions of live trial testimony would be better reproduced by any of the methods discussed below.

2. *Audiotape*

Aside from the understandable distortions in the appearance and handsomeness ratings, the use of audiotape to present deposition testimony produced very few differences from the live trial results. The audio trial was rated significantly less stimulating than the live trial, but both the audio and the live trial produced generally more positive evaluations of the trial participants than the other media trials. Given this latter result and the observations of Yenawine and Arbuckle⁷⁴ that audiotape presentations resulted in more emotional involvement than black-and-white videotape presentations, it appears that audiotape produces some unique effects when compared to videotape and read transcript presentations—effects which contribute to a heightened sense of “reality.” To illustrate, if one were to close his eyes while listening to a reasonably high quality audiotape reproduction of another person's voice, there would be little difference between that experience and hearing him in person.⁷⁵ The read transcript method does not provide anything like this experience and the image projected on the screen by video presentations is so obviously a media presentation that it may dissipate the sense of reality created by the accompanying audio recording. Yet the very fact that audiotape focuses the jurors' attention on one aspect of a person's demeanor—his voice—also creates the possibility that if a person has an unusually pleasant or unpleasant voice, jurors may perceive his audiotaped testimony differently than his live testimony.⁷⁶

⁷⁴Yenawine & Arbuckle, *supra* note 40.

⁷⁵As an illustration of the involving nature of audiotape replay, consider the following subjective experience of a reporter at the Watergate coverup trial.

It was an appropriately bizarre way to begin the final phase of Watergate. After the opening statements, Federal Judge John J. Sirica's Washington courtroom was eerily silent for up to 100 minutes at a time. Muff-sized earphones clamped on their heads, judge, jury, defendants and spectators alike were transported by tape recording into former President Richard Nixon's Oval Office. . . . Reproduced publicly for the first time, the ghostly voices, disembodied but all too real, conveyed the intent to deceive with far more impact than any previously printed transcript.

TIME, Oct. 28, 1974, at 12.

⁷⁶For example, the landowner in the stimulus trial received his least favorable awards in the audio trial. This may be a result of his comparative disadvantage in audio pre-

3. *Black-and-white videotape*

In addition to being more accurate than either audiotape or read transcript in reproducing the appearance aspects of the live trial, black-and-white videotape was also the only medium tested which did not produce significant differences in any of the five "desirability" ratings such as level of interest and stimulation. These advantages were offset by significant distortions in the friendliness ratings and in the jurors' preferences for participants similarly rated in the live trial. An intriguing question is whether these distortions were a result of the emotional distancing associated with the use of black-and-white videotape by Yenawine and Arbuckle,⁷⁷ and the Bermant group.⁷⁸

4. *Color videotape*

Of the four media tested, color videotape was rated closest to the live trial in its appearance aspects and in its ability to reproduce the "live" jurors' responses to the forced-choice friendship and preferred counsel questions. Like black-and-white videotape, however, the color presentation produced some distortions in the general "friendliness" ratings, and color videotape was the only electronic presentation to produce distortions in the honesty ratings. The color trial was also rated significantly less easy to pay attention to than the live trial.

5. *Conclusion*

This research was designed to test whether jurors respond differently to media presentations of testimony than to live presentations of the same testimony. As indicated in the above discussion, significant differences in juror perceptions did occur between the media and live trials. These findings raise the question of whether such differences may affect the type or amount of verdict that jurors are likely to render, and the related question of whether the differential effects of the various media can be predicted in advance. Since additional research on a broad scale will be required to answer these questions, the conclusion that any one of the three electronic media would be the method of choice over the other two would be premature. The study did indicate, however, that substantially more and greater differences in juror perceptions occurred in the live/read transcript comparisons than in any of the other live/media comparisons—a finding which would suggest that all of the electronic media tested were more accurate than read transcript in reproducing the results of a live trial. Given the competing advantages and disadvantages of the

sentation during the trial. He spoke very slowly, with little tonal variety, and his voice had a raspy quality resulting from a guttural resonance. The city's expert witness, on the other hand, had a deep, well-resonated voice, and his vocal manner was assured and confident.

⁷⁷Yenawine & Arbuckle, *supra* note 40.

⁷⁸Bermant, Chappell & McGuire, *supra* note 33.

three electronic media, however, situational requirements become the dominant factors in selecting one medium over another. In this light, the lower cost and greater convenience of audiotape are strong factors to be considered.

B. An Evaluation of the Use of Videotape To Present All Testimony at Trial

In contrast to the use of videotape to present deposition testimony of inaccessible witnesses, the use of videotape to present all testimony at trial involves the presentation of evidence that would usually be presented live. Thus, the primary question involved here is not whether videotape is an acceptable substitute for another medium, such as read transcript, but whether videotape is an acceptable substitute for live testimony. As previously discussed, this study found that while videotaped testimony demonstrated many similarities to live testimony, it also produced several significant differences.

Given the occurrence of significant distortions in juror perceptions of trial testimony in the videotape presentations, the next step is to determine whether these differences support the conclusion that the videotape trial is not an acceptable alternative to the live trial. Although the present research was not specifically designed to answer this question, several of the findings would indicate that this may be the case.

First, the results of this study indicated that the biasing effects of media presentations do not affect everyone alike. Rather, juror perceptions of trial testimony were found to be related both to the characteristics of the witness and to the medium used—a finding supported by the Jorgensen and Howell research.⁷⁹ A striking example of this type of media-participant interaction is found in the disproportionate lowering of the landowner's friendliness ratings in the black-and-white video trial relative to the ratings of the other trial participants. In addition, the effects of a media presentation upon juror perceptions of any given individual are difficult, if not impossible, to predict in advance. Thus, given the present state of information, the parties to a trial could not knowledgeably assess whether they would be injured or benefited by selecting a video trial.

Second, analysis of the relative impact of the trial participants on the jurors' preferred dollar awards indicated that substantial shifts occurred between the live and media trials. For example, the preferred dollar awards demonstrated strong correlations with the jurors' perceptions of the expert witness in the live trial, but in the media trials the awards were more strongly correlated with the

⁷⁹Jorgensen & Howell, *Judging Unposed Emotional Behavior*, 6 *PSYCHOTHERAPY: THEORY, RESEARCH & PRACTICE* 161 (1969).

juror's perceptions of the landowner. This question of impact is central to the purpose of a trial, since both parties are attempting to persuade the jurors to accept their point of view. If media trials substantially change one participant's impact on the jurors relative to the other trial participants, videotape trials may produce results substantially different from live trials in terms of juror perceptions and decisions. As previously noted, the one-sidedness of the trial selected for this study precluded any definitive assessment of this question, but the potential importance of the finding of differences in the relative impact of the media trial participants warrants further and more specific study.

These and other findings of differences between live and media trials should stand as a caution to those proposing the immediate and widespread implementation of videotape trials.

C. *Recommendations for Future Research*

Assuming, as research has shown, that differences in juror perceptions occur between live and media trials, then the degree and direction of impact these differences will have on jurors' verdicts need to be carefully tested and verified in experimental settings before major policy decisions are made as to the use of videotape in trials.

The most serious potential impact of these differences is that they may influence the outcome of trials. Jurors may plausibly be led by these different perceptions to render a different verdict or to vary the amount of dollar or quality of other awards. This potential biasing effect of videotape presentation of trial testimony suggests the need for research specifically designed to compare *deliberated jury* verdicts after live and media presentations of the same trial testimony repeated over a number of trials using several witness and attorney types. This research is necessary to determine whether there will be consistent and gross differences between the verdicts or award amounts in live and media trials. If such differences are found to consistently occur in some or all types of trials, that information should be weighed both in the decision of whether to go ahead with media presentations in general and in the decision of whether to accept media presentations in specific instances.

One possible design for this research would be to present a color videotape trial to jurors in which the method of presenting the testimony of one of the trial witnesses is varied (live, color video, black-and-white, audio, and read transcript) in successive trials. If the stimulus witness' testimony is pivotal to the outcome of the trial, changes in impact are likely to be reflected in the final decisions of jurors. Changes in the amount of influence of the witness upon the jurors could be assessed by testing for differences in preferred awards and verdicts made after each trial. An experimental procedure like this would provide a better comparison of deposition presentation methods than the procedure used in this study.

In designing future research, researchers should take into account the fact that experimental studies of videotape trials that have been completed to date have compared the results of a live trial with the results of a continuous videotape record of the same trial. The video recording has typically included in a split-screen format both the trial portion of the courtroom and appropriate close-up inserts of trial participants. Consequently, the experimental studies have used videotapes that have included pictures of judges, witnesses, and attorneys. By contrast, actual—as opposed to experimental—videotape trials will present testimony that is recorded at different times, in different places, and, typically, outside of the presence of the judge. As a result of these differences between the experimental videotape trials and actual videotape trials, the studies to date have produced data concerning the effects of the use of media to present the live trial record, but have not examined all of the differences that might occur in a genuine videotape trial. This methodological consideration is important as current procedures have probably minimized the differences between live and videotape trials. Future studies could more adequately compare live and videotape trials by excluding pictures of the judge and, in general, attempting to produce a record that would appear to be as segmental and discontinuous as that of an actual videotape trial.

APPENDIX I

JUROR'S QUESTIONNAIRE

This questionnaire is designed to help us obtain your impressions of the participants in the trial you have just witnessed. We would appreciate your serious and thoughtful responses to the items on the following pages.

DETERMINATION OF THE JUST COMPENSATION FOR THE TAKING OF THE PROPERTY

In your opinion, what is the amount of just compensation which the defendant landowners are entitled to be paid for the taking of their property? \$ _____

INSTRUCTIONS FOR RATING TRIAL PARTICIPANTS

On the following pages you will find several lists of descriptive adjectives on which we would like you to describe the participants (witnesses and attorneys) in this trial. In making your judgments, respond on the basis of what these words mean to you. If you do not know the meaning of a particular word, raise your hand and the person administering the questionnaire will help you.

HERE IS HOW YOU ARE TO USE THESE SCALES:

The scale is designed so you can express *the degree to which* the person you are rating seems to fit one end of the scale or the other.

To indicate the degree to which the word at one end of the scale describes the person you are rating, you can check any of the spaces on that side.

For example, if you feel that the participant you are rating is very closely described by one end of the scale, you should place an "X" as follows:

Fair : X : ___ : ___ : ___ : ___ : ___ : ___ : ___ : Unfair

OR

Fair : ___ : ___ : ___ : ___ : ___ : ___ : ___ : X : Unfair

If you feel that the participant you are rating is quite closely described by one or the other end of the scale (but not entirely), or is only slightly related to one side as opposed to the other side (but is not really neutral), *then you should put an "X" in one of the spaces* indicated by the asterisks (*).

Fair : ___ : * : * : * : ___ : * : * : * : ___ : Unfair

Which space you check should depend on the degree to which the word describes the person you are rating. The direction toward which you check, of course, depends upon which of the two ends of the scale seem characteristic of *the way in which you view the participant*.

If you consider the person as neutral on the scale, both sides of the scale equally associated with the concept, or if the scale is completely irrelevant, unrelated to the way you perceive the person, then you should place your "X" in the middle space:

Fair : ___ : ___ : ___ : ___ : X : ___ : ___ : ___ : Unfair

IMPORTANT: 1. Place your "X" 's in the middle of the spaces, not on the boundaries.

this
not this
 : ___ : ___ : X : ___ : ___ : ___ X : ___ : ___ :

2. Be sure you check every scale for every concept—*do not omit any*.
3. Never put more than one "X" on a single scale.
4. Please fill out each page completely before going to the next page.

5. Notice that the positive items are not always on the same side.
6. Do not look back and forth through the items. Do not try to remember how you checked similar items earlier in the test. Make each item a separate and independent judgment.
7. Work at fairly high speed through the test. Do not worry or puzzle over individual items. It is your first impressions, the immediate "feelings" about the items, that we want. On the other hand, please do not be careless, because we want your true impressions.

MR. : WITNESS FOR THE CITY

cooperative : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : uncooperative
 cold : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : warm
 reasonable : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : unreasonable
 knowledgeable : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : uninformed
 vague : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : precise
 well-mannered : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ill-mannered
 inaccurate : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : accurate
 friendly : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : unfriendly
 defensive : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : open
 dishonest : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : honest
 excited : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : calm
 handsome : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : plain
 unprejudiced : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : prejudiced
 hesitant : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : confident
 convincing : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : unconvincing
 well dressed : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : poorly dressed
 consistent : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : inconsistent
 tense : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : relaxed
 untrustworthy : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : trustworthy

MR. : WITNESS FOR THE CITY

(Continued)

- nice : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : not nice
- certain : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : uncertain
- unfair : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : fair
- clean cut : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : unwholesome
- telling the truth : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : not telling the truth
- pleasant : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : annoying
- insincere : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : sincere
- clear memory : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : faulty memory
- not logical : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : logical
- greedy : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : not greedy

MR. : LANDOWNER

- cooperative : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : uncooperative
- cold : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : warm
- reasonable : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : unreasonable
- knowledgeable : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : uninformed
- vague : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : precise
- well-mannered : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ill-mannered
- inaccurate : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : accurate
- friendly : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : unfriendly
- defensive : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : open
- dishonest : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : honest
- excited : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : calm
- handsome : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : plain
- unprejudiced : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : prejudiced
- hesitant : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : confident
- convincing : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : unconvincing
- well dressed : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : poorly dressed

MR. : LANDOWNER
(Continued)

consistent : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : inconsistent
 tense : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : relaxed
 untrustworthy : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : trustworthy
 nice : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : not nice
 certain : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : uncertain
 unfair : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : fair
 clean cut : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : unwholesome
 telling the truth : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : not telling the truth
 pleasant : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : annoying
 insincere : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : sincere
 clear memory : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : faulty memory
 not logical : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : logical
 greedy : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : not greedy

MR. : ATTORNEY FOR THE LANDOWNER

cooperative : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : uncooperative
 cold : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : warm
 reasonable : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : unreasonable
 knowledgeable : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : uninformed
 vague : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : precise
 well-mannered : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ill-mannered
 inaccurate : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : accurate
 friendly : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : unfriendly
 defensive : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : open
 dishonest : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : honest
 excited : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : calm
 handsome : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : plain
 unprejudiced : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : prejudiced

MR. : ATTORNEY FOR THE LANDOWNER
(Continued)

- hesitant : _ : _ : _ : _ : _ : _ : _ : _ : confident
- convincing : _ : _ : _ : _ : _ : _ : _ : _ : unconvincing
- well dressed : _ : _ : _ : _ : _ : _ : _ : _ : poorly dressed
- consistent : _ : _ : _ : _ : _ : _ : _ : _ : inconsistent
- tense : _ : _ : _ : _ : _ : _ : _ : _ : relaxed
- untrustworthy : _ : _ : _ : _ : _ : _ : _ : _ : trustworthy
- nice : _ : _ : _ : _ : _ : _ : _ : _ : not nice
- certain : _ : _ : _ : _ : _ : _ : _ : _ : uncertain
- unfair : _ : _ : _ : _ : _ : _ : _ : _ : fair
- clean cut : _ : _ : _ : _ : _ : _ : _ : _ : unwholesome
- telling the truth : _ : _ : _ : _ : _ : _ : _ : _ : not telling the truth
- pleasant : _ : _ : _ : _ : _ : _ : _ : _ : annoying
- insincere : _ : _ : _ : _ : _ : _ : _ : _ : sincere
- clear memory : _ : _ : _ : _ : _ : _ : _ : _ : faulty memory
- not logical : _ : _ : _ : _ : _ : _ : _ : _ : logical
- greedy : _ : _ : _ : _ : _ : _ : _ : _ : not greedy

MR. : ATTORNEY FOR THE CITY

- cooperative : _ : _ : _ : _ : _ : _ : _ : _ : uncooperative
- cold : _ : _ : _ : _ : _ : _ : _ : _ : warm
- reasonable : _ : _ : _ : _ : _ : _ : _ : _ : unreasonable
- knowledgeable : _ : _ : _ : _ : _ : _ : _ : _ : uninformed
- vague : _ : _ : _ : _ : _ : _ : _ : _ : precise
- well-mannered : _ : _ : _ : _ : _ : _ : _ : _ : ill-mannered
- inaccurate : _ : _ : _ : _ : _ : _ : _ : _ : accurate
- friendly : _ : _ : _ : _ : _ : _ : _ : _ : unfriendly

MR. : ATTORNEY FOR THE CITY
(Continued)

- defensive : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : open
- dishonest : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : honest
- excited : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : calm
- handsome : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : plain
- unprejudiced : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : prejudiced
- hesitant : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : confident
- convincing : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : unconvincing
- well dressed : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : poorly dressed
- consistent : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : inconsistent
- tense : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : relaxed
- untrustworthy : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : trustworthy
- nice : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : not nice
- certain : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : uncertain
- unfair : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : fair
- clean cut : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : unwholesome
- telling the truth : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : not telling the truth
- pleasant : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : annoying
- insincere : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : sincere
- clear memory : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : faulty memory
- not logical : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : logical
- greedy : ___ : ___ : ___ : ___ : ___ : ___ : ___ : ___ : not greedy

QUESTIONS CONCERNING THE WITNESSES

1. *If you had to choose between the two witnesses, whom would you prefer to have for a friend?*

Mr. _____
(Select only one)
Mr. _____

2. To what extent were you influenced by the *fact that Mr. is an expert* at Real Estate evaluation?

Not at all : _ : _ : _ : _ : _ : _ : _ : _ : Very much

3. Was this proceeding basically "fair" and "just" for Mr. ?

Very fair : _ : _ : _ : _ : _ : _ : _ : _ : Not at all fair

QUESTIONS CONCERNING THE ATTORNEYS

1. If you had legal difficulties and *had to choose* either Mr. (counsel for the city) or Mr. (counsel for Mr.) to represent you, whom would you select?

Mr. _____
(Select only one)
Mr. _____

2. *If you had to choose between* the two attorneys, whom would you prefer to have for a friend?

Mr. _____
(Select only one)
Mr. _____

WE WOULD LIKE TO KNOW YOUR REACTIONS TO THE TRIAL PROCEDURE. PLEASE RATE THE SCALES BELOW.

Interesting : _ : _ : _ : _ : _ : _ : _ : _ : Dull

Easy to pay attention : _ : _ : _ : _ : _ : _ : _ : _ : Difficult to pay attention

Fatiguing : _ : _ : _ : _ : _ : _ : _ : _ : Refreshing

Confusing : _ : _ : _ : _ : _ : _ : _ : _ : Clear

Stimulating : _ : _ : _ : _ : _ : _ : _ : _ : Tedious

YOUR PARTICIPATION AND COOPERATION WERE GREATLY APPRECIATED. PLEASE PROVIDE THE FOLLOWING INFORMATION ABOUT YOURSELF. A CHECK FOR \$8.00 WILL BE MAILED TO YOU NEXT WEEK.

Name _____

Address _____

_____ zip code

- 1) Age _____
- 2) Sex (Please check)
 - Male _____
 - Female _____
- 3) Circle highest grade completed.
 - a) Elementary School: 1 2 3 4 5 6
 - b) Jr. High and High School: 7 8 9 10 11 12
 - c) College: Freshman Sophomore Junior Senior Graduate Student
 - d) Vocational School: 1 2 3 4

APPENDIX 2
ADJECTIVE RATING PAIRS GROUPED IN FACTORS

Factor Name	Adjective Pair	Correlation Factor Loading
Competency	precise—vague	.788
	confident—hesitant	.752
	certain—uncertain	.695
	accurate—inaccurate	.693
	knowledgeable—uninformed	.682
	consistent—inconsistent	.613
	clear memory—faulty memory	.612
	convincing—unconvincing	.545
	reasonable—unreasonable	.473
Honesty	trustworthy—untrustworthy	.742
	telling truth—not telling truth	.719
	sincere—insincere	.683
	honest—dishonest	.679
	fair—unfair	.612
	logical—not logical	.601
Friendliness	friendly—unfriendly	.780
	warm—cold	.687
	well-mannered—ill-mannered	.679
	nice—not nice	.622
	pleasant—annoying	.581
	cooperative—uncooperative	.529
Appearance	well dressed—poorly dressed	.884
	clean cut—unwholesome	.835
Objectivity	prejudiced—unprejudiced	.794
	greedy—not greedy	.506
	open—defensive	.438