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An Application of the Elaboration Likelihood Model to Jurors' Decision Making in a Complex Lawsuit

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An Application of the Elaboration Likelihood
Model to Jurors' Decision Making in a Complex Lawsuit

by

Leslie A. Scott

A Thesis Submitted to the Faculty of the Graduate School
of Loyola University of Chicago in Partial Fulfillment
of the Requirements for the Degree of

Master of Arts

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VITA

The author, Leslie Angela Scott, is the daughter of James John Scott and Dorothy Mary Scott. She was born September 11, 1957, in Chicago, Illinois.

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LITERATURE REVIEW

There is currently a debate within the legal community over whether certain civil suits may be too complex to be tried to a jury. In fact, the United States Supreme Court was recently requested to decide if the seventh amendment right to a trial by jury could be waived in a civil suit because the complexity of the issues would severely diminish the jury's ability to render a well reasoned verdict (APA Monitor, 1986).

At the heart of the debate over a "complexity exception" to the seventh amendment is the question of whether juries are capable of competently deciding complex and/or protracted civil suits. Attorneys in favor of waving an individual's right to a jury trial argue that the nature of certain civil suits-- their length, highly technical and abstract subject matter, and amount of evidence presented-- preclude jurors from engaging in diligent information processing. Therefore, they contend that their own clients' fifth amendment right to due process would be denied if the seventh amendment right to a jury trial were to take precedence (Blecher & Daniels, 1980;

Withrow & Suggs, 1980).

Advocates favoring a complexity exception to the seventh amendment make two assumptions: (1) jurors cannot comprehend the facts and issues in complex civil litigation, and therefore, reach a reasoned decision, and (2) a judge sitting alone is a better fact-finder than a collective jury. In terms of the latter assumption, Saks (1981), in a published report to the Federal Judicial Center, concluded, after reviewing the literature concerning small group decision making and complex information tasks, that the fact-finding task of a jury is of the type in which large heterogeneous groups should perform better than individuals. ¹

In addition to its intuitive appeal, however, the former assumption that, jurors in a complex lawsuit cannot reach a sound decision, has received some empirical support. Although studies which have examined the effect of task complexity on information processing and decision making are few, overall, the findings indicate that a complex task gives rise to a less effortful mode of information processing (Bodenhausen & Lichtenstein, 1987; Hogarth, 1980; Payne, 1976). Furthermore, these studies imply that complex tasks result in decisions that individuals would not have made if they had been processing information more thoroughly.

According to Hogarth (1980), task complexity is one of

four factors that engenders less formal information processing strategies or the use of potentially erroneous simplifying rules or heuristics. In the most applicable study conducted to date, Payne (1976) found that as task complexity increased, a decision maker's method of processing information changed from a consistent and thorough evaluation of the information presented to an inconsistent and more effortless evaluation of the information. In Payne's study, complexity was defined as more information.

More recently, Bodenhausen and Lichtenstein (1987) found that a more complex decision task resulted in the use of a simplifying rule which was of little diagnostic value--a stereotype. In Bodenhausen and Lichtenstein's study, the complex decision task was judging the guilt of a Hispanic defendant and an ethnically nondescript defendant while the less complex decision task was judging the aggressiveness of the same two types of defendants as in the complex task. Although all subjects performed both types of decision tasks, at the onset of the experiment, one half of the subjects were led to believe that their task was to judge the guilt of the two defendants while the remaining one half believed that their task was to rate the aggressiveness of the two defendants. The results showed that individuals who performed the more complex task, judged the defendant as more guilty and aggressive when he was Hispanic than when

he was ethnically nondescript. Conversely, individuals who performed the simple task, did not perceive one defendant as more or less guilty or aggressive than the other. Thus, the complexity of the task affected not only the amount of effort individuals put forth in reaching a decision, but also resulted in a decision that the decision makers might not have made if presented with a more simple task. Of even greater importance, however, is the finding that the mere thought of engaging in a complex task caused individuals to employ a less formal information processing strategy.

Although these findings do not favor the view that jury trials in complex cases should be preserved, what are the implications of such findings for real jury trials? In a real trial, where the jury's decision is binding, and the consequence of the decision is real, would jurors actually use a less thorough mode of information processing for reaching a decision? Studies from the information processing and decision making literature suggest that jurors would not. When the consequences of a decision are meaningful (Langer, Blank & Chanowitz 1978), the issues under consideration are important or relevant to the decision maker (Gabrenya & Arkin, 1979; Sherman & Corty, 1984), or if the decision maker will be held accountable for his/her decision (Tetlock, 1983), the decision maker will adopt a more careful and thorough information processing strategy.

In general, the literature supports Taylor's (1980) characterization of humans as cognitive misers who engage in irrational, top of the head (Taylor & Fiske, 1978) or mindless (Langer, Blank & Chanowitz, 1978) information processing unless motivated, usually by the desire to be correct, to process information more thoroughly. In a real trial, therefore, when jurors' desires to reach a correct decision are high, the complexity of the task should not have any effect on the manner in which jurors process information.

Still, other studies suggest that high motivation, although necessary for effortful information processing, is not a sufficient condition for such processing. According to Hogarth (1980), the presence of any one of four conditions-- task complexity, procedural uncertainty, low motivation, and emotional stress-- will result in the use of less formal information processing strategies. Studies from the persuasion literature concur with Hogarth's assertions. And, unlike the information processing and decision making research, which has produced a listing of factors that engender less effortful information processing, research conducted within the persuasion field has lead to the development of several theories specifying both the antecedents to either more effortful or effortless information processing as well as the processes thought to underlie the two modes (Chaiken, 1987; Petty & Cacioppo,

1986).

Persuasion Research

One of the first persuasion theories on the processing of an informational message is Petty and Cacioppo's (1981, 1986) Elaboration Likelihood Model (ELM). According to the ELM, individuals process an informational message, such as a legal argument or commercial, with varying degrees of cognitive effort, with the extreme poles of the continuum anchored by a central processing strategy and peripheral processing strategy. The central route is characterized by a diligent consideration of the information presented while the peripheral approach relies on the use of "simple rules of thumb" or heuristic principles. Through the central route, individuals reach a decision or are persuaded based on careful analysis of the content of the message. Under the peripheral route, however, individuals reach a decision or are persuaded based on cues irrelevant to the quality of the message. For example, in a legal case, a juror may reach a decision based not on the cogency of the arguments but on characteristics of the defendant and stereotypes associated with these characteristics (e.g., the defendant is an Indian doctor, and thus, more likely to commit medical malpractice).

One of the key features of the ELM is the postulate specifying the conditions necessary for inducing one processing mode as opposed to the other. According to the

theory, an individual's use of the peripheral rather than the central route is a function of two factors, both the individual's motivation and ability to process the informational message. Essentially, "any variable which reduces a person's motivation and/or ability to think about (or elaborate on) the message content will make the peripheral route more likely" (Petty, Cacioppo, & Goldman, 1981, p. 854).

Petty and Cacioppo's research has led to the identification of a variety of conditions that either enhance or reduce an individual's motivation or ability to scrutinize an informational message (Cacioppo & Petty, 1979; Petty & Cacioppo, 1979; Petty & Cacioppo, 1984; Petty & Cacioppo, 1986; Petty, Wells & Brock, 1976). Subsequent research has demonstrated that once an individual's motivation and/or ability to process an argument has been decreased, peripheral cues become more important determinants of message acceptance (Petty, Cacioppo & Goldman, 1981; Petty, Cacioppo & Schumann, 1984). In the first of several studies systematically examining the effect of various factors on an individual's motivation to process an informational message, Petty, Cacioppo and Goldman, (1981) found that when a message was high in personal relevance (college students were told that within the next year, all graduating seniors would be required to take comprehensive exams), the content of the message (weak

versus strong argument) mediated attitude change. However, when the message was low in personal relevance (mandatory exams would not go into effect until ten years later), peripheral cues, such as the expertise of the message source (a neighboring high school student versus a Princeton University Professor), mediated attitude change. In accounting for the observed effect, the authors reasoned that as the personal importance of a message increased, it became more important for the message recipient to hold a correct opinion. The authors concluded that issues of high personal relevance motivated the message recipient to scrutinize the arguments in an effort to judge their veridicality. In contrast, when an issue was of little personal relevance, the recipient may have been more motivated to reduce cognitive effort than to form a correct opinion.

A conceptual replication of this study (Petty, Cacioppo, Schumann, 1983), as well as studies conducted by other persuasion researchers (Chaiken, 1980) and researchers from outside the persuasion field (Gabrenya & Arkin, 1979), supported this initial supposition. Chaiken (1980) found that when university students were presented with a message advocating that the university switch from a semester to a trimester system within the next year (high personal relevance), students' attitudes changed in the direction of the message containing five as opposed to one

strong argument. But, for students who heard the message that the university should adopt a trimester system sometime in the distant future--after they graduated (low personal relevance), their attitudes changed in the direction of the more likable source even though this was the source who presented only one argument.

In a conceptually distinct experiment, Gabrenya and Arkin (1979) also tested the hypothesis that the motivational state of an individual, rather than his/her inherent processing limitations, governed the use of heuristic principles. In Gabrenya and Arkin's (1979) study motivation was manipulated by asking both field dependent and independent subjects to solve a decision problem which typically instigated heuristic decision processes (Kahneman & Tversky, 1973) in a situation where their performance outcomes were either made public or kept private. Consistent with Petty and Cacioppo's theory, subjects use of the representative heuristic was a function of their motivational state. The results revealed that field independent subjects in the private condition demonstrated greater use of the representative heuristic (poorer performance) than did field dependent subjects in the public condition, and field dependents showed the opposed performance pattern. In the public condition, both field independents and dependents can be viewed as residing on the right side of an inverted "U" shaped performance curve.

But, because of greater evaluation apprehension, field dependent subjects become aroused past the point of optimal performance whereas field independent subjects become motivated to perform better. In the private condition, the inverse occurred. Field dependent subjects were optimally motivated in the private condition whereas field independents' motivational level fell below that necessary for optimal performance.

Although Petty and Cacioppo's (1986) examination of factors that enhance or reduce an individual's ability to process an argument has been less exhaustive than their work with motivation, in general, the research supports the assumption that decreased ability to process an argument centrally enhances the use of peripheral cues. In an indirect test of the use of peripheral cues under low ability conditions, university students were presented with a variety of messages advocating certain university wide policy changes (e.g., dormitory bed checks). One half of the subjects did this while copying lists of two-digit numbers (distraction condition). In addition, within each condition, the message was delivered either by a credible or less credible source (Kiesler & Mathog, 1968). As expected, the distracted subjects were more likely to agree with the highly credible source than their non-distracted counterparts. Although Kiesler and Mathog (1968) proposed a cognitive dissonance explanation for the effect of

distraction on message acceptance, the results are also consistent with an ELM view--reducing an individual's ability to scrutinize a message will enhance the use of peripheral cues.

Like Petty and Cacioppo (1981, 1986), Gabrenya and Arkin (1979) also viewed information processing as taking place along a continuum of cognitive effort anchored by vigilant and non-vigilant processing. Chaiken (1980) reached similar conclusion, and labeled her two processing modes as systematic and heuristic. Research on these models is consistent with the major assumptions of the ELM. An individual's use of a less rather than more effortful information processing mode is a function of both the individual's motivation and ability to process the message (Bodenhausen & Lichtenstein, 1987; Chaiken, 1980; Gabrenya & Arkin, 1979; Hogarth, 1980; Langer, Blank & Chanowitz, 1978; Payne, 1976; Taylor & Fiske, 1978; Tetlock, 1983).

Overview and Hypotheses

The present study is concerned with applying Petty and Cacioppo's ELM to the legal issue of whether jurors are capable fact-finders when asked to render a decision in a complex lawsuit. Whether jurors are capable fact-finders is an empirical question that should not be left to legal speculation. The present study assumed that a complex lawsuit, as with other complex tasks, will reduce jurors' ability to think about the evidence presented. It was

hypothesized that jurors who are exposed to a complex case will be more likely to engage in peripheral information processing than jurors who are exposed to a simple case. Although enough research has accumulated in support of the negative effect of task complexity, it is questionable whether such a finding may be generalized to a trial setting. At least one reason for concern is that a jury's motivation to reach a veridical opinion may be strong enough to override the negative effect of task complexity. The present research therefore, employed a jury simulation paradigm in which, it was believed, subjects would experience a high level of motivation. The present study also featured a measure for directly assessing subjects' use of a peripheral cue. One shortcoming of the research in this area has been its failure to measure directly whether individuals actually employed a peripheral cue.

To a lesser extent, this study was concerned with testing a strategy for improving jurors' factfinding abilities. One argument favoring the exclusion of juries in complex cases is that they do not possess the factfinding tools available to a judge. When a case is tried without a jury, a judge is free to ask questions of witnesses, review evidence that would be excluded from a jury trial, and has the ability to consult trial transcripts (Blecher & Daniels, 1980; Withrow & Suggs, 1988). However, instead of eliminating the use of juries

in complex cases because jurors do not possess a judge's factfinding tools, legal authors have suggested that jurors be allowed to use those same tools.

One factfinding strategy that has been suggested is to provide the jury with a legal framework or schema from which to work. Psychological research supports the assumption that such frameworks enhance vigilant information processing (Elwork, Sales & Alfini, 1977; Hogarth, 1980). Hogarth (1980) found that individuals were more likely to engage in error filled heuristic processing in the absence of a procedural schema. More directly, Elwork, Sales & Alfini (1977) found that when jury instructions were given at the beginning of a trial, jurors were better able to recall evidence-related information. In light of past research, it was hypothesized that if jurors were given a legal framework prior to the case, the debilitating effects of complexity will be eliminated.

METHOD

Subjects

Subjects were 59 male and 81 female undergraduate students who participated in the experiment as part of a course requirement for an introductory psychology class at Loyola University of Chicago. Prior to the main study, an additional 73 undergraduate students were recruited, and participated in a pilot test of the case summary, and the stereotype and complexity manipulations. Subjects were randomly assigned to experimental conditions in both the main study and pilot tests.

Overview

The present study asked subjects to read 1 of 8 different summaries of a hypothetical medical malpractice lawsuit, and make a decision about the negligence of the defendant. In actuality, all summaries contained the same arguments and presented evidence which favored neither the plaintiff nor defendant, but differed with respect to the complexity of the case, presence or absence of a legal framework, and presence or absence of a strong peripheral cue. These three factors were the independent variables

under study. Thus, the present study conformed to a 2 (level of complexity: simple vs complex) x 2 (legal framework: present vs absent) x 2 (peripheral persuasion cue: present vs absent) factorial design.

The peripheral cue was the defendant's foreign name which was designed to activate a negative stereotype of a doctor who was more likely to commit medical malpractice. In the peripheral cue conditions, subjects read about defendant Dr. Denish Rahmajani, and in the no peripheral cue conditions, subjects read about defendant Dr. James Morris. According to the major experimental hypothesis, when elaboration likelihood is high (simple case condition), subjects' verdicts would be based on a careful analysis of the arguments presented. Thus, a verdict in line with the evidence would reflect this mode of processing. However, when subjects' abilities to process the arguments centrally was impaired (complex case condition), their verdict would be based on a peripheral cue, such as the stereotype. A verdict in favor of the plaintiff (against the defendant) would exemplify this mode of processing. After rendering their verdict, subjects were asked to rate both how difficult it was to understand the case, and how important it was for them to do the best job they could, list their cognitive responses, answer a series of questions concerning the framework manipulation, and recall the arguments and evidence of the case.

Legal Summary

Subjects read a legal summary concerning a medical malpractice lawsuit brought on behalf of the plaintiff, Carol Ann Williams, against Dr. James Morris (Dr. Denish Rahmajani), for injuries to Mrs. Williams' daughter following the delivery of the little girl. The plaintiff claimed that the actions of the defendant following the delivery of her daughter left her child irreversibly brain damaged. The expert witness for the plaintiff, Dr. Michealson, argued in support of the plaintiff's claim that the defendant was negligent. The expert witness for the defendant, Dr. Edwards, testified that the defendant exercised good judgment, and did not cause the plaintiff's injuries. (See Appendix for the complete transcript.)

When writing the summary, special care was taken to insure that the defendant's name was the only peripheral cue that subjects could have used to reach their decision. Thus, both the simple and complex versions of the case were equated in terms of length and strength of the prosecution's and defense's arguments, and their expert witnesses' credentials. The equivalence of the cases for the prosecution and defense was assessed in a pilot test of the simple case with no stereotype, and no framework summary (the baseline summary). Of the 29 subjects who participated in the pilot test, 15 rendered a verdict in favor of the plaintiff and 14 decided in favor of the defendant. In

order to increase trial realism (Weinten & Diamond, 1977), subjects also read standard jury instructions on the applicable law for negligence in a medical malpractice lawsuit in Illinois (see Appendix). As in a real trial, these instructions were given to subjects after they read the case summary.

Independent Variables

Complex versus Simple Case. Lawsuits viewed as sufficiently complex to warrant an exception to a jury trial have been those where (a) the issues of the case required jurors to consider complicated financial and accounting principles or involved technical language unique to a particular field, (b) jurors would have to consider an overwhelming amount of evidence (e.g., in one case jurors were exposed to 240 witnesses and over 24,000 documents), and (c) jurors would have to keep track of a number of different claims for a number of different parties (e.g., in one case, five classes of plaintiffs filed suit against 20 individual defendants and 80 corporate partnership defendants) (Withrow & Suggs, 1979).

Based on these legal definitions of complexity and the fact that subjects had only 40 minutes to digest the facts of the case, complexity was operationally defined as language too technical for jurors to understand. Specifically, complexity was manipulated by presenting subjects with more (or less) medical terminology and less

(or more) definitions for the medical terms used. For example, in the simple case conditions, the defendant's expert witness alerted subjects to the consequence of providing too much oxygen to the baby in this manner, "Dr. Morris (Rahmajani) was also careful not to administer oxygen at levels in excess of 40%. Recent studies have indicated that the administration of supplemental oxygen in excess of 40% can cause blindness in babies. This disease essentially occurs when too much oxygen is given to children and ultimately burns the arteries in the baby's retina causing blindness". In the complex case conditions, the peril of too much oxygen was described in this manner, "Dr. Morris (Rahmajani) was also careful not to ventilate the neonate at concentrations in excess of 40%. Recent studies have indicated that the provision of additional fractional inspired oxygen in excess of 40% can cause Retrolental Fibroplasia (RLF). RLF is a disease of the eyes related to hypoxemia. Vasoconstrictions as a result of very high concentrations of oxygen in retinal capillaries causes a wild overgrowth of these developing blood vessels; veins become numerous and dilate. The retina becomes edematous, and hemorrhages separate the retina from its attachment. Advanced scarring occurs from the retina to lens, destroying the normal architecture of the eye. This extensive retinal detachment and scarring result in irreversible blindness".

Legal Framework. The legal framework variable was manipulated by presenting subjects with the standard jury instructions for determining negligence in a medical malpractice lawsuit in Illinois either immediately after reading the legal summary (absence of a legal framework) or both before and after reading the legal summary (presence of a legal framework). Subjects in the legal framework condition therefore, read the standard jury instructions twice.

Peripheral Cue. The manipulation of an irrelevant cue was accomplished by presenting subjects with a lawsuit concerning either a defendant whose foreign sounding name had the potential to activate a negative stereotype of a doctor who was likely to commit medical malpractice or whose name did not have such potential. In the peripheral cue/stereotype conditions, subjects read about Dr. Denish Rahmajani who was "a pediatrician practicing in Winston, Illinois. He was born in India and went to college and medical school there. He came here following graduation from medical school and did an internship and residency at Northwestern Memorial Hospital. He moved to Winston, Illinois in about 1960. He began treating patients there and has become a respected member of the community. He has published a number of articles in The Journal of The American Academy of Pediatrics. Dr. Rahmajani is board certified as a specialist in pediatrics by the American

Academy of Pediatricians." In the no peripheral cue/stereotype conditions, subject read about Dr. James Morris who also was "a pediatrician practicing in Winston, Illinois. He has been practicing there, treating babies, for 10 years. He attended medical school at Stanford University, and came to Winston following an internship and residency at Northwestern Memorial Hospital. He has become a respected member of the community. He published a number of articles in The Journal of The Academy of Pediatrics. Dr. James Morris was board certified as a specialist in pediatrics by the American Academy of Pediatricians."

Procedure

The experiment was conducted in a classroom large enough to accommodate group sessions of up to 15 subjects. After all the subjects who had signed up for a particular experimental session were seated, the experimenter began the session by explaining that the purpose of the experiment was "to find out how jurors vote in different types of law cases prior to deliberation." They were then told that "we would like you to read one of several different transcripts from an actual trial and then make a decision as to whether the defendant is or is not negligent."

After being told the purpose and the general instructions for the experiment but before receiving the case summaries and four dependent measures booklets, subjects were asked to complete a brief questionnaire which

asked them for some background information. Subjects were told that "these questions were similar to what attorneys ask real jurors during what is called the voir dire phase of a trial." Specifically, this first dependent measures booklet required subjects to answer some demographic questions (e.g., sex, age, summer work experience), personal history questions (e.g., do you know any doctors, have you or any members of your family ever been involved in a medical malpractice case), and questions concerning their attitudes on the issues of medical malpractice and doctors performing cesarean sections. The questions concerning the issues of the case were designed to test whether subjects used the peripheral cue in reaching their decision or decided the case based on their preexisting attitudes on the issues of the case. According to the Elaboration Likelihood Model (Petty & Cacioppo, 1981), individuals use peripheral cues in decision making only when they are unable or unmotivated to think about both the content of the message and the issue(s) under consideration. In other words, if subjects were unable to think about the evidence and the arguments of the case, their verdicts may have been based on their preexisting attitudes on the issues of medical malpractice or performing cesarean sections rather than on the peripheral cue/stereotype.

After 3 minutes, the experimenter collected subjects' voir dire questionnaires and handed each subject a packet of

materials which contained the case summary followed by the judge's instructions to the jury and four dependent measures booklets labeled, Questionnaire #2, Questionnaire #3, Questionnaire #4, and Questionnaire #5 (Questionnaire #1 was the voir dire questionnaire). Subjects randomly received a written legal summary corresponding to 1 of the 8 experimental conditions, e.g., complex case-stereotype-no legal framework. Physically, all of the experimental materials looked the same. Thus, subjects were unaware that the person sitting next to them was reading a different case.

After receiving the experimental materials, subjects were instructed to read the case and the judges' instructions which followed. The experimenter then went on to say, "After you have read the judge's instructions, please answer the rest of your questionnaires in the order that they appear. Note however, that because actual jurors are not allowed to retire to the jury room with any notes, you may not use your case booklet to answer the rest of your questionnaires." This latter instruction was included to eliminate the possibility of subjects reviewing the case materials while reaching a decision.

The instructions the experimenter used for the presence of a legal framework condition differed slightly from those used for the absence of a legal framework condition. Because the jury instructions came before the

case summary, subjects were told to read the jury instructions first, and then, the case summary. They were then instructed to reread the jury instructions after reading the case, and before completing the four dependent measures booklets.

Finally, the experimenter concluded her/his instructions by informing subjects that they had 40 minutes to read and digest the facts of the case. At the end of 40 minutes, they would be expected to render a verdict (Questionnaire #2) and complete the remaining questionnaires. When all subjects had finished answering their dependent measures booklets, they were debriefed both orally and in writing.

Dependent Measures

The 4 questionnaire booklets contained 4 dependent measures and 4 manipulation check questions. Each measure appeared on a separate page. †

Verdict. Immediately after reading the judge's instructions, subjects rendered their verdict by placing a check next to 1 of 2 responses: "Do you: find in favor of the defendant, Dr. Morris (Dr. Rahmajani), and against the plaintiff, Mrs. Williams, or do you find in favor of the plaintiff, Mrs. Williams, and against the defendant, Dr. Morris (Dr. Rahmajani)." On the following page, subjects indicated their verdict again, but this time by specifying the degree to which they felt the defendant was or was not

negligent. Subjects marked how they felt on a 9 point scale anchored by not negligent at all (1), and definitely negligent (9).

Cognitive Responses. After completing the continuous verdict measure, subjects listed their cognitive responses in compliance to the request to "list the factors that you feel influenced your decision." Subjects' responses to the open-ended question were scored by two independent raters along the dimension of origin of responses made (Cacioppo, Harkins and Petty, 1981).

The raters were trained to place each cognitive response (defined as a complete idea, thought or utterance) that subjects' listed into one of three origin categories: 1) message-originated thoughts [direct restatements or paraphrases of the arguments and evidence presented in court (e.g., "The defendant did not perform the blood gas tests.")], 2) modified message originated thoughts [elaborations of, or replies to the evidence and arguments (e.g., "If the baby was so small, how could it possibly acquire air from a mask?")], and 3) recipient generated thoughts. This last major category was split into 2 subcategories: 1) recipient generated thoughts which were statements expressing ideas or reactions not traceable directly to the specific arguments and evidence presented (e.g., "The plaintiff's attorney did a better job in describing and telling the exact details of the events."),

and 2) recipient generated thoughts which were responses pertinent to the issues but not to a specific argument or piece of evidence (e.g., "There are too many medical malpractice cases."). The two subcategories were created in order to better assess whether subjects reached a decision by employing the peripheral cue (scored as the first type of recipient generated thought) or by responding to the issues of the case (scored as the second type of recipient generated thought).

The interrater reliability coefficients for the message originated thoughts and modified message originated thoughts categories were $r=.82$ and $.80$, respectively. For the recipient generated-no association to case thoughts category and the recipient generated-issue thoughts category, the interrater reliability coefficients were $r = .92$, and $.98$ respectively.

Message Recall. The second dependent measures booklet (Questionnaire #3) contained 21 questions designed to test subjects' recall of the evidence and arguments of the case. Subjects read a question, such as "What can the administration of too much oxygen lead to?", and were expected to write the answer on a blank line immediately following the question. Although subjects were asked 21 questions, several questions asked for more than one answer (e.g., "What are at least two different methods for determining if an infant is receiving proper levels of

oxygen?"). Thus, the total number of questions subjects could have answered correctly was 26.

Manipulation Check Measures. Questionnaires 4 and 5, together, contained 4 manipulation check measures for assessing whether the various independent variables operated as intended. The first series of questions in Questionnaire # 4 provided a test of the framework manipulation. It was reasoned that if the framework manipulation was found to have no effect on subjects' verdict, one explanation for such a finding might be that subjects' did not understand the instructions as written. Based on the assumption that a "legally correct" verdict could only be reached if subjects understood the judge's instructions, a measure of the correctness of subjects' verdict was taken. A correct verdict is one that adheres to the specific legal criteria (the applicable law) for determining negligence outlined in the judge's instructions. According to the judge's instructions, a verdict in favor of the plaintiff (defendant) can only be reached if a juror finds that (a) the defendant's conduct was not (was) in conformity with the standard of care exercised by reasonably well qualified physicians (this is a form of negligence called malpractice), and (or) (b) one or more of the ways in which the plaintiff claims that the defendant was negligent was (was not) the proximate cause of the claimed injuries. Using this criteria, subjects'

pattern of responding to a series of no-yes questions (e.g., "Was Dr. Morris' conduct in conformity with the standard of care exercised by reasonably well qualified physicians practicing in the same locality?; Is a lack of oxygen a proximate cause of the newborn baby's injuries?") was scored as indicating that they reached their verdict either correctly or incorrectly. A verdict was scored as "correct," if the answers to the framework questions were in line with the legal criteria specified in the instructions. If subjects' answers to the framework questions were inconsistent with the legal criteria outlined in the judge's instructions, their verdict was scored as "incorrect."

The complexity manipulation was checked by asking subjects to indicate on a 9 point scale anchored by not difficult at all (1) and very difficult (9), how difficult the case was to understand. Subjects' level of motivation was assessed next by asking subjects to rate how important it was to them to do the best they could, using a 9 point scale ranging from (1) not at all to (9) extremely important. A measure of subjects' level of motivation was taken for two reasons. First, the major hypothesis assumed that subjects' motivation would be high, but that a high level of motivation would not be enough to overcome the negative effect of complexity. Second, ability reducing variables like complexity can affect individuals' motivation

to process information thoroughly (Chaiken, 1987). Thus, in the present case, complexity may have caused subjects' to use the stereotype not because it interfered with message attention or comprehension directly but because it lowered subjects' motivation to process the case centrally.

The last questionnaire contained 16 questions for determining the equivalence of the opposing arguments. The objective was to see if subjects viewed all actors (i.e., plaintiff, defendant, attorneys and expert witnesses) as equally credible, difficult to understand, and likeable, and hence, did not reach a decision solely due to the fact that one attorney (expert witness) was more credible (likeable, difficult to understand) than another. In short, the measure was designed to test for the presence of any additional peripheral cues other than the stereotype which may have accounted for differences among subjects' verdicts. Using a 9 point scale anchored by not at all (1) and very (9), subjects rated the following: the likability, credibility and difficulty of attorneys' and expert witnesses' arguments.

The questions pertaining to the credibility, likability and difficulty of any one particular actor (i.e., plaintiff's expert witness, defendant's expert witness, plaintiff's attorney, defendant's attorney, plaintiff and defendant), appeared together on the same page of the questionnaire. Thus, on the first page of this

booklet, subjects answered how they felt regarding the credibility, likability and difficulty of one actor, and on the next page they answered the same series of questions but with respect to a different actor. Furthermore, to control for fatigue, the different question sets were rotated throughout the questionnaire according to the Latin Square technique.

RESULTS

This study assessed the effect of 3 independent variables (case complexity--simple vs complex, peripheral cue--present vs absent, and framework--present vs absent) on 4 major dependent variables: subject's verdicts, judgments of the defendant's negligence, cognitive responses, and argument recall. Based on previous research (Bodenhausen, 1988; Chaiken, 1980; Petty & Cacioppo, 1986), subjects' sex was not expected to either interact with the factors under study or directly (or indirectly) affect the dependent variables. Thus, the effect of sex was not analyzed.

Check on Experimental Conditions. The research design was expected to satisfy several situational conditions which would allow for a meaningful interpretation of the data. One such condition was that subjects would be highly motivated to process information centrally. The overall mean on the motivation rating revealed that subjects were, indeed, highly motivated to do the best job they could ($M = 7.78$ on a 9 point scale). Furthermore a three way ANOVA performed on the motivation

variable did not yield a significant main effect for case complexity or any significant interactions. Thus, it was unlikely that subjects' use of the peripheral information was due to reduced motivation.

A second condition of the research design was that the case summary would be free from any additional persuasion factors which could also operate as peripheral cues. This condition was assessed by looking at subjects' ratings of the credibility, likability, and difficulty of the defendant, plaintiff, both expert witnesses and both attorneys. Paired t-tests performed on each of the credibility, likability and difficulty ratings for each adversary pair (i.e., defendant's-plaintiff's attorney, defendant's-plaintiff's expert witness, and defendant-plaintiff) in both the base line simple and complex case conditions (no framework and no stereotype), yielded no significant differences between the pairs. All participants in the lawsuit, as compared to their counterpart, were viewed as equally credible, likable and difficult to understand.

Of central importance to the study was the notion that the defendant's foreign sounding name could evoke a negative stereotype of a doctor who was more likely to commit medical malpractice. This assumption was tested through a pilot test of the stereotype manipulation. Determination of whether the desired negative stereotype could be produced by

the name Dr. Rahmajani was reached by assessing subjects' responses to 8 likelihood questions [e.g., "using the 7 point scale below, how likely is it that Dr. Rahmajani (or Dr. John T.) will be . . . the next president of the American Medical Association; sued for medical malpractice; discover a cure for cancer"], and 8 bipolar trait adjective pairs concerning either Dr. Rahmajani or Dr. John T. [e.g., "rate how you feel about Dr. Rahmajani (or Dr. John T.) as a surgeon: competent-incompetent; trustworthy-untrustworthy; precise-careless"].

Regarding the likelihood statements, the statement concerning Dr. Rahmajani's and Dr. John T.'s likelihood to commit medical malpractice was the only measure of interest. As such, this was the only likelihood statement analyzed. The other questions were included to conceal the purpose of the pilot test. As expected, subjects believed that Dr. Rahmanjani would be more likely to be sued for medical malpractice ($M = 5.14$) than Dr. John T. ($M = 3.95$), $t(40) = 1.87$, $p < .05$, one-tailed. A t-test performed on subjects' summed responses to the bipolar trait adjective pairs produced similar results. Again, Dr. Rahmajani ($M = 1.73$) was viewed more negatively than Dr. John T ($M = 5.90$), $t(40) = 2.08$, $p < .05$, one-tailed.

Analyses performed on the manipulation check measures for the independent variables of case complexity and framework revealed that these manipulations were also

successful. Indeed, subjects who read the complex case summary felt that the case was significantly more difficult to understand ($M = 5.20$) than subjects who read the simple case summary ($M = 3.65$), $F(1,135) = 18.15$, $p < .01$.

Finally, contrary to previous research (Elwork, Sales & Alfini, 1977), the standard jury instructions for determining negligence in a medical malpractice case, at least, in Illinois were found to be quite understandable. The understandability of the jury instructions was assessed by looking at the "legal correctness" of subjects' verdicts. A legally correct verdict could only be reached if subjects understood the instructions. If subjects' answers to the framework questions were inconsistent with the legal criteria outlined in the judge's instructions, their verdict was scored as "incorrect." A verdict was scored as "correct," if the answers to the framework questions were in line with the legal criteria specified in the instructions. A log linear analysis of the correctness measure produced no significant main effects or interactions. In each of the cells of the design, the majority of verdicts rendered were legally correct or consistent with the applicable law for negligence, and the overall percent correct was 80 %.

Verdict. According to the major hypotheses, a complex legal case will engender nonvigilant information processing or the use of peripheral cues in a decision making situation. However, jurors will not rely on

peripheral cues for reaching a decision if they are presented with an ability enhancing strategy, such as a legal framework, prior to hearing a complex case. The two major hypotheses, therefore, implied a Case Complexity by Peripheral Cue interaction (subjects who read the complex case will be more likely than subjects who read the simple case to render a verdict against the defendant when the stereotype is present), and a Case Complexity by Peripheral Cue by Legal Framework interaction (the highest ratings of negligence will occur in the complex case, stereotype and no framework condition).

Subjects' ratings of the defendant's negligence were analyzed by a 2 (Case Complexity) X 2 (Peripheral Cue) X 2 (Legal Framework) ANOVA. 2 Subjects' ratings of the defendant's negligence appear in Table 1. The results showed a significant main effect for Legal Framework, $F(1,137) = 6.68$, $p = .01$, and two significant two-way interactions: Peripheral Cue by Legal Framework, $F(1,137) = 4.47$, $p < .05$, and Case Complexity by Legal Framework, $F(1,137) = 4.33$, $p < .05$. The three-way interaction did not reach significance, $F(1,137) = 3.04$, ns.

The main effect for legal framework indicated that subjects who read the case transcript without benefit of a legal framework judged the defendant as more negligent ($M = 4.91$) than subjects who possessed a legal framework while reading the case ($M = 3.85$). The means associated with the

Table 1

Mean Ratings of Defendant's Negligence as a Function of
Case Complexity, Stereotype, and Legal Framework

<u>Stereotype</u>	<u>Framework</u>			
	<u>Present</u>		<u>Absent</u>	
	<u>Present</u>	<u>Absent</u>	<u>Present</u>	<u>Absent</u>
<u>Task Complexity</u>				
Simple	4.65 (17)	4.53 (17)	5.33 (18)	4.28 (18)
Complex	2.82 (17)	3.41 (17)	6.00 (17)	4.06 (17)

Note. Higher numbers indicate greater degree of negligence. Cell n's are in parentheses.

Peripheral Cue by Legal Framework interaction are presented in Figure 1. As the Figure and post hoc tests indicated, while in possession of a legal framework, the stereotype had no effect on subjects' ratings of the defendant's negligence, $F(1,137) = .16$, ns. However, in the absence of a legal framework, subjects who were exposed to the stereotype judged the defendant as more negligent ($M = 5.66$) than subjects who were not exposed to the stereotype ($M = 4.17$), $F(1,137) = 7.07$, $p < .01$. Thus, it appears that a legal framework precluded the use of a stereotype. Figure 2 illustrates the Case Complexity by Legal Framework interaction. Post hoc tests revealed that, contrary to the major hypotheses, no differences were found between complexity conditions in the absence of a legal framework, $F(1,137) = .15$, ns. However, when given a legal framework, individuals who read the complex case judged the defendant as significantly less negligent ($M = 3.12$) than individuals who read the simple case ($M = 4.59$), $F(1,137) = 6.43$, $p < .05$. Thus, the framework seemed to influence the manner in which individuals processed complex information but not simple information.

A second analysis was performed on subjects' dichotomous judgments of the defendant's negligence or the verdict measure. The percentages of subjects who voted in favor of the defendant for each condition are reported in Table 2. The results of a log linear analysis partially

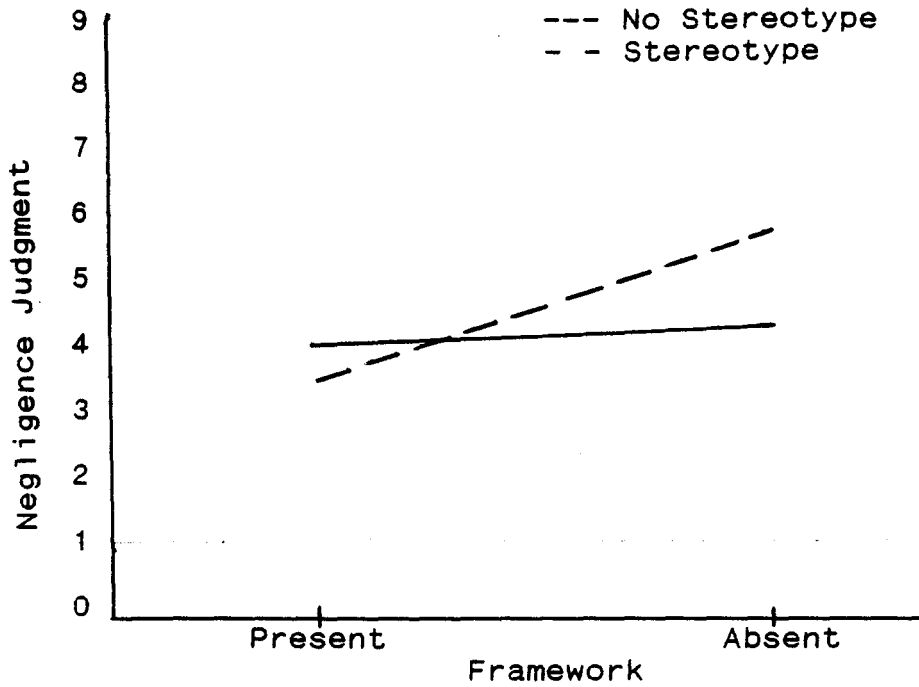


Figure 1 Ratings of defendant's negligence by Stereotype and Legal Framework. Higher numbers mean greater negligence.

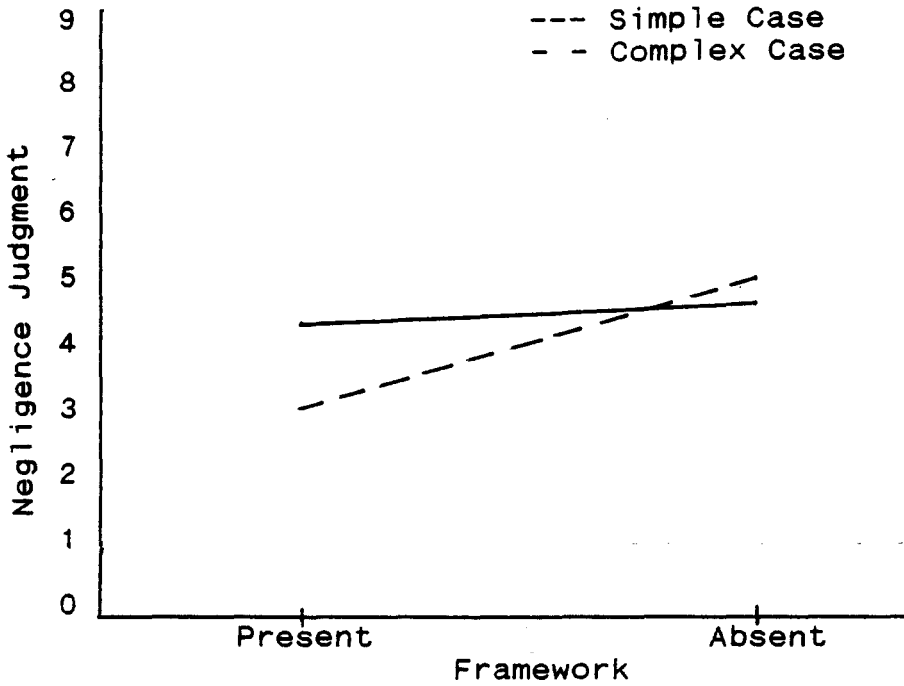


Figure 2 Ratings of defendant's negligence by Case Complexity and Legal Framework. Higher numbers mean greater negligence.

Table 2

Percentage of Subjects who Rendered a Verdict Against the Defendant as a Function of Case Complexity, Stereotype, and Legal Framework

<u>Stereotype</u>	<u>Framework</u>			
	<u>Present</u>		<u>Absent</u>	
	<u>Present</u>	<u>Absent</u>	<u>Present</u>	<u>Absent</u>
Task Complexity				
Simple	42 (17)	42 (17)	56 (18)	50 (18)
Complex	18 (17)	24 (17)	71 (17)	42 (17)

Note. Numbers indicate percentage of subjects who voted against the defendant. Cell n's are in parentheses.

confirmed the findings obtained in the previous analysis. The only factor that significantly added to the fit of the model was the Case Complexity by Legal Framework interaction $X(1) = 3.84, p < .05$. As before, the interaction indicated that only while subjects were in possession of a legal framework did the complexity of the case have an affect on their verdicts. A higher proportion of subjects who read the complex case with the benefit of a legal framework as compared to no framework, voted in favor of the defendant (79% vs 44%).

Cognitive Responses and Attitudes toward Medical Malpractice Cases. A direct test of subjects' use of the stereotype was conducted by first counting the number of message originated thoughts, modified message originated thoughts, recipient generated-no association to case thoughts and recipient generated-issue related thoughts that each subject listed. Subjects were then identified as processing the information presented by way of "scrutinizing the message" (either more message originated thoughts or modified message originated thoughts than the other types of thoughts), "peripheral cues" (more recipient generated-no association to case thoughts than the other types of thoughts), "case related issues" (more recipient generated-issue related thoughts than other types of thoughts) or "mixed mode" (an equal number of the different types of cognitive thoughts possible). Subjects' mode of information

processing used was explained by using log linear analysis. Although the continuous verdict measure provided some evidence that subjects relied on the peripheral cue/stereotype for reaching their decision in the no framework condition, the results of this analysis indicated no differences in information processing among the different experimental conditions. As Table 3 shows, regardless of case complexity, presence or absence of a framework and stereotype, the overwhelming majority of thoughts listed were either message originated or modified message originated thoughts.

Argument Recall. According to the ELM, ability reducing variables prevent individuals from attending to and/or comprehending the message presented. As such, ability reducing variables should affect individuals' recall of a message. In the present study, therefore, subjects who read a simple case should recall more arguments and facts (correctly) than subjects who read a complex case. The number of facts and arguments that subjects can recall correctly also provides a test of the processes underlying the positive effect of the framework manipulation. Theoretically, a framework cancels out the negative effect of complexity because a framework enables individuals to identify the relevant aspects of the message. In short, a framework increases subjects ability to attend to the message. As such, individuals who are

Table 3

Type of Information Processing Mode Used as a Function of Case Complexity, Stereotype, and Legal Framework

<u>Stereotype</u>	<u>Framework</u>			
	<u>Present</u>	<u>Absent</u>	<u>Present</u>	<u>Absent</u>
<u>Simple Case</u>				
Scrutinized Message	94	100	86	100
Peripheral Cues				
Issue Related			7	
Mixed Mode	6		7	
	(16)	(17)	(15)	(17)
<u>Complex</u>				
Scrutinized Message	94	94	100	88
Peripheral Cues	6			6
Issue Related				
Mixed Mode		6		6
	(16)	(17)	(17)	(16)

Note. Numbers indicate percentage of subjects who generated predominately message originated or modified message originated thoughts (scrutinized the message), no association to case thoughts (peripheral cues), issue related thoughts (issue related), or an equal number of message originated/modified message originated and no association/issue related thoughts. Cell n's are in parentheses.

given a legal framework prior to hearing the case should recall more facts and arguments correctly than individuals who are not given a legal framework prior to reading the case.

The total number of facts and arguments that subjects recalled correctly, out of a possible 26 items, was calculated. Subjects' scores were then analyzed by a 2 (case complexity) X 2 (legal framework) X 2 (peripheral cue) analysis of variance. The overall mean was $\bar{M} = 18.03$. No significant differences among experimental conditions were found.

Other Analyses. In order to better understand the effect of the framework manipulation, a three-way ANOVA was performed on subjects' ratings of the difficulty of the case. It was expected that the framework would make the complex case more understandable. The analysis produced a significant main effect for framework. Subjects who received the jury instructions prior to reading the case rated the case as less difficult to understand ($\bar{M} = 4.06$) than subjects who did not receive the jury instructions prior to reading the case ($\bar{M} = 4.78$), $F(1,136) = 4.07$, $p < .05$. Although the framework manipulation, overall, made the case less difficult to understand, the Case Complexity by Legal Framework interaction implied by the prediction was not significant, $F(1,136) = .005$, ns.

DISCUSSION

On a theoretical level, the purpose of the present study was to assess both the generalizability of the ELM to a legal setting and its utility as a general framework for understanding when and how individuals process information. On an applied level, this study sought to address the legal question of whether jurors are capable fact-finders when asked to render a decision in a complex lawsuit. In accordance with the major assumptions of the ELM, it was hypothesized that a complicated legal case would reduce subjects' ability to scrutinize the legal arguments presented in court, and enhance the use of a less effortful information processing strategy. It was also hypothesized that if jurors were presented with an ability-enhancing strategy, such as the judge's instructions prior to reading the complex transcript, the detrimental effect of complexity would be eliminated. This study also attempted to provide a direct test of subjects' use of peripheral cues. In this regard, it was hypothesized that subjects' inability to elaborate on the content of the case would be reflected in the cognitive responses they generated.

Overall, the results of this study were not inconsistent with an ELM account of the ability-limiting factor of complexity, but the data provided only partial support for the major hypotheses. Consistent with the major assumptions of the ELM, a legal framework reduced the use of peripheral cues. The results of this study showed that while in possession of a legal framework, the presence or absence of stereotypic information had no effect on subjects' judgments of the defendant's negligence. Quite unexpectedly, however, in the absence of a legal framework, all subjects, regardless of case complexity, relied on the stereotype. Thus, while this finding suggests that reading the judge's instructions prior to reading the case transcript enabled subjects to process the simple and complex cases centrally, it also appears, that when available, individuals will use stereotypic information for reaching a decision in the absence of a legal framework. One explanation for the considerable influence of the stereotype on subjects' decisions, and the lack of an impact of the complexity manipulation is that both the simple and complex cases were equally complex--complex in terms of ambiguity rather than understandability of the evidence. A second "complex" property of the legal transcript used in this study may have been the "closeness" of the case. Thus, while the complex transcript may have been more difficult to understand than the simple case transcript (as

the analysis of the difficulty measure revealed), both cases may have been equally difficult in terms of reaching a decision. This latter operationalization of case difficulty was not assessed. However, the results of the credibility, likability and difficulty ratings of the adversary pairs suggests that both parties to the dispute presented equally compelling and cogent arguments. This finding is further substantiated by the results from the dichotomous verdict measure taken in the base-line simple case. In the base-line simple case, 50 % of the subjects voted for the defendant, and 50 % voted for the plaintiff. In their review of the literature on stereotypes, Bodenhausen and Lichtenstein, (1987) noted that "stereotypes will be influential whenever other evidence fails to provide clear and direct implications for the judgment" (p. 871). This point of view is also consistent with an ELM view of the impact of stereotypes on decisions. Another treatment variable that can also enhance or reduce an individual's motivation or ability to process information centrally is the nature of the message. As in the present case, a message with vague or ambiguous implications can also induce a peripheral information processing route (Petty & Cacioppo, 1987).

Although it is plausible that both the complex and simple case transcripts were perceived as equally difficult in terms of reaching a decision, this explanation is

somewhat inadequate because it runs contrary to the second finding that a legal framework affects the manner in which information in the complex, but not simple, case was processed. If both transcripts were equally complex, the legal framework manipulation would have had the same impact on judgments rendered in both cases. Although the pattern of negligence judgments presented in Table 1 suggests that the legal framework, overall, lowered subjects' ratings of the defendant's negligence, the framework manipulation had a much more powerful impact on negligence judgments rendered in the complex case condition than in the simple case condition. In fact, negligence judgments rendered in the complex case, framework condition dropped well below the baseline judgment.

One explanation that would account for both findings is that the two transcripts, although complex, were not equally complex, and the two levels of complexity resulted in an information processing difference. Although the simple case was complex enough to engender the use of the stereotype, it was not complex enough to warrant closer scrutiny of the evidence. On the other hand, the complex transcript was undeniably complex, and necessitated further examination of the arguments which the second exposure to the judge's instructions offered. In essence, the framework manipulation may have had the same effect on information processing as the ability enhancing variable of repetition.

According to Petty and Cacioppo (1979), the benefits of repetition are most apparent when additional opportunities are needed to process a message, as when reading a complex lawsuit. What may have occurred in the complex case condition is that, after reading the judge's instructions and then reading the complex transcript, subjects were still uncertain of their decision, and additional opportunities to process the message arguments were needed. The second reading of the judge's instructions provided this opportunity, and subjects took advantage of it unlike the subjects in the simple case condition who were also exposed to the judge's instructions two times. During the second reading of the judge's instructions, subjects in the complex case condition who were uncertain of their decision, diligently searched the instructions for information that would provide them with an answer to the case, while subjects in the simple case condition who were certain of their decision, just gave the instructions a passing glance.

Such an explanation implies, however, that the opposite pattern of cognitive responding and message recall than the one predicted should emerge. Thus, only in the complex case, framework condition should greater recall of the message arguments, and more message originated or modified message originated thoughts than recipient generated or issue irrelevant thoughts be observed. However, this pattern of responding did not occur. In fact,

neither the cognitive response nor the recall measures detected any differences in argument processing among the experimental conditions. While these results may indicate that all subjects processed the case centrally, the measures also may have been inappropriate for the aims of the particular experiment. The wording of the cognitive response item may have primed subjects to list only the facts of the case. For the main study, the pilot study's version of the cognitive response item was shortened from:

"please list all the thoughts you had while hearing the case and reaching your decision. List the thoughts you may have had regarding what was said and/or not said during the trial. Just try to remember and write down all the different kinds of thoughts that may have crossed your mind while reading and reaching your decision."

to "please list all the factors that influenced your decision." With the latter instruction, subjects literally generated a listing of the facts of the case while the former measure produced paragraphs of thoughts (e.g., "Is it an act of God? Why did the doctor take two hours to get to the emergency? How bad was the car accident?" "The baby didn't seem like it was in critical condition so the doctor was calm about the situation."). The difference is not surprising. Survey researchers have known for a long time that a longer opened-ended question will elicit a longer response (Sudman & Bradburn, 1985).

The responses elicited by the recall measure also showed no variation. An alternative explanation for these

results may be that the easy to understand judge's instructions and attorneys' opening arguments (only the expert witnesses' statements were made more complex) provided subjects with all the information they needed for answering the recall questions. Their knowledge of the case which was gathered from the attorneys' opening arguments and judge's instructions, however, was not enough for subjects who were exposed to the complex case to feel confident about rendering a verdict. A test of this explanation would require the use of the longer version of the cognitive response item and a confidence measure.

On the other hand, the results of the cognitive response and recall measures may truly indicate that all subjects, regardless of experimental condition, actually processed the case centrally, and the ambiguity of the case together with the complexity of the case triggered the use of either a relevant or peripheral cue. In the absence of a legal framework, the ambiguity of the case engendered the use of the stereotype. In the presence of a legal framework, however, the framework became the "peripheral" cue, although a relevant one, eliminating the effect of the stereotype, and leading to a more effortful processing of the complex case. According to this explanation, subjects use of the framework occurred during processing rather than after processing the case, but before delivering a decision.

What may have occurred is that, while reading the

complex transcript, subjects felt uncertain about their ability to render a verdict, and relied more heavily on the legal framework. Thus, subjects read or processed the complex case in terms of the legal criteria outlined in the judge's instructions. Since the framework provided a clear and stringent definition of negligence, subjects were less likely to find a clear case of negligence. Conversely, while reading the simple transcript, subjects felt confident about their ability to render a verdict. And, since the case arguments could be easily processed, subjects did not feel the need for greater cognitive effort.

On a theoretical level, these findings demonstrated the applicability of the ELM of persuasion to an understanding of how and when individuals will engage in effortful versus effortless information processing. On an applied level, these findings appear to indicate that close or equally matched lawsuits are inherently complex, and thus, provide the perfect environment for inducing the use of cues--relevant or peripheral. In fact, it appears that the more uncertain individuals are about a message or decision, the more likely it is that they will process the message in light of situational cues. Furthermore, this research suggests that cues may operate as facilitators of greater cognitive effort. In the present situation, the judge's instructions not only reduced the use of a

peripheral cue (reliance on a less effortful mode of information processing), but also, under conditions of high uncertainty resulted in more central information processing.

Future research might profitably explore the relationship between uncertainty and cognitive effort; specifically, whether high motivation and uncertainty, when accompanied by a strategy for reducing uncertainty might result in greater cognitive effort than that expended under conditions of certainty. In addition, research should be carried out for ascertaining other legal tactics for inducing more central information processing strategies especially, for use with more routine lawsuits which are not traditionally labeled as complex.

FOOTNOTES

1. Saks' findings are based solely on a review of the literature on small group decision making. He emphasizes that, to date, there have been no direct tests of the differences between judges and juries capabilities to try complex lawsuits. As such, he emphatically states that, "the conclusions of this report should be considered as 'best available guesses' based on imperfect information" (p. 1, Saks, 1981).

2. Two subjects were eliminated from the analysis because their dependent measures booklets referred to a defendant who was different from the one they read about.

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APPENDIX A

I. Text of the Simple Legal Summary

IN THE CIRCUIT OF COOK COUNTY, ILLINOIS
COUNTY DEPARTMENT, LAW DIVISION

CAROL ANN WILLIAMS, as mother)
and next friend of LISA WILLIAMS,))
a minor,)
)
Plaintiff,)
)
v.)
)
JAMES MORRIS, M.D.,)
(DENISH RAHMAJANI, M.D.,))
)
Defendant.)

No.: 85 L 12397

SUMMARY OF THE TRANSCRIPT OF PROCEEDINGS

OPENING REMARKS BY JUDGE MEYERS

Ladies and Gentlemen of the Jury: the first step in the proceedings was what was known as voir dire. This is the period during which the attorneys had an opportunity to ask questions of the jurors regarding your ability to hear this case. After questioning more than 65 potential jurors, you twelve jurors and two alternatives were empanelled to hear the evidence in this case. This is a medical malpractice action brought by Carol Ann Williams, on behalf of her daughter, Lisa Williams, against Dr. James Morris (Dr.

Denish Rahmajani). The attorneys for both parties now have an opportunity to provide you with their opening statements. The opening statement is designed to give you an idea of what the case is all about and what the evidence is expected to show. Mr. Martin, the attorney for Mrs. Williams, will address you first.

OPENING STATEMENT BY COUNSEL

FOR THE PLAINTIFF, THOMAS C. MARTIN

Ladies and gentlemen, as Judge Meyers told you this is a medical negligence action that has been brought on behalf of my client, Carol Ann Williams, against Dr. James Morris (Dr. Denish Rahmajani), for injuries to Mrs. Williams' daughter, Lisa, following the delivery of the little girl on February 20, 1983. The evidence in this case will show that the actions of Dr. Morris (Rahmajani) following the delivery of Lisa, left her hopelessly and irreversibly brain damaged. The evidence will also show that Dr. Morris' (Rahmajani) actions were deviations from the standard of care of doctors in the community.

My client, Carol Ann Williams, at age 35, was pregnant with her first child. During the course of her pregnancy, Mrs. Williams was under the care of Dr. James, her obstetrician. Her expected date of delivery was April 15, 1983. On February 20, 1983, however, just following her seventh month of pregnancy, Mrs. Williams was involved in a minor automobile accident and experienced a preterm rupture

of the membranes. She drove herself to Winston Community Hospital in Winston, Illinois, where she was admitted to the labor room. She had already begun to have contractions. This indicated that labor was underway. Several hours later, the nurse on duty in the labor and delivery room detected a passage of meconium in the amniotic fluid and called Dr. James, Mrs. Williams' obstetrician, on the telephone. The passage of meconium meant that the baby was in trouble or, in clinical terms, experiencing fetal distress. Dr. James called the defendant, Dr. James Morris (Dr. Denish Rahmajani), a pediatrician with whom Mrs. Williams had made arrangements to care for her child following birth. Dr. Morris (Rahmajani) told Dr. James to have the nurse place Mrs. Williams on an electronic fetal heart monitoring device, which was done. However, Dr. Morris (Rahmajani) did not arrive at the hospital until approximately 1:15 p.m.--two hours later. When he arrived, Dr. Morris (Rahmajani) examined Carol Ann. His clinical examination of the baby and his examination of the print-out strip from the fetal heart monitor confirmed that the baby was in distress. The examination revealed that the baby was having problems breathing, and its heart rate was dropping. Forty-five minutes later, Lisa was delivered by cesarean section. Upon birth, Lisa weighed 2 lbs., and was having difficulty breathing. Lisa was then turned over to Dr. Morris (Rahmajani) who was in the delivery room. Dr. Morris

(Rahmajani) and his nurse attempted to suction the baby to clear her lungs, and began administering 100% oxygen by an ordinary bag and mask method. They administered oxygen for five minutes. At no time was an endotracheal tube used as a means of placing oxygen into Lisa's lungs to help her breathe.

A short time later, Dr. Morris (Rahmajani) discontinued the oxygen and had Lisa taken to the nursery. As you will hear later, Dr. Morris (Rahmajani) claims that he instructed the nursing staff to carry out his routine orders. Those orders included placing Lisa in a heated incubator, and most importantly, to supply the baby with oxygen at a level of only 30%. However, as the evidence will show, the 30% oxygen level given to Lisa was too low to prevent brain damage.

Lisa remained in the nursery for two months. For the first three weeks, Dr. Morris (Rahmajani) continued to administer oxygen to Lisa at a level of 30%. Throughout this time, he claims to have visited Lisa three times a day.

On March 15, 1983, Dr. Morris (Rahmajani) went on vacation for three weeks. He asked his associate, Dr. Patel, to follow Lisa. Before leaving, Dr. Morris (Rahmajani) decreased the level of oxygen to 25%. Five days later, Lisa was noted as making shallow breathing sounds and periodic grunting noises. Dr. Patel increased the oxygen level to 30% where it stayed for two weeks. When Dr. Morris

(Rahmajani) returned from vacation, he decided that Lisa could be discharged.

Once Lisa was home however, her mother began to notice problems. Carol Ann first noticed that her baby was not developing as a normal infant should have developed. She began to notice that the baby was not able to control her hand, head, and arm movements, and was not able to hold on to toys and bottles with her hands. She also noticed that Lisa was crying out at various times throughout the day and night for no apparent reason. Her mother became worried and concerned. Lisa was taken back to the hospital on May 26, 1983, for an outpatient visit. It was on this visit that Dr. Morris (Rahmajani) first determined that the baby was suffering from brain damage.

Today, Lisa is three years and six months old. She has no awareness of who she is. Although she has grown in height and weight at a relatively normal rate, she is not able to walk, and she is not able to reach, climb, or hold on to any objects. She has to be diapered, and she is totally dependent upon her parents and nurses for her care. She is going to require a lifetime of care by her parents, nurses, rehabilitation specialists, and family members.

This lawsuit has been brought against Dr. Morris (Rahmajani) for causing Lisa's brain damage. You will hear expert medical testimony from Dr. Michaelson, an exceptionally well qualified pediatrician, who will explain

determine the level of oxygen in Lisa's blood. Laboratory tests known as blood gas studies would have provided more accurate and reliable information about whether Lisa was receiving a sufficient level of oxygen. These were not done.

Finally, Dr. Morris (Rahmajani) was negligent in failing to transfer Lisa to a hospital with a new born intensive care unit. Winston Community Hospital does not have such facilities but Dr. Morris (Rahmajani) knew that Northwestern Memorial Hospital did, and therefore, knowing the potential for problems, he should have ordered a transfer.

In this case, Lisa's brain damage was caused by the negligence of Dr. Morris (Rahmajani). We will show how this occurred through the testimony of the witnesses. At the close of all the evidence, you will be asked to render a verdict in favor of Carol Ann and Lisa Williams, and against the defendant, Dr. James Morris (Dr. Denish Rahmajani). Thank you very much for your attention.

OPENING STATEMENT BY

MR. MONTGOMERY, COUNSEL FOR DR. MORRIS (Rahmajani)

Ladies and gentlemen, my name is Bill Montgomery, and I represent Dr. Morris (Rahmajani). What this case is about is whether this little baby's condition was caused by the malpractice of my client, Dr. James Morris (Dr. Denish Rahmajani). What the evidence will really show in this case is that Dr. Morris (Rahmajani) was confronted with an

emergency situation with a little baby that weighed less than two pounds, and that his efforts saved Lisa's life.

Dr. Morris is a pediatrician practicing in Winston, Illinois. He has been practicing there, treating babies, for 10 years. He attended medical school at Stanford University, and came to Winston following an internship and residency at Northwestern Memorial Hospital. He has become a respected member of the community. He has published a number of articles in The Journal of The American Academy of Pediatrics. Dr. Morris is Board Certified as a specialist in pediatrics by the American Academy of Pediatricians.

(Dr. Rahmajani is a pediatrician practicing in Winston, Illinois. He was born in India and went to college and medical school there. He came here following graduation from medical school and did an internship and residency at Northwestern University Hospital. He moved to Winston, Illinois in about 1960. He began treating patients there and has become a respected member of the community. He has published a number of articles in The Journal of American Academy of Pediatric. Dr. Rahmajani is Board Certified as a specialist in pediatrics by the American Academy of Pediatricians.)

Mrs. Williams became pregnant in July of 1982, and it was expected that she would deliver on April 15, 1983. Her obstetrician was Dr. James. Carol Ann had talked to Dr. Morris (Rahmajani) while she was pregnant about his taking

care of her baby following birth. Dr. Morris (Rahmajani) agreed. In the seventh month of her pregnancy, when the baby was only 29 weeks old, Carol Ann was involved in a minor car accident and went into labor. A few hours later, Lisa was born.

The issues in this case are about the care and the treatment of Lisa after delivery. When Lisa was born, she weighed only 2 lbs. Dr. Morris (Rahmajani) will take the stand and he will testify to the condition of this baby when it was born. He will tell you that shortly prior to birth, he was contacted at home by Dr. James regarding Mrs. Williams' condition. At this time, Dr. Morris (Rahmajani) instructed Dr. James to have the nurse place Mrs. Williams on an electronic fetal heart monitoring device to check the status of the baby. He then left for the hospital. When Dr. Morris (Rahmajani) arrived at the hospital at 1:15 p.m., he discovered that the baby was in fetal distress. A short time later, the baby was delivered by cesarean section. The delivery took forty-five minutes.

When Lisa was born, she was experiencing a syndrome known as Hyaline Membrane Disease (HMD), otherwise known as respiratory distress syndrome or asphyxia. This syndrome accounts for 10% of all deaths in premature infants, and remains the number one cause of death in newborns. However, because of the actions of Dr. Morris (Rahmajani), Lisa's life was saved.

Upon birth, Lisa was suffering from asphyxia. The term "asphyxia" refers to depressed respiration, and means that she was having difficulty breathing. However, Lisa had only moderate asphyxia--a condition that is frequently seen in small, preterm infants, and Dr. Morris (Rahmajani) gave oxygen to Lisa to help her breathe. The decision to provide oxygen is made based on, among other factors, what is called the Apgar score. The Apgar score is a measure of the baby's condition upon birth. The evidence will show that the actions of Dr. Morris (Rahmajani) following Lisa's delivery were warranted given Lisa's Apgar score. The evidence will also show that, based on this Apgar score, Dr. Morris (Rahmajani) correctly choose to provide supplemental oxygen by the bag and mask method as opposed to the method called intubation. Intubation was an unnecessary risk that Dr. Morris (Rahmajani) choose not to take--it can cause infection and other damage. Dr. Morris (Rahmajani) will tell you that the correct method for providing supplemental oxygen therefore, was through an oxygen bag and mask, just as he did, rather than through intubation.

The emergency passed, and when the baby was breathing better, she was placed in an incubator to make sure that her progress would continue. Dr. Morris (Rahmajani) will explain to you that he was careful not to supply too much oxygen since, if he did, the baby would have been at risk of developing retrolental fibroplasia (RLF). RLF is a disease

that causes blindness in babies. You will hear a good deal of testimony about RLF, not only from Dr. Morris (Rahmajani), but from a doctor that will come into this courtroom to testify on behalf of Dr. Morris (Rahmajani). This doctor's name is Dr. Edwards.

Dr. Edwards will explain to you that the disease known as RLF is the largest single cause of blindness in this country. He will explain to you that it is high levels of oxygen following birth that typically cause RLF. He will also explain to you that preterm small infants who develop respiratory distress, infants just like Lisa, are the most likely candidates to receive high levels of oxygen to maintain life until the respiratory distress emergency has passed. He will tell you that during this period therefore, it is important that the administration of supplemental oxygen does not lead to what is known as hyperoxia--too much oxygen which causes RLF.

You will hear testimony from Dr. Edwards that despite all of the studies, and despite all of the advances in modern medicine, the precise levels of oxygen that can be supplied without causing RLF are unknown. He will tell you however, that it is believed that a baby will not develop RLF when given supplemental oxygen at levels below 40%. Here, Dr. Morris (Rahmajani) ordered that 30% oxygen be delivered.

For whatever tragic reason, this child developed brain

damage. There are 850,000 children in this country with mental retardation and another 750,000 young people with cerebral palsy. Unfortunately, modern medicine still knows very little about the factors that cause these dreaded disabling conditions. Yet, you have heard Mr. Martin suggest that it was the improper treatment of Lisa's respiratory problem or asphyxia following birth that caused her injuries. However, as indicated by Lisa's Apgar score, Dr. Morris (Rahmajani) did provide proper treatment.

In this case, the plaintiff, Carol Ann Williams, must prove that Dr. Morris (Rahmajani) was negligent in treating Lisa, and that it was the negligent actions of Dr. Morris (Rahmajani) that caused Lisa's retardation. Accordingly, I ask you to keep an open mind until you have heard all of the evidence. The plaintiff's case will be presented first. That is because the plaintiff has the burden of proving her claims of negligence against Dr. Morris (Rahmajani). The defendant is not required to put on any evidence because it is the plaintiff that must sustain her burden of proof. I have indicted to you that I expect to call certain witnesses to testify so that you have a complete understanding of the complex and the difficult decisions that Dr. Morris (Rahmajani) needed to make in this case. I think when all the evidence is in, you will agree that there was no negligence on the part of Dr. Morris (Rahmajani), and accordingly, I will return, following my closing argument,

and ask you for a verdict of not guilty in his favor. Thank you very much for your attention.

SUMMARY OF THE DIRECT EXAMINATION OF
PLAINTIFF'S EXPERT DR. LOUIS MICHAELSON

I was born in Chicago and attended medical school at the University of Illinois. I then did my internship and residency in pediatrics at Massachusetts General Hospital. I have been practicing as a pediatrician since 1959. I am Board Certified in pediatrics. I am now a member of the staff at Rush Presbyterian St. Luke's Medical Center.

At the request of Mrs. Williams' attorney, I examined the medical records of this case, and I also examined Lisa. What I learned was that Mrs. Williams was pregnant with her first child at the age of 35. The expected date of delivery was April 15, 1983. However, after seven months of pregnancy, when the fetus was 29 weeks old, she experienced a preterm rupture of the membranes following a minor automobile accident.

In this case, shortly after Mrs. Williams was admitted to the hospital, the nurse on duty noticed the passage of meconium from the amniotic fluid. This is typically a sign of a fetus in trouble or fetal distress. Meconium is essentially a fetal bowel movement that is emitted from the fetus when it is in distress or unable to obtain the requisite amount of oxygen. The presence of meconium indicates that the infant may require special care on

delivery. The passage of meconium therefore, should have indicated to Dr. Morris (Rahmajani) that special care was required, and that he could expect to see an infant that would be in distress upon delivery.

Mrs. Williams was placed on an electronic fetal heart monitor. This is used to indicate fetal distress by comparing the fetal heart rate with the mother's uterine contractions during labor. If the fetal heart beat trails the uterine contractions, a syndrome known as late deceleration occurs, and indicates that the infant may be experiencing respiratory problems upon birth. Here, late decelerations were present.

When a baby is born, the physician will assign it a numerical value that expresses the condition of the infant at periods of one minute and five minutes following birth. This numerical expression is known as the Apgar score and ranges from a low of 0 to a high of 10. The Apgar score is divided into five categories including heart rate, respiratory effort, muscle tone, reflex irritability, and color. Each category is rated between 0 and 2. A total one minute Apgar score of 0 to 3 indicates a respiratory problem called severe asphyxia. Asphyxia is typically attributable to a lack of oxygen in the lungs of the baby during labor and delivery. Moderate asphyxia is reflected by an Apgar score between 4 and 7, and indicates that the infant is breathing although it is pale and gasping. A

normal infant, with an Apgar score of 8 to 10, will cough or cry within seconds of delivery, and no further procedures are necessary. Here, the records claim to show that Lisa had an Apgar score of 4--at the bottom end of moderate asphyxia.

With an infant in respiratory distress, an endotracheal tube should be inserted between the baby's vocal cords, and the lungs should be inflated with oxygen through the tube approximately 30 times per minute until the heart rate is at least 100 beats per minute. When an infant is suffering from respiratory distress syndrome or, as it is otherwise called, Hyaline Membrane Disease (HMD), intubation should be done.

The HMD syndrome is essentially caused by an insufficient production of surfactant which is the material that is used to develop the fetal lungs during pregnancy. If the infant is born premature, it may not have yet produced the requisite amount of surfactant for full development of lungs. Thus, when the premature infant is born, the doctor should place the endotracheal tube into the baby's lungs to help it breathe.

It is my opinion that Dr. Morris (Rahmajani) was negligent in this case for a number of reasons. First, once the baby was delivered, there was an improper delay in the initial administration of oxygen. The infant should have been given oxygen immediately after the one minute Apgar

score was taken. Instead, the medical records appear to reveal that there was at least a five minute delay between the time of delivery and the time that the oxygen was first delivered by bag and mask. Also, given the condition of the infant, Dr. Morris (Rahmajani) should have intubated the baby to fill its lungs with oxygen rather than provide oxygen by bag and mask. Had this been done immediately in this case, the baby's heart rate would not have dropped. This delay was a deviation from the standard of care, and I believe that this delay caused insult to the baby's brain.

Once the baby was removed to the incubator, special care had to be taken to ensure that the proper levels of oxygen were given. Dr. Morris (Rahmajani) ordered that the baby be placed in the incubator with 30% oxygen. This level was insufficient, even if we assume that this level was maintained consistently. In the present case, we do not know whether Lisa was receiving a consistent supply of oxygen because Dr. Morris (Rahmajani) never conducted blood gas studies. Blood gas studies analyze the exact amount of oxygen in the blood at any given time. They were not taken and no laboratory results were recorded. As such, the oxygen level in Lisa's blood may have dropped below the already insufficient level of 30%.

Even if we assume that a 30% oxygen level was maintained consistently throughout this period, this level of oxygen is grossly insufficient. It is evident that the baby does have

brain damage, and the insufficiency of oxygen following birth is the likely cause. The failure to provide proper oxygen levels, and the failure to perform blood gas studies were unacceptable deviations from the standard of care.

Furthermore, it was a deviation from the standard of care for Dr. Morris (Rahmajani) to fail to transfer this baby. Because of the prematurity and the evidence of fetal distress prior to delivery, Dr. Morris (Rahmajani) should have been placed on notice of a high risk infant. Under these circumstances, he should have required the transfer of Mrs. Williams to one of the neonatal centers in Chicago prior to delivery or even during the months following birth. Dr. Morris (Rahmajani) is on staff at Northwestern Memorial Hospital which was available for transfer. With an infant in fetal distress, it must have access to neonatal intensive care at all times. Dr. Morris (Rahmajani) failed to do this and was negligent in failing to do so. Any one of these factors was a deviation from acceptable medical practice, and was sufficient to cause Lisa's injuries.

SUMMARY OF THE DIRECT

EXAMINATION OF DR. RAYMOND EDWARDS

My name is Raymond Edwards, and I am a physician. I have been asked to testify as an expert in this case on behalf of Dr. Morris (Rahmajani). I was born in Chicago, Illinois and attended medical school at the Johns Hopkins University, where I did my general rotating internship.

Thereafter, I did a residency in pediatrics at New York Hospital. I am Board Certified in Pediatrics. I am now a member of the staff at Children's Memorial Hospital.

In connection with my opinions in this case, I reviewed the medical records of Dr. James relating to the pregnancy of Mrs. Williams. I have reviewed the hospital chart from Winston Community Hospital relating to the delivery that was performed by Dr. James, and the care following delivery by Dr. Morris (Rahmajani). In providing my opinions in this case, I also relied upon the several articles that I have published in this area. These articles have appeared in various journals, among which include, The Journal of Pediatrics.

I have two major opinions in this case. First, that Dr. Morris (Rahmajani) did not deviate from the standard of care acceptable of a practicing pediatrician in his treatment of Lisa Williams. Second, that the brain damage that the baby suffered was not caused by anything that Dr. Morris (Rahmajani) did or failed to do.

I believe it is impossible in this case to say, with any certainty, what caused the brain damage in this child. A low level of oxygen is but one of several factors routinely suggested by physicians as causing brain damage. Therefore, in most brain damage cases, physicians will, as a matter of routine, look for evidence of anoxia or asphyxia. Recall these are two respiratory conditions brought about by low

levels of oxygen. Thus, where a child has both brain damage, and it is recorded in the medical records that the child was suffering from some asphyxia, it is frequently assumed that the asphyxia and hence, the low oxygen level, caused the brain damage.

However, even when we know, for example, that one factor such as, a low oxygen level, can cause brain damage, we cannot be certain in most cases that the low level of oxygen did, in fact, cause such damage. In order to say that a specific factor caused a specific injury to occur, physicians must look at all the potential causes of that specific injury, and systematically eliminate each cause until only one remains.

However, in infants with mental retardation or cerebral palsy, this method often fails to provide a definitive explanation of cause because we do not know what are all the causes of brain damage. As such, doctors frequently rely on a simplistic form of reasoning to determine the cause of brain damage in infants. I believe that this is what Dr. Michealson has done for the plaintiffs in providing his opinion that the brain damage was caused by a lack of oxygen following delivery. However, in this case, Dr. Michealson cannot say that a lack of oxygen following birth caused brain damage.

Let's review what happened. The hospital chart revealed that this baby had a one minute Apgar score of 4. This

indicates moderate asphyxia; an infant who is breathing although pale and gasping. In Dr. Michealson's opinion, since Lisa's Apgar score indicated asphyxia, although moderate, that meant that the baby must have had an insufficiency of oxygen. Since the baby ended up with brain damage, the insufficiency of oxygen must have caused the brain damage. I don't believe that this necessarily follows. If this were true, then how could we explain babies that have a 1 minute Apgar score of 0 or severe asphyxia that develop with no brain damage or mental handicap. A well known study of infants with Apgar scores of 0 found that 93% of these babies had no serious neurological or mental handicap later in life. Conversely, another study of over 55,000 pregnant women found that 73% of the children who later developed cerebral palsy had Apgar scores of 7-10 at five minutes. When we start to look at these studies, Dr. Michealson's evidence via his simplistic reasoning begins to fall apart. Thus, it is extremely difficult, in any given case to determine whether a factor such as, asphyxia, is the cause of brain damage or whether it is merely the symptom of another problem. So, first I do not believe that anyone in this case can state with a reasonable degree of certainty that it is more true than not true that Lisa's brain damage was triggered by any particular event.

Second, with respect to the care rendered by Dr. Morris

(Rahmajani), it is my opinion that his care was within acceptable limits. Dr. Michealson has said that Dr. Morris (Rahmajani) deviated from the standard of care. I disagree. Dr. Morris (Rahmajani) was confronted with a baby that was two months preterm and weighed only 2 lbs. The size of this baby is so small that the doctor could hold it in one hand. When it was born, and showed that it had problems breathing, Dr. Morris (Rahmajani) immediately provided it with oxygen to help the baby breathe.

In terms of the correct method for administering oxygen, the decision of whether or not to intubate a baby depends on the doctor's clinical judgment, and I believe that Dr. Morris (Rahmajani) appropriately exercised his judgment here. As stated, intubation would only be appropriate in the case of severe asphyxia, and not in the case of moderate asphyxia. The risks of intubation include infection and other damage--especially when you are dealing with such a small infant.

Once the baby had started breathing more efficiently, he discontinued the oxygen, and had the baby placed in an incubator. Once the baby was placed in the nursery, he again used his clinical judgment to determine the proper level of oxygen to be provided. The level of oxygen that he decided to administer was 30%. This was the level that all of the pediatricians at Winston Hospital were administering at this time.

Dr. Morris (Rahmajani) was also careful not to administer oxygen at levels in excess of 40%. Recent studies have indicated that the administration of supplemental oxygen in excess of 40% can cause blindness in babies. This disease essentially occurs when too much oxygen is given to children and ultimately burns the arteries in the baby's retina causing blindness. Retrolental fibroplasia (RLF) is the largest single cause of blindness in children in this country.

This disorder was first recognized by doctors in 1941. As a relationship between the administration of too much oxygen to preterm babies and RLF became apparent, the incidence of RLF dropped off dramatically. Unfortunately, however, the alternative practice of administering lower levels of oxygen, in order to prevent RLF, began to be associated with an increase in death among premature infants--especially those with respiratory distress syndrome. In response, doctors, again, began giving higher levels of oxygen. However, as doctors were raising oxygen levels in an effort to prevent death, the number of blind babies that were born with RLF began to increase. We are still conducting numerous studies in this area. Recently, however, The American Academy of Pediatrics has suggested that the administration of supplemental oxygen at levels of 40% is considered to be safe. In this case, despite the other tragic consequence, it is apparent that Dr. Morris

(Rahmajani) prevented RLF from developing since Lisa has normal vision.

There is no question that it is a difficult choice for a pediatrician to determine what level of oxygen should be supplied. Although I agree that blood gas studies are a more accurate and reliable indicator of the particular level of oxygen in a baby's blood, because these tests are taken by pricking the skin on the bottom of the infant's foot, such tests can be detrimental to the baby's health--they also can lead to infection and disease. In this instance, the person who is best suited to tell us what level was required is Dr. Morris (Rahmajani). He is an exceptionally well qualified pediatrician. We must allow doctors to exercise their clinical judgment since their examination of the baby is the best indicator of how much oxygen is required.

With regard to Dr. Michealson's claim that the baby should have been transferred, I believe that proper care was rendered at Winston Community Hospital. This would obviate the need for transfer to a special center in Chicago. Furthermore, in this case, a quick delivery was indicated, and with any transfer, a potential is raised for additional complications.

It is in my opinion that Dr. Morris (Rahmajani) exercised good judgment in caring for Lisa. I believe he did what should have been done, and that the tragic

condition that this little girl ultimately ended up with was not caused by Dr. Morris (Rahmajani).

II. Text of the Complex Legal Summary

IN THE CIRCUIT OF COOK COUNTY, ILLINOIS
COUNTY DEPARTMENT, LAW DIVISION

CAROL ANN WILLIAMS, as mother)
and next friend of LISA WILLIAMS,))
a minor,)

Plaintiff,)

v.) No.: 85 L 12397

JAMES MORRIS, M.D.,)
(DENISH RAHMAJANI, M.D.,))

Defendant.)

SUMMARY OF THE TRANSCRIPT OF PROCEEDINGS

OPENING REMARKS BY JUDGE MEYERS

Ladies and Gentlemen of the Jury: the first step in the proceedings was what was known as voir dire. This is the period during which the attorneys had an opportunity to ask questions of the jurors regarding your ability to hear this case. After questioning more than 65 potential jurors, you twelve jurors and two alternatives were empanelled to hear the evidence in this case. This is a medical malpractice action brought by Carol Ann Williams, on behalf of her daughter, Lisa Williams, against Dr. James Morris (Dr.

Denish Rahmajani). The attorneys for both parties now have an opportunity to provide you with their opening statements. The opening statement is designed to give you an idea of what the case is all about and what the evidence is expected to show. Mr. Martin, the attorney for Mrs. Williams, will address you first.

OPENING STATEMENT BY COUNSEL
FOR THE PLAINTIFF, THOMAS C. MARTIN

Ladies and gentlemen, as Judge Meyers told you this is a medical negligence action that has been brought on behalf of my client, Carol Ann Williams, against Dr. James Morris (Dr. Denish Rahmajani), for injuries to Mrs. Williams' daughter, Lisa, following the delivery of the little girl on February 20, 1983. The evidence in this case will show that the actions of Dr. Morris (Dr. Denish Rahmanjani) following the delivery of Lisa, left her hopelessly and irreversibly brain damaged. The evidence will also show that Dr. Morris' (Dr. Rahmanjani's) actions were deviations from the standard of care of doctors in the community.

My client, Carol Ann Williams, at age 35, was pregnant with her first child. During the course of her pregnancy, Mrs. Williams was under the care of Dr. James, her obstetrician. Her expected date of delivery was April 15, 1983. On February 20, 1983, however, just following her seventh month of pregnancy, Mrs. Williams was involved in a minor automobile accident and experienced a preterm rupture

of membranes. She drove herself to Winston Community Hospital in Winston, Illinois, where she was admitted to the labor room. She had already begun to have contractions. Several hours later, the nurse on duty in the labor and delivery room detected a passage of meconium in the amniotic fluid and called Dr. James, Mrs. Williams' obstetrician, on the telephone. The expulsion of meconium indicated fetal distress. Dr. James called the defendant, Dr. James Morris (Dr. Denish Rahmajani), a pediatrician with whom Mrs. Williams had made arrangements to care for her child following birth. Dr. Morris (Dr. Rahmajani) told Dr. James to have the nurse place Mrs. Williams on an electronic fetal heart monitor, which was done. However, Dr. Morris (Dr. Rahmajani) did not arrive at the hospital until approximately 1:15 p.m.--two hours later. When he arrived, Dr. Morris (Dr. Rahmajani) examined Carol Ann. His clinical examination of the baby and his examination of the print-out strip from the fetal heart monitor confirmed that the baby was in distress. Forty-five minutes later, Lisa was delivered by cesarean section. Upon birth, Lisa weighed 2 kilograms, and was having irregular, shallow and gasping respirations. Lisa was then turned over to Dr. Morris (Dr. Rahmanjani) who was in the delivery room. Dr. Morris (Dr. Rahmajani) and his nurse attempted to suction the baby, and began oxygenating Lisa by bag and mask. They ventilated the infant for five minutes. At no time was tracheal intubation

used as a means of oxygenation.

A short time later, Dr. Morris (Dr. Rahmajani) discontinued the oxygen and had Lisa taken to the nursery. As you will hear later, Dr. Morris (Dr. Rahmajani) claims that he instructed the nursing staff to carry out his routine orders. Those orders included placing Lisa in a heated isolette, and most importantly, to supply inspired air at a concentration of only 30%. However, as the evidence will show, the 30% concentration given to Lisa was too low to prevent neurologic damage.

Lisa remained in the nursery for two months. For the first three weeks, Dr. Morris (Dr. Rahmajani) continued to oxygenate Lisa at a concentration of 30%. Throughout this time, he claims to have visited Lisa three times a day.

On March 15, 1983, Dr. Morris (DR. Rahmajani) went on vacation for three weeks. He asked his associate, Dr. Patel, to follow Lisa. Before leaving, Dr. Morris (Dr. Rahmajani) decreased the concentration to 25%. Five days later, Lisa was noted as making shallow breath sounds and periodic grunting. Dr. Patel increased the oxygen level to 30% where it stayed for two weeks. When Dr. Morris (Dr. Rahmajani) returned from vacation, he decided that Lisa could be discharged.

Once Lisa was home however, her mother began to notice problems. Carol Ann first noticed that her baby was not developing as a normal infant should have developed. She

began to notice that the baby was not able to control her hand, head, and arm movements, and was not able to hold on to toys and bottles with her hands. She also noticed that Lisa was crying out at various times throughout the day and night for no apparent reason. Her mother became worried and concerned. Lisa was taken back to the hospital on May 26, 1983, for an outpatient visit. It was on this visit that Dr. Morris (Dr. Rahmajani) first determined that the baby was suffering from neurologic damage.

Today, Lisa is three years and six months old. She has no awareness of who she is. Although she has grown in height and weight at a relatively normal rate, she is not able to walk, and she is not able to reach, climb, or hold on to any objects. She has to be diapered, and she is totally dependent upon her parents and nurses for her care. She is going to require a lifetime of care by her parents, nurses, rehabilitation specialists, and family members.

This lawsuit has been brought against Dr. Morris (Dr. Rahmajani) for causing Lisa's injuries. You will hear expert medical testimony from Dr. Michaelson, an exceptionally well qualified pediatrician, who will explain to you that Dr. Morris (Dr. Rahmajani) was negligent in his care of Lisa. Dr. Michaelson will tell you that since Lisa was born premature, her lungs were unable to adjust to extrauterine life. Dr. Michaelson will explain that Dr. Morris (Dr. Rahmajani) should have anticipated that Lisa

would be in distress upon delivery, and therefore, should have been prepared for an emergency situation.

Immediately upon birth, Dr. Morris (Dr. Rahmajani) should have resuscitated Lisa through endotracheal intubation. As the evidence will show however, there was a five minute delay before Dr. Morris (Dr. Rahmajani) initiated ventilatory measures, and he ventilated the infant by bag and mask.

Dr. Michaelson will also tell you that after delivery, Dr. Morris (Dr. Rahmajani) should have maintained consistently a proper concentration of oxygen. The evidence in this case will show that following delivery, the 30% oxygen concentration in Lisa's blood was improper, and therefore, caused her injuries.

We will show that once Lisa was placed in the isolette, Dr. Morris (Dr. Rahmajani) was negligent in relying exclusively upon his clinical judgment in attempting to determine whether Lisa was receiving stable concentrations of oxygen. Dr. Morris (Dr. Rahmajani) should have conducted arterial blood gases. Determination of arterial blood gases would have provided more accurate and reliable information about whether Lisa was receiving sufficient concentrations of oxygen. These were not done.

Finally, Dr. Morris (Dr. Rahmajani) was negligent in failing to transfer Lisa to a hospital with a new born intensive care unit. Winston Community Hospital does not

have such facilities but Dr. Morris (Dr. Rahmajani) knew that Northwestern Memorial Hospital did, and therefore, knowing the potential for problems, he should have ordered a transfer.

In this case, Lisa's neurologic damage was caused by the negligence of Dr. Morris (Dr. Rahmajani). We will show how this occurred through the testimony of the witnesses. At the close of all the evidence, you will be asked to render a verdict in favor of Carol Ann and Lisa Williams, and against the defendant, Dr. James Morris (Dr. Rahmajani). Thank you very much for your attention.

OPENNING STATEMENT BY

MR. MONTGOMERY, COUNSEL FOR DR. MORRIS (DR. RAHMAJANI)

Ladies and gentlemen, my name is Bill Montgomery, and I represent Dr. Morris (Dr. Rahmajani). What this case is about is whether this little baby's condition was caused by the malpractice of my client, Dr. James Morris (Dr. Rahmajani). What the evidence will really show in this case is that Dr. Morris (Dr. Rahmajani) was confronted with an emergency situation with a little baby that weighed less than two kilograms, and that his efforts saved Lisa's life.

Dr. Morris (Dr. Rahmajani) is a pediatrician practicing in Winston, Illinois. He has been practicing there, treating babies, for 10 years. He attended medical school at Stanford University, and came to Winston following an internship and residency at Northwestern Memorial Hospital.

He has become a respected member of the community. He has published a number of articles in The Journal of The American Academy of Pediatrics. Dr. Morris (Dr. Rahmajani) is Board Certified as a specialist in pediatrics by the American Academy of Pediatricians.

Mrs. Williams became pregnant in July of 1982, and it was expected that she would deliver on April 15, 1983. Her obstetrician was Dr. James. Carol Ann had talked to Dr. Morris (Dr. Rahmajani) while she was pregnant about his taking care of her baby following birth. Dr. Morris (Dr. Rahmajani) agreed. In the seventh month of her pregnancy, when the baby was only 29 weeks old, Carol Ann was involved in a minor car accident, and experienced a preterm rupture of membranes. A few hours later, Lisa was born.

The issues in this case are about the care and the treatment of Lisa after delivery. When Lisa was born, she weighed only 2 kilograms. Dr. Morris (Dr. Rahmajani) will take the stand and he will testify to the condition of this baby when it was born. He will tell you that shortly prior to birth, he was contacted at home by Dr. James regarding Mrs. Williams' condition. At this time, Dr. Morris (Dr. Rahmajani) instructed Dr. James to have the nurse place Mrs. Williams on an electronic fetal heart monitor to check the status of the baby. He then left for the hospital. When Dr. Morris (Dr. Rahmajani) arrived at the hospital at 1:15 p.m., he discovered that the baby was in fetal distress. A

short time later, the baby was delivered by cesarean section. The delivery took forty-five minutes.

When Lisa was born, she was experiencing Hyaline Membrane Disease (HMD) or Respiratory Distress Syndrome (RDS). This syndrome accounts for 10% of all deaths in premature infants, and remains the number one cause of death in newborns. However, because of the actions of Dr. Morris (Dr. Rahmajani), Lisa's life was saved.

Upon birth, Lisa was suffering from neonatal asphyxia. However, Lisa had only moderate asphyxia--a condition that is frequently seen in small, preterm infants, and Dr. Morris (Dr. Rahmajani) oxygenated Lisa. The decision to oxygenate is made based on, among other factors, what is called the Apgar score. The evidence will show that the actions of Dr. Morris (Dr. Rahmajani) following Lisa's delivery were warranted given Lisa's Apgar score. The evidence will also show that, based on this Apgar score, Dr. Morris (Dr. Rahmajani) correctly choose to provide ventilatory therapy by bag and mask. Mechanical ventilation was an unnecessary risk that Dr. Morris (Dr. Rahmajani) choose not to take--it can lead to sepsis. Dr. Morris (Dr. Rahmajani) will tell you that the correct method for oxygenation therefore, was through bag and mask.

The emergency passed, and when the baby was breathing better, she was placed in an isolette to make sure that her progress would continue. Dr. Morris (Dr. Rahmajani) will

explain to you that he was careful not to over oxygenate Lisa since, if he did, she would have been at risk of developing retrolental fibroplasia (RLF). RLF is a disease that causes blindness in infants. You will hear a good deal of testimony about RLF, not only from Dr. Morris (Dr. Rahmajani), but from a doctor that will come into this courtroom to testify on behalf of Dr. Morris (Dr. Rahmajani). This doctor's name is Dr. Edwards.

Dr. Edwards will explain to you that the disease known as RLF is the largest single cause of blindness in this country. He will explain to you that it is high concentrations of oxygen following birth that typically cause RLF. He will also explain to you that preterm small infants who develop respiratory distress, infants just like Lisa, are the most likely candidates to receive high concentrations of oxygen to maintain life until the respiratory distress emergency has passed. He will tell you that during this period therefore, it is important that the administration of additional fractional inspired air does not result in oxygen toxicity which causes RLF.

You will hear testimony from Dr. Edwards that despite all of the studies, and despite all of the advances in modern medicine, the precise concentrations of inspired oxygen that can be supplied without causing RLF are unknown. He will tell you however, that it is believed that a baby will not develop RLF when given additional fractional

inspired oxygen at concentrations below 40%. Here, Dr. Morris (Dr. Rahmajani) ordered that 30% be delivered.

For whatever tragic reason, this child developed neurologic damage. There are 850,000 children in this country with mental retardation and another 750,000 young people with cerebral palsy. Unfortunately, modern medicine still knows very little about the factors that cause these dreaded disabling conditions. Yet, you have heard Mr. Martin suggest that it was the improper treatment of Lisa's asphyxia following birth that caused her injuries. However, as indicated by Lisa's Apgar score, Dr. Morris (Dr. Rahmajani) did provide proper treatment.

In this case, the plaintiff, Carol Ann Williams, must prove that Dr. Morris (Dr. Rahmajani) was negligent in treating Lisa, and that it was the negligent actions of Dr. Morris (Dr. Ramajani) that caused Lisa's retardation. Accordingly, I ask you to keep an open mind until you have heard all of the evidence. The plaintiff's case will be presented first. That is because the plaintiff has the burden of proving her claims of negligence against Dr. Morris (Dr. Rahmajani). The defendant is not required to put on any evidence because it is the plaintiff that must sustain her burden of proof. I have indicted to you that I expect to call certain witnesses to testify so that you have a complete understanding of the complex and the difficult decisions that Dr. Morris (Dr. Rahmajani) needed to make in

this case. I think when all the evidence is in, you will agree that there was no negligence on the part of Dr. Morris (DR. Rahmajani), and accordingly, I will return, following my closing argument, and ask you for a verdict of not guilty in his favor. Thank you very much for your attention.

SUMMARY OF THE DIRECT EXAMINATION OF
PLAINTIFF'S EXPERT DR. LOUIS MICHAELSON

I was born in Chicago and attended medical school at the University of Illinois. I then did my internship and residency in pediatrics at Massachusetts General Hospital. I have been practicing as a pediatrician since 1959. I am Board Certified in pediatrics. I am now a member of the staff at Rush Presbyterian St. Luke's Medical Center.

At the request of Mrs. Williams' attorney, I examined the medical records of this case, and I also examined Lisa. What I learned was that Mrs. Williams was pregnant with her first child at the age of 35. The expected date of delivery was April 15, 1983. However, after seven months of pregnancy, when the fetus was 29 weeks old, she experienced a preterm rupture of membranes following a minor automobile accident.

In this case, shortly after Mrs. Williams was admitted to the hospital, the nurse on duty noticed the expulsion of meconium from the amniotic fluid. Meconium is essentially a fetal bowel movement that is emitted from the fetus when it is in distress or unable to obtain the requisite amount of

oxygen. The expulsion of meconium therefore, should have indicated to Dr. Morris (Dr. Rahmajani) that special care was required, and that he could expect to see a neonate in distress upon delivery.

Mrs. Williams was placed on an electronic fetal heart monitor. This is used to indicate fetal distress by comparing the fetal heart rate with the mother's uterine contractions during labor. Fetal heart rate is evaluated by assessing both baseline and periodic changes. If the fetal heart beat trails the uterine contractions, late decelerations occur. Late decelerations are due to uteroplacental insufficiency as the result of decreased blood flow and oxygen transfer to the fetus through intervillous space during uterine contractions causing hypoxemia. When uteroplacental insufficiency is acute, fetal distress may ensue. Here, late decelerations were present.

When a baby is born, the physician will assign it a numerical value that expresses the condition of the infant at periods of one minute and five minutes following birth. This numerical expression is known as the Apgar score and ranges from a low of 0 to a high of 10. The Apgar score is divided into five categories including heart rate, respiratory effort, muscle tone, reflex irritability, and color. Each category is rated between 0 and 2. A total one minute Apgar score of 0 to 3 indicates severe asphyxia. An

Apgar score between 4 and 7 indicates moderate asphyxia; the infant is breathing although it is pale and gasping. A normal infant, with an Apgar score of 8 to 10, will cough or cry within seconds of delivery, and no further procedures are necessary. Here, the records claim to show that Lisa had an Apgar score of 4--at the bottom end of moderate asphyxia.

Asphyxia is the impaired exchange of oxygen and carbon dioxide on a ventilatory basis. Asphyxia is typically attributed to an increase in arterial carbon dioxide tension causing a decrease of below normal levels of oxygen in blood and/or tissue. In short, circulatory patterns that accompany asphyxia represent an inability to make the transition to extrauterine circulation--in effect a return to fetal-like circulatory patterns. Failure of lung expansion and establishment of respiration rapidly produces hypoxia, acidosis, and hypercarbia. These biochemical changes result in pulmonary vasoconstriction, with retention of high pulmonary vascular resistance, hypoperfusion of the lungs, and a large right-to-left shunt through the ductus arteriosus. The foramen ovale opens, and blood flows from right to left.

Although the neonate is supplied with protective mechanisms against hypoxial insults, severe prolonged hypoxia will overcome these protective mechanisms, resulting in brain damage.

Furthermore, asphyxia and prematurity are two main factors associated with RDS or HMD. Asphyxia, with a corresponding decrease in pulmonary blood flow, may interfere with surfactant production. At birth, the neonate synthesizes surfactant at an increased rate to adjust to an air-breathing existence. Development of RDS by the preterm infant indicates a failure to synthesize lecithin at the rate required to maintain alveolar stability. Alveolar instability upon expiration with increasing atelectasis causes hypoxia and acidosis, which inhibit the surfactant system and cause pulmonary vasoconstriction. Thus the central pathophysiologic defect, lung instability due to this abnormality in the surfactant system, precipitates the biochemical aberrations of hypoxemia, hypercarbia, and acidemia, which further increases pulmonary vasoconstriction and hypoperfusion. Adequate gaseous exchange dependent on diffusion and ventilation/perfusion ratio is upset with RDS. Hypoxia produces physiologic complications and consequences that increase the hypoxia and decrease pulmonary perfusion.

When a neonate is suffering from asphyxia, respiratory therapy by mechanical ventilation is required immediately. The physician should put a laryngoscope into the right side of the infant's mouth to move the tongue from the respiratory tract. After the laryngoscope has been put into place, an endotracheal tube should be inserted between the

baby's vocal cords, and the lungs should be inflated with oxygen through the tube approximately 30 times per minute until the heart rate is at least 100 beats per minute.

It is my opinion that Dr. Morris (Dr. Rahmajani) was negligent in this case for a number of reasons. First, once the baby was delivered, there was an improper delay in initial respiratory ventilation. The infant should have been oxygenated immediately after the one minute Apgar score was taken. Instead, the medical records appear to reveal that there was at least a five minute delay between the time of delivery and the time that resuscitation measures were first delivered. Also, given the condition of the infant, Dr. Morris (Dr. Rahmajani) should have intubated the neonate. Had this been done immediately in this case, the infant's heart rate would not have dropped. This delay was a deviation from the standard of care, and I believe that this delay caused insult to the baby's brain.

Once the baby was removed to the isolette, special care had to be taken to ensure that an adequate and stable concentration of oxygen was supplied to prevent Pao₂. Dr. Morris (Dr. Rahmajani) ordered that the baby be placed in the isolette with 30% oxygen. This concentration was inadequate, even if we assume that this concentration was maintained consistently. In the present case, we do not know whether Lisa was receiving a stable concentration of oxygen because Dr. Morris (Dr. Rahmajani) never conducted

arterial blood gases. Arterial blood gases determine the partial pressures of oxygen and carbon dioxide in the blood. They were not taken and no laboratory results were recorded. As such, the concentration of oxygen in Lisa's blood may have dropped below the already inadequate level of 30%.

Even if we assume that a stable oxygen concentration of 30% was maintained throughout this period, this concentration of oxygen is grossly insufficient. It is evident that the baby does have neurologic damage, and inadequate respiratory oxygenation following birth is the likely cause. The failure to provide adequate fractional inspired oxygen, and the failure to perform blood gases were unacceptable deviations from the standard of care.

Furthermore, it was a deviation from the standard of care for Dr. Morris (Dr. Rahmajani) to fail to transfer this baby. Because of the prematurity and the evidence of fetal distress prior to delivery, Dr. Morris (Dr. Rahmajani) should have been placed on notice of a high risk infant. Under these circumstances, he should have required the transfer of Mrs. Williams to one of the neonatal centers in Chicago prior to delivery or even during the months following birth. Dr. Morris (Dr. Rahmajani) is on staff at Northwestern Memorial Hospital which was available for transfer. With an infant in fetal distress, it must have access to neonatal intensive care at all times. Dr. Morris (Dr. Rahmajani) failed to do this and was negligent in

failing to do so. Any one of these factors was a deviation from acceptable medical practice, and was sufficient to cause Lisa's injuries.

SUMMARY OF THE DIRECT
EXAMINATION OF DR. RAYMOND EDWARDS

My name is Raymond Edwards, and I am a physician. I have been asked to testify as an expert in this case on behalf of Dr. Morris (Dr. Rahmajani). I was born in Chicago, Illinois and attended medical school at the Johns Hopkins University, where I did my general rotating internship. Thereafter, I did a residency in pediatrics at New York Hospital. I am Board Certified in Pediatrics. I am now a member of the staff at Children's Memorial Hospital.

In connection with my opinions in this case, I reviewed the medical records of Dr. James relating to the pregnancy of Mrs. Williams. I have reviewed the hospital chart from Winston Community Hospital relating to the delivery that was performed by Dr. James, and the care following delivery by Dr. Morris (Dr. Rahmajani). In providing my opinions in this case, I also relied upon the several articles that I have published in this area. These articles have appeared in various journals, among which include, The Journal of Pediatrics.

I have two major opinions in this case. First, that Dr. Morris (Dr. Rahmajani) did not deviate from the standard of

care acceptable of a practicing pediatrician in his treatment of Lisa Williams. Second, that the neurologic damage that the neonate suffered was not caused by anything that Dr. Morris (Dr. Rahmajani) did or failed to do.

I believe it is impossible in this case to say, with any certainty, what caused the neurologic damage in this child.

Hypoxia is but one of several factors routinely suggested by physicians as causing neurologic damage. Therefore, in most brain damage cases, physicians will, as a matter of routine, look for evidence of hypoxia. Thus, where a child has both neurologic damage, and it is recorded in the medical records that the child was suffering from some neonatorum asphyxia, be it pallida or livida, it is frequently assumed that the hypoxia caused the dysfunction.

However, even when we know, for example, that one factor such as, asphyxia, can cause brain damage, we cannot be certain in most cases that the asphyxia did, in fact, cause such damage. In order to say that a specific factor caused a specific dysfunction to occur, physicians must look at all the potential causes of that specific dysfunction, and systematically eliminate each cause until only one remains.

However, in infants with mental retardation or cerebral palsy, this method often fails to provide a definitive explanation of cause because we do not know what are all the causes of brain damage in human infants. As such, doctors frequently rely on a syllogism to determine the cause of

neurologic damage. I believe that this is what Dr. Michaelson has done for the plaintiffs in providing his opinion that the dysfunction was caused by hypoxia following delivery. However, in this case, Dr. Michaelson cannot say definitively that an increase in arterial carbon dioxide tension following birth caused brain damage.

Let's review what happened. The hospital chart revealed that this baby had a one minute Apgar score of 4. This indicates moderate asphyxia. In Dr. Michaelson's opinion, since Lisa's Apgar score indicated asphyxia, although moderate, that meant that the baby must have been hypoxic. Since the baby ended up with neurologic damage, the hypoxia must have caused anoxic brain damage. I don't believe that this necessarily follows. If this were true, then how could we explain babies that have a 1 minute Apgar score of 0 or severe asphyxia that develop with no neurologic damage or mental handicap. A well known study of infants with Apgar scores of 0 found that 93% of these babies had no serious neurologic or mental handicap later in life. Conversely, another study of over 55,000 pregnant women found that 73% of the children who later developed cerebral palsy had Apgar scores of 7-10 at five minutes. When we start to look at these studies, Dr. Michaelson's syllogism begins to fall apart. Thus, it is extremely difficult, in any given case to determine whether a factor such as, asphyxia, is the cause of neurologic damage or whether it is merely the

symptom of another problem. So, first I do not believe that anyone in this case can state with a reasonable degree of certainty that it is more true than not true that Lisa's neurologic damage was triggered by any particular event.

Second, with respect to the care rendered by Dr. Morris (Dr. Rahmajani), it is my opinion that his care was within acceptable limits. Dr. Michaelson has said that Dr. Morris (Dr. Rahmajani) deviated from the standard of care. I disagree. Dr. Morris (Dr. Rahmajani) was confronted with a baby that was two months preterm and weighed only 2 kilograms. The size of this baby is so small that the doctor could hold it in one hand. When it was born, and flaring nares and grunting, Dr. Morris (Dr. Rahmajani) immediately administered resuscitation therapy.

In terms of the correct method for ventilation, the decision of whether or not to intubate a neonate depends on the doctor's clinical judgment, and I believe that Dr. Morris (Dr. Rahmajani) appropriately exercised his judgment here. As stated, intubation would only be appropriate in the case of severe asphyxia, and not in the case of moderate asphyxia. The risks of mechanical ventilatory assistance include septicemia or sepsis, an increase in the incidence of ruptured alveoli and subsequent pulmothorax, as well as, additional respiratory distress--especially when you are dealing with such a small infant.

Once the baby had started breathing more efficiently, he

discontinued oxygenation, and had the baby placed in an isolette. Once the baby was placed in the nursery, he again used his clinical judgment to determine the proper concentration of inspired oxygen to be provided. The concentration of oxygen that he decided to administer was 30%. This was the concentration that all of the pediatricians at Winston Hospital were administering at this time.

Dr. Morris (Dr. Rahmajani) was also careful not to ventilate the neonate at a concentration in excess of 40%. Recent studies have indicated that the provision of additional fractional inspired oxygen in excess of 40% can cause retrolental fibroplasia (RLF). RLF is a disease of the eyes related to hypoxemia. Vasoconstrictions as a result of very high concentrations of oxygen in retinal capillaries causes a wild overgrowth of these developing blood vessels; veins become numerous and dilate. In sum, the aqueous humor, followed by the vitreous humor, becomes turbid as new vessels proliferate toward the lens. The retina becomes edematous, and hemorrhages separate the retina from its attachment. Advanced scarring occurs from the retina to the lens, destroying the normal architecture of the eye. This extensive retinal detachment and scarring result in irreversible blindness.

This disorder was first recognized by doctors in 1941. As a relationship between the administration of very high

concentrations of oxygen to preterm infants and RLF became apparent, the incidence of RLF dropped off dramatically. Unfortunately, however, the alternative practice of administering lower concentrations of oxygen, in order to prevent RLF, began to be associated with an increase in mortality rates among preterm infants --especially those with respiratory distress syndrome. In response, doctors, again, began giving higher concentrations of oxygen. However, as doctors were raising oxygen levels in an effort to prevent neonatal mortality, the number of neonates born with RLF began to increase. We are still conducting numerous studies in this area. Recently, however, The American Academy of Pediatrics has suggested that the administration of additional fractional inspired oxygen at concentrations of 40% is considered to be safe. In this case, despite the other tragic consequence, it is apparent that Dr. Morris (Dr. Rahmajani) prevented RLF from developing since Lisa has normal vision.

There is no question that it is a difficult choice for a pediatrician to determine what concentration of oxygen should be supplied. Although I agree that arterial blood gases are a more accurate and reliable indicator of the partial pressures of oxygen and carbon dioxide in the blood, because samples are drawn from radial, pedal, or temporal arteries by needle puncture, such tests also can lead to neonatal sepsis. In this instance, the person who is best

suited to tell us what concentration was required is Dr. Morris (Dr. Rahmajani). He is an exceptionally well qualified pediatrician. We must allow doctors to exercise their clinical judgment since their examination of the baby is the best indicator of how much oxygen is required.

With regard to Dr. Michaelson's claim that the baby should have been transferred, I believe that proper care was rendered at Winston Community Hospital. This would obviate the need for transfer to a special center in Chicago. Furthermore, in this case, a quick delivery was indicated, and with any transfer, a potential is raised for additional complications.

It is in my opinion that Dr. Morris (Dr. Rahmajani) exercised good judgment in caring for Lisa. I believe he did what should have been done, and that the tragic condition that this little girl ultimately ended up with was not caused by Dr. Morris (Dr. Rahmajani).

III. Text of the Judge's Instructions to the Jury

INSTRUCTIONS TO THE JURY

Faithful performance by you of your duties is vital to the administration of justice.

The law applicable to this case is contained in these instructions and it is your duty to follow them. You must consider these instructions as a whole, not picking out one instruction and disregarding others.

It is your duty to determine the facts, and to determine them from the evidence produced in open court. You are to apply the law to the facts and in this way decide the case. Neither sympathy nor prejudice should influence you. Your verdict must be based on evidence and not upon speculation, guess or conjecture.

The evidence which you are to consider consists of testimony of the witnesses and the exhibits offered and received. The production of evidence in court is governed by rules of law. From time to time it has been my duty as judge to rule on the admissibility of evidence. You must not concern yourselves with the reasons for these rulings.

Arguments, statements and remarks of counsel are intended to help you in understanding the evidence and applying the law, but are not evidence. If any argument, statement or remark has no basis in the evidence, then you should disregard that argument, statement or remark.

Whenever evidence was received for a limited purpose or limited to one party you should not consider it for any other purpose or as to any other party.

Neither by these instructions nor by any ruling or remark which I have made do I or have I meant to indicate any opinion as to the facts.

In determining whether any proposition has been proved, you should consider all of the evidence bearing on the question without regard to which party produced it.

In considering the evidence in this case, you are not required to set aside your own observation and experience in the affairs of life, but you have a right to consider all the evidence in light of your own observation and experience in the affairs of life.

You are the sole judges of the credibility of the witnesses, and of the weight to be given to the testimony of each of them. In determining the credit to be given any witness, you may take into account his ability and opportunity to observe, his memory, his manner while testifying, any interest, bias or prejudice he may have, and the reasonableness of his testimony considered in the light of all the evidence in the case.

In deciding whether any fact has been proved, it is proper to consider the number of witnesses testifying on one side or the other as to that fact, but the number of witnesses alone is not conclusive, if the testimony of the lesser number is more convincing.

When I use the words "ordinary care", I mean the care a reasonably careful person would use under circumstances similar to those shown by the evidence. The law does not say how a reasonably careful person would act under those circumstances. That is for you to decide.

It was the duty of the defendant, before and at the time of the occurrence, to use ordinary care for the safety of the plaintiff.

When I use the expression "proximate cause", I mean a cause which, in natural or probable sequence, produced the injury complained of.

The plaintiff claims she was injured and sustained damage while exercising ordinary care and that the defendant was negligent in one or more of the following respects:

- (a) failing to intubate Lisa in a timely manner to provide oxygen;
- (b) failing to supply proper levels of oxygen once Lisa was transferred to the nursery;
- (c) failing to perform blood gas studies to determine the amount of oxygen in her

blood; and

- (d) failing to transfer Lisa to a neonatal care center.

The plaintiff further claims that one or more of the foregoing was a proximate cause of her injuries.

The defendant denies that he was negligent in doing any of the things claimed by the plaintiff and denies that any claimed act or omission on the part of the defendant was a proximate cause of the claimed injuries.

When I say that a party has the burden of proof on any proposition, or use the expression "if you find", or "if you decide", I mean you must be persuaded, considering all the evidence in the case, that the proposition on which he has the burden of proof is more probably true than not true.

The plaintiff has the burden of proving each of the following propositions:

First, that the defendant acted, or failed to act in one of the ways claimed by the plaintiff as stated to you in these instructions and that in so acting, or failing to act, the defendant was negligent;

Second, that the plaintiff was injured;

Third, that the negligence of the defendant was a proximate cause of the injury to the plaintiff.

If you find from your consideration of all the evidence that each of these propositions has been proved, then your verdict should be for the plaintiff, but, if on the other hand, you find from your consideration of all the evidence that any of these propositions has not been proved, then your verdict should be for the defendant.

In treating a patient, a doctor must possess and apply the knowledge and use the skill and care that is ordinarily used by reasonably qualified doctors in the locality in which he practices or in similar localities in similar cases and circumstances. A failure to do so is a form of negligence that is called malpractice.

The only way in which you may decide whether the defendant possessed and applied the knowledge and used the skill and care which the law required of him is from evidence presented in this trial by doctors called expert witnesses. You must not attempt to determine this question from any personal knowledge you have.

If, in the treatment of a patient, a doctor realizes, or, if, in the exercise of that care and skill which a reasonably well qualified doctor would ordinarily use in the locality in which he practices, or in similar localities, should realize that the nature of the patient's condition requires the services of a physician skilled in a special branch of medical science, then the doctor is under a duty to refer the patient to a specialist.

Forms of verdict are supplied with these instructions. After you have reached your verdict, fill in and sign the appropriate form of verdict and return it into court. The verdict should be signed by each of you. You should not write or mark upon this or any of the other instructions given you by the court.

If you find for the plaintiff and against the defendant, then you should use the form of verdict which says:

"We the Jury, find for the plaintiff and against the defendant."

if you find for the defendant and against the plaintiff, then you should use the form of verdict which says:

"We the Jury, find for the defendant and against the plaintiff."

APPENDIX B

Case Booklet # _____

Questionnaire # 1

The following questions are those an attorney asks of potential jurors during the pretrial or voir dire phase of the trial. Attorneys ask these questions to determine who is best suited to serve as a juror. Voir dire means to speak the truth.

1. What is your age? _____
age

2. What is your sex? _____
sex

3. What city/town and state are you from?

City and State

4. Of what nationality are you? _____

5. What is your father's and/or mother's occupation. And, if married, what is your spouse's occupation?

Mother: _____

Father: _____

Spouse: _____

6. If you are currently employed, where do you work and what do you do? If you are not presently employed, where have you worked in the past, and what did you do (e.g., summer jobs)?

;

7. Are you married? (Check one response)

____YES ____NO

8. Have you ever given birth? ____NO ____YES

9. Were there any complications? ____YES ____NO

10. Would you say you agree or disagree with the following statement:

There are too many medical malpractice cases.

AGREE DISAGREE

11. Do you have any siblings and/or relatives who were born mentally retarded or severely handicapped?

NO YES

12. Regarding your siblings and/or relatives, was a medical malpractice case ever filed?

YES NO

13. Are any of your family members or friends a doctor?

NO YES

14. Have you ever worked in a hospital?

YES NO

15. Would you say that you agree or disagree with the following statement:

Doctors are not to be trusted.

AGREE DISAGREE

16. Have you, any family members or friends ever been involved in a medical malpractice lawsuit?

YES NO

17. Did you, your family members or friends sue the doctor and/or hospital involved?

NO YES

18. Did you, your family members or friends win the case?

_____YES _____NO

19. Would you say that you agree or disagree with the following statements:

a. Medical malpractice cases are just a way for attorneys and clients to make money.

_____AGREE _____DISAGREE

b. Medical malpractice cases are justified primarily because doctors and hospitals don't know what they are doing half the time.

_____DISAGREE _____AGREE

c. Some medical malpractice cases are justifiable while others are not; it just depends on the particular case.

_____AGREE _____DISAGREE

Case Booklet # _____

Questionnaire # 2

Please check the appropriate response.

Do you:

find in favor of the plaintiff,
Mrs. Williams, and against the
defendant, Dr. Morris (Rahmajani)

or

do you find in favor of the
defendant, Dr. Morris (Rahmajani),
and against the plaintiff, Mrs.
Williams.

Please check the appropriate response.

Do you:

find in favor of the defendant,
Dr. Morris (Rahmajani), and
against the plaintiff, Mrs. Williams

or

do you find in favor of the
plaintiff, Mrs. Williams, and
against the defendant,
Dr. Morris (Rahmajani)

Please list the factors that you feel influenced your decision.

Case Booklet # _____

Questionnaire # 3

Please answer the following questions as best as you can.

1. What are the specific charges against the defendant; in what way was he said to have been negligent?

2. How is negligence determined? _____

3. What is the defendant's name? _____
4. How long after he was called did the defendant arrive at the hospital? _____
5. What are at least two different ways of administering oxygen mentioned in the case?
- (a) _____
- (b) _____
6. When was Mrs. Williams expected date of delivery?
- _____
7. What level of oxygen was administered to the infant?
- _____
8. What problems does Lisa have because of her injury?
- _____
- _____
9. What did Lisa's Apgar score indicate that she was experiencing?
- _____
10. What is Carol Ann Williams' obstetrician's name?
- _____
11. What can the administration of too much oxygen lead to?
- _____
12. What were all the pediatricians at Winston Community Hospital also doing?
- _____

13. How was Lisa delivered? _____

14. How much did Lisa weigh at birth? _____

15. Through what method was Lisa administered oxygen?

16. How did Mrs. Williams get to Winston Community Hospital?

17. What were the scientific studies that the defendant's expert witness talked about meant to demonstrate?

18. What was Lisa's Apgar score? _____

19. What are at least two methods for determining whether an infant is receiving proper levels of oxygen?

(a) _____

(b) _____

20. What must a physician do in order to determine that a specific factor caused a specific injury to occur?

21. How long of a time period was there between the delivery of the baby and the first administration of oxygen.

Case Booklet # _____

Questionnaire # 4

Was Dr. Morris' (Rahmajani's) conduct in conformity with the standard of care exercised by reasonably well qualified physicians practicing in the same locality? (Check one response.)

_____NO

_____YES

a. Is a lack of oxygen a proximate cause of the newborn baby's injuries? (Check one response.)

_____YES _____NO

b. Is not intubating the baby in a timely manner to provide oxygen a proximate cause of the newborn baby's injuries? (Check one response.)

_____NO _____YES

c. Is non-performance of blood gas studies to determine the amount of oxygen in the baby's blood a proximate cause of the newborn baby's injuries? (Check one response.)

_____ YES _____ NO

d. Is not transferring the baby to a neonatal care center a proximate cause of the baby's injuries? (Check one response.)

_____NO _____YES

Case Booklet # _____

Questionnaire # 5

APPROVAL SHEET

The thesis submitted by Leslie Scott has been read by the following committee:

Dr. R. Scott Tindale, Director
Assistant Professor, Psychology, Loyola

Dr. John Edwards
Associate Professor, Psychology, Loyola

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval by the Committee with reference to content and form.

The thesis is therefore accepted in partial fulfillment of the requirements for the degree of Master of Arts.

4/20/89
Date

R. Scott Tindale
Director's Signature