Younger and Older Jurors: The Influence of Environmental Supports on Memory Performance and Decision Making in Complex Trials

Joseph M. Fitzgerald

Department of Psychology, Wayne State University, Detroit, Michigan

This study compared memory and decision making by younger (aged 19–35) and older (aged 55–75) adults who had viewed a 2-hr video of a complex civil trial. Participants were tested for free recall, recognition memory, source identification, and the accuracy of their verdicts. The experiment manipulated (a) note taking during the trial and (b) timing of judicial instructions: either before (preinstructed) or after (standard) the presentation of relevant evidence. Judicial instructions provide jurors with a framework for understanding legal concepts such as liability and compensatory damages. Both younger and older adults provided more detailed and cohesive accounts when they were given judicial instructions before the evidence. Other benefits of preinstruction to memory and decision making were limited to older adults. Note-taking effects were generally limited but were consistent across age groups. The results highlight the potential value of relatively simple interventions for improving cognitive performance in a real-world setting.

What is the relationship between legal procedures and the ability of jurors to produce verdicts consistent with both legal principles and the evidence of a particular case? Research on this issue may lead to improvements in legal procedures and enhance jurors’ satisfaction with the legal system. Prior research with younger jurors has shown (a) that instructing jurors in the legal principles involved in a case before they hear the evidence is beneficial and (b) that taking notes during a trial can help juror memory and decision making.

Representatives of the legal system have openly questioned its reliance on jury trials (Friedland, 1990). They have noted that the legal system now considers more complex questions and information than those typically presented to courts when the notion of trial by jury was codified. Psychology and law researchers have experimented with allowing jurors to take notes (Flango, 1980; Heuer & Penrod, 1989; Sand & Reiss, 1985), allowing jurors to ask questions (Heuer & Penrod, 1988), restructuring judicial instructions (Elwork, Sales, & Alfini, 1977), and changing the timing of jury instructions (FosterLee & Horowitz, 1997; FosterLee, Horowitz, & Bourgeois, 1993). In many cases, such modifications have had a significant positive impact on juror decision making and memory, and in no case have such modifications of the trial process been found to have a negative impact. Gerontologists have a particular interest in issues of juror performance, satisfaction, and participation because as the population as a whole ages, the juror pool ages as well. It is important to understand how the cognitive changes associated with age impact the ability of jurors to reach accurate verdicts.

How do jurors cope with the demands presented by modern civil trials? Pennington and Hastie (1986, 1992) proposed the story model. When presented with a large set of information like that presented in a trial, individuals attempt to provide an organizational framework such as a story. The story outline or script (Schank & Abelson, 1977, 1995) guides the interpretation of information as it is presented, and the story later provides a framework for recall of that information. The nature of trial stories varies with the type of case, the arguments of the attorneys, and the nature of the evidence. As jurors try to fit evidence presented to them over a series of witnesses, the task becomes difficult (Hastie & Pennington, 1995). The script that underlies the story may help minimize that deterioration.

The legal system clearly recognizes the interpretive nature of memory in the construction of narratives. Both sides are allowed to present a version of reality, a story of what took place. For example, what one side construes as an accident, the other construes as reckless conduct. In that sense, the system assumes the type of meaning-focused text processing discussed by those who have studied the development of text processing in adulthood (Adams, 1991; Gould, Trevithick, & Dixon, 1991; Labouvie-Vief, 1990). As those authors have noted, in some contexts older adults appear to have a more enriched style of processing in which they add personal meaning to the text. However, two differences between text recall and the task of the juror are notable: (a) the multiple meanings are being proposed by external sources as opposed to a single preexisting internal framework and (b) the average juror is naive as to the rules that must be followed in constructing acceptable interpretations. Thus, enrichment strategies that are suitable for some recall tasks may be problematic for others. For example, the use of elaborations enriches storytelling for fables (Adams, 1991) but may impede correct decision making for jurors. Relevant to this point, G. Cohen (1979) reported that frequent value-oriented elaborations by older adults impeded their processing.
of a brief text. Thus, it may be of some concern that the style of text processing that Adams (1991) and Labouvie-Vief (1990) saw as valuable for older adults may be at odds with the style of processing that is optimal for juror memory and decision making.

If the goals of the legal system are to have jurors fairly consider all of the evidence, apply the relevant law, and then reach a verdict consistent with both evidence and law, then the system should minimize the impact of extralegal elaborations. In particular, justice may be better served if jurors are given a legal framework before they hear the evidence. For example, the concept of liability has a specific meaning in the legal system, which influences the meaning of words such as trust, intention, and mistake. Although the courts cannot provide every juror with a legal education, if jurors are going to be instructed at some point during the trial, it may be better to do so before the presentation of evidence and arguments rather than afterward.

The argument for preinstruction is well founded in schema research. Bransford and Johnson (1972) experimentally demonstrated the powerful effects of schema on cognitive performance. If college students are presented with an interpretive framework or schema before they read an ambiguous text, they recall more information from that text than if there was no schema or if the schema was presented after the text. In the most thorough and controlled study of the impact of the timing of judicial instructions, FosterLee and colleagues (1993) presented mock jurors with abbreviated recorded versions of a civil case in which several plaintiffs had brought suit against a large chemical company. The evidence favored the plaintiffs on the issue of liability, but each plaintiff had experienced a different degree of damage. FosterLee and colleagues reported that in terms of compensation awards, only the pre instructed jurors properly distinguished among the plaintiffs. The post instructed jurors actually gave the highest award to the least damaged party. The verdict data closely paralleled differences in memory performance.

The available evidence regarding memory for text suggests that, as a rule, the qualitative pattern of recall “remains unscathed by age” (Stine, Soederberg, & Morrow, 1996, p. 276), although the strength of any effect of schema might be moderated by the nature and length of the text to be recalled. Light (1992) reviewed a variety of studies that show similar effects of schematic and script processing in older adults. Thus, the relevant mechanisms for preinstruction effects would seem to be intact.

Preinstruction may particularly benefit older adults. Hess (Hess & Pullen, 1996; Hess & Tate, 1991) has argued that older adults are dependent on existing knowledge structures in processing information. If those knowledge structures are flawed or nonexistent, then older adults may not comprehend the trial, may not remember the evidence, and/or may reach an inappropriate verdict. Preinstruction provides jurors with a knowledge structure that serves as scaffolding for incoming information (Bransford & Johnson, 1972). If jurors are provided with the structure (schema) after they hear the evidence, which is what happens in most courtrooms, they may have drawn incorrect inferences from the testimony.

Note taking was the other major independent variable in the present research. Previous laboratory research with younger samples has supported the value of note taking for both memory variables and decision making (Flango, 1980; FosterLee & Horowitz, 1997; FosterLee et al., 1993), but a major field study (Heuer & Penrod, 1988) failed to support the cognitive value of note taking. That study, however, was limited to self-reported differences in memory rather than actual memory assessments. Laboratory and field research in education generally support the value of note taking in educational settings (Carter & van Matre, 1975), but DiVesta and Gray (1973) reported that although individuals with higher short-term memory scores performed better in a note-taking condition, those with below-average capacity actually performed more poorly than control participants. This latter finding might suggest that older adults would have difficulty with note taking. However, Burack and Lachman (1996) reported that older adults perform better on a list memory task when they are instructed to take notes. Although the task used here is quite different, both the facility of the older adults to take notes and the improvement in performance suggest the potential value of juror note taking.

Finally, in the present research I examined an aspect of juror memory performance that has not been included in earlier studies: source monitoring/forgetting. In source monitoring (Johnson, Hashtroudi, & Lindsay, 1993), participants are asked to make judgments about the source or origin of information. Jurors operate in a context in which source memory may be of considerable importance. The source of the evidence may be relevant to whether it is accepted. Information that is provided by a credible witness is more likely to influence the verdict. However, to date no research has examined source memory in the context of a simulated trial. Such factors as the order of presentation and the amount of information presented by a particular source can be neatly controlled as they are in laboratory experiments (Schacter, Kasznia, Kihlstrom, & Valdiserri, 1991). On the other hand, examining source memory in a real-world context may provide a better sense of the ecological importance of this variable. For example, laboratory research has indicated that source memory tasks are particularly difficult for older adults, although older adults perform at a higher level if distinctive sources of information are employed (Ferguson, Hashtroudi, & Johnson, 1992). Although older adults have difficulty integrating different types of information such as perceptual and spatial cues (Ferguson et al., 1992), research by Bayen and Murmane (1996) suggests that when multiple perceptual cues (face and voice) are used to distinguish sources at time of encoding, older adults perform much like younger adults. As would be the case in any real trial, each source in the present study was distinct from the others in terms of physical appearance, clothing, and voice. The experimental manipulation in the current study was whether identifying cues for these many sources were made available at time of retrieval. During the source memory task, participants worked with either a list of the names of trial participants (sources) or an array of photographs along with the names. I hypothesized that the photographs would lead to more accurate source identification in both age groups.


METHODS

Participants

The participants were 124 juror-eligible adults in a metropolitan area. The younger adults (n = 72) were primarily college students and support staff at a university recruited through advertisements in the university newspaper. They ranged in age from 19 to 35 years (M = 23.4) and represented a variety of ethnic and social class groups. The older adults (n = 52) ranged in age from 55 to 75 years (M = 66.8). The older group was also ethnically and socially diverse. They were recruited through newspaper advertisements and at senior citizen centers and apartment buildings.

A t test indicated no difference in average level of education (M = 13.1 years); however, a chi-square analysis indicated a significant difference, χ²(2, n = 124) = 23.77, p < .001, in the distribution because of the wider range of education among the older adults.

I used a 2 × 2 × 2 (Judicial Instruction × Note Taking × Age) design. In addition, for the source monitoring and recognition memory tasks, I used an additional design variable of two levels of support (names vs. names plus photographs). This last variable will be referred to below as Array. Each of these design variables was a between-subjects variable.

Trial Materials

The mock jurors viewed a videotaped version of the same trial presented in audio only by Foster-Lee and colleagues (1993). The transcript was developed from an actual trial. They selectively edited it to favor the plaintiffs. A trial that lasted several weeks was reduced to 2 h. The locale and the names of the participants were also modified. Professional actors performed all roles; the video was professionally produced with the quality of video and audio similar, if not superior, to that provided in televised trials.

In the trial, four plaintiffs brought suit against the Northern Corporation for medical and economic damages. They claimed that Northern knowingly allowed the chemical dibenzodioxin (DBX) to leach into the groundwater and the surrounding waterways. The plaintiffs were exposed to DBX in their drinking water and any fish taken from the waterways. The plaintiffs claimed that the DBX had led to a variety of illnesses including skin rashes, chloracne, and cancer. Two plaintiffs also claimed direct economic losses. The version of the trial employed here was designed by Foster-Lee and colleagues for medical and economic damages. They selectively edited it to favor the plaintiffs. A trial that lasted several weeks was reduced to 2 h. The locale and the names of the participants were also modified. Professional actors performed all roles; the video was professionally produced with the quality of video and audio similar, if not superior, to that provided in televised trials.

The mock jurors viewed a videotaped version of the same trial presented in audio only by Foster-Lee and colleagues (1993). The transcript was developed from an actual trial. They selectively edited it to favor the plaintiffs. A trial that lasted several weeks was reduced to 2 h. The locale and the names of the participants were also modified. Professional actors performed all roles; the video was professionally produced with the quality of video and audio similar, if not superior, to that provided in televised trials.

The four plaintiffs could be clearly differentiated in terms of the damage they had sustained. Foster-Lee and colleagues (1993) confirmed this by having law professors and students rate the plaintiffs. One of the issues of interest was the ability of the jurors to observe these distinctions in making their awards. Here I provide a brief description of each plaintiff.

Charles Lamont was the most severely damaged plaintiff. He had suffered clear economic damage to his fishing-related business. He also suffered from liver angiosarcoma, a rare form of liver cancer. Donald Bessant was described by physician witnesses as having sustained severe damage to his immune system. He was described as being at increased risk for infectious diseases, diabetes, and cancer. William Gallimore had a serious skin disease, chloracne. Elizabeth Stengle claimed to be suffering from anxiety related to fear of cancer. She and the other plaintiffs had sought and received some therapeutic assistance for such anxiety and related stressors. She also claimed unsubstantiated economic losses related to the value of farm property.

There were two versions of the trial, which differed only in the timing of instructional conditions: standard and preinstructed. In both conditions, the judge began with general instructions about the role of the judge and jurors. In the preinstructed condition, the judge then delivered several minutes of liability instructions before the opening arguments and liability evidence were heard. In the standard version, the same liability instructions followed the evidence. After the liability portion of the trial was completed, the compensation phase was presented. Again, in the preinstructed version the judge’s instructions preceded the evidence, and in the standard condition the instructions were presented after the evidence.

Dependent Measures

Liability decision.—Jurors expressed their verdict on a 6-point rating scale ranging from “totally in favor of the plaintiff” to “totally in favor of the defendant.” Scores 1–3 were pro-defense; Scores 4–6 were pro-plaintiff. This strategy prevented jurors from becoming “hung” in their decision making.

Compensatory damages.—Jurors finding for the plaintiff were asked to provide a rating for compensatory damages on a 10-point scale: 1 = “none” to 10 = “$700,000 or more.”

Free recall.—Participants were asked to provide a written recall of what took place during the trial. They were instructed to write their accounts so that someone who had not watched the trial would know what had taken place. Further, they were instructed to be certain to include anything that was relevant to their verdict in the trial. Several variables were derived from the protocols:

1. Cohesiveness. Raters read each protocol and rated it on a 4-point scale for cohesiveness, with 4 the highest score. Interrater agreement for this interval level variable, as assessed by a generalizability coefficient, was .84.

2. Prototypicality. Raters categorized each account in terms of which prototypical stories the account most closely resembled. The raters familiarized themselves with a pro-defense account, a pro-plaintiff low-award account, and a pro-plaintiff high-award account. Each account was assigned to one of these prototypes or as not clearly matching any of the prototypes. Interrater reliability for this nominal variable, assessed by kappa (J. Cohen, 1960; Siegel & Castellan, 1988), was .87.
3. Statement classification. Each protocol was parsed into statements of fact or opinion by raters. A statement was defined as a sentence, or clause within a sentence, that contained a complete idea, but if a sentence or clause contained multiple ideas then each idea was scored as an independent idea. For example, the sentence “Mr. Lamont and Mr. Bessant ate fish from nearby streams” would be considered as two independent statements (Mr. Lamont ate fish, Mr. Bessant ate fish) and each would be scored independently. Each statement was categorized as falling within one of the following categories:

(a) Probative statements were those directly related to issues of evidence and legal principle, for example, “Northern Chemical produced DBX at the plant.”

(b) Evaluative statements provided an opinion about the witnesses, the attorneys, the judge, the plaintiffs, the defendants, or the evidence. Primarily, jurors used evaluative statements to state skepticism about the credibility of a statement or witness, to show disapproval of the actions of the defendants, or to express an opinion.

(c) Facts not stated were statements that might or might not be true but simply were not in the trial; therefore, their truth value could not be determined.

(d) Errors were statements that clearly contradicted a statement presented in the trial. These were often statements about symptoms or damages attributed to the wrong plaintiff.

(e) The Other category included statements that carried along the narrative account but simply did not fit one of the above categories. For example, the statement “First the judge came on and talked” would only take on the status of a probative statement if the juror noted what the judge said.

Source/recognition memory.—Participants were presented with a series of written statements and asked to indicate whether they heard each statement during the trial. As participants worked on this task, an array of either names or names and photographs was available. If the juror believed that statement was in the trial, he or she then stated the name of the individual who made it. There were 48 statements presented in random order: 12 pro-plaintiff facts, 12 pro-defense facts, 12 neutral facts, 6 pro-plaintiff lures, and 6 pro-defense lures. FosterLee and colleagues (1993) developed the lures from errors that participants made in recalling the trial. For example, one lure stated that all of the plaintiffs had developed cancer. Many of the 12 lures also appeared in the free-recall protocols of the current study.

Procedure

Participants were tested individually in a quiet room free of distractions. They reviewed and signed an informed consent form and then completed a brief test of vocabulary from the Kit of Factor-Referenced Cognitive Tests (Educational Testing Service, 1976). They then viewed a videotaped version of a tort trial lasting approximately 2 h. The tape included prefatory instructions that they were about to watch a tape of trial and that they should attend carefully to what was said, as if they were actual jurors. They were told that they would be asked questions about the trial when it was over. Note takers were instructed that they could take notes about the trial and were provided with paper and pens. Four participants were eliminated from the study because they did not follow instructions or because they were assigned to the no notes condition but had started taking notes while the experimenter was out of the room. Participants were allowed to use their notes while determining their verdict and constructing their free recall. They did not have access to them during the recognition/source memory task. Participants did not know what tasks they would complete after watching the trial. The informed consent letter noted that they would be asked questions about the trial when it was over. Some participants watched the tape in the same room with another participant, but they were not allowed to interact while watching the trial; all testing was conducted individually. Being tested alone or with others had no impact on the analyses reported here. Participants were given a 10-min break midway through the trial; after the trial, they made a decision regarding liability and about a compensation award if they found in favor of the plaintiff; they then responded to the memory tasks described previously.

Results

The results of the study are presented in the following order: free recall, recognition memory, source memory, and verdict variables. The primary design used for the free recall variables was a $2 \times 2 \times 2$ (Age $\times$ Note Taking $\times$ Timing of Instructions) design. For recognition memory and source memory, the additional design variable of Array (names vs. names and photos) was used. Throughout these analyses, education and vocabulary were considered as possible covariates. If either of these variables correlated significantly with the dependent variable under analysis, it was included as a covariate for that variable.

Free Recall

The free-recall narratives generally reflected the pro-plaintiff bias of the evidence presented during the trial. As assessed by chi-square, there were no differences due to age, instruction, or note taking in the distribution of protocols over the categories. Sixty-eight percent of all protocols fit with either the pro-plaintiff low-award or pro-plaintiff high-award prototypes.

The ratings for cohesiveness were examined in an analysis of covariance with education as a covariate. There were main effects of age, $F(1,115) = 13.32, p < .001, \eta^2 = .104$; note taking, $F(1,115) = 4.59, p < .05, \eta^2 = .038$; and timing of instruction, $F(1,115) = 5.62, p < .05, \eta^2 = .047$. There were no interactions. Older adults provided less cohesive accounts ($M = 1.81$) than younger jurors ($M = 2.24$); jurors receiving standard instructions ($M = 1.88$) were less cohesive than those who were preinstructed ($M = 2.25$); and those who did not take notes ($M = 1.81$) produced less cohesive accounts than note takers ($M = 2.25$). Vocabulary was also positively associated with cohesiveness, $F(1,115) = 6.11, p < .01, \eta^2 = .05$; education, however, was not.
For the total number of statements, there were main effects for note taking, $F(1,116) = 12.59, p < .001, \eta^2 = .098$, and instructional timing, $F(1,116) = 5.21, p < .05, \eta^2 = .024$, with note takers providing longer protocols ($M_s = 35.37$ and $22.87$, respectively) and those in the preinstructed condition also providing longer protocols ($M_s = 33.44$ and $22.88$, respectively). There were no other effects for length of protocol.

Each statement was categorized as probative, evaluative, error, fact not stated, or other. The proportion of statements of each type was computed for each participant. The pattern of usage for younger and older jurors is presented in Figure 1. Clearly, most statements were probative or evaluative, although errors and facts not stated did occur with some frequency. The other category was utilized for less than $1\%$ of the statements of any group/condition. Errors were uncommon, but occasionally noteworthy. For example, some participants wrote that all the plaintiffs had cancer, when in fact only one (Mr. Lamont) had cancer, although all four feared they would develop it. There were no effects of age, instructional timing, or note taking for errors, facts not stated, or the other category. There were, however, substantial effects for probative and evaluative statements.

The analysis of the probative statements identified main effects of age, $F(1,116) = 10.27, p < .01, \eta^2 = .081$; note taking, $F(1,116) = 4.11, p < .05, \eta^2 = .034$; and timing of instructions, $F(1,116) = 5.72, p < .02, \eta^2 = .047$. An interaction between age and timing of instructions, $F(1,116) = 5.702, p < .02, \eta^2 = .04$, was also found. Note takers ($M = .61$) consistently provided a higher proportion of probative statements than those who did not take notes ($M = .53$). The interaction between age and the timing of instructions for probative statements is illustrated in Figure 2A. Scheffé tests indicated that for younger adults there was no effect of the timing of instructions, but there was an effect of timing for older adults ($p < .01$). Also, the age groups differed in the standard condition ($p < .05$), but not in the preinstructed condition.

The analysis of evaluative information indicated effects of timing of instructions, $F(1,116) = 4.33, p < .05, \eta^2 = .04$, and an interaction between age and timing of instructions, $F(1,116) = 3.84, p < .05, \eta^2 = .032$. The interaction between age and timing of instructions is illustrated in Figure 2B. Older adults in the preinstructed group made a lower proportion of evaluative statements than older adults in the standard group ($p < .05$); the younger adults did not differ between conditions. The older adults made a significantly ($p < .01$) higher proportion of evaluative statements than the younger adults in the standard condition only. The effect of note taking approached conventional significance, $F(1,116) = 3.53, p < .06, \eta^2 = .029$, with note takers ($M = .182$) making a lower proportion of evaluative statements than those who did not take notes ($M = .248$).

Overall, the older adults provided less cohesive accounts but, like the younger adults, generally wrote protocols that resembled pro-plaintiff prototypes. The protocols written by jurors who took notes contained a higher proportion of probative information and, marginally, a lower proportion of evaluative information. Preinstructed older adults provided a higher proportion of probative information and a lower proportion of evaluative information than older jurors in the standard condition. Timing of instructions did not influence the proportions of statement type for younger adults.

**Recognition Memory**

Recognition memory performance was analyzed in terms of effects of age, instructional timing, note taking, and array. Array refers to whether participants had either only the names or the names along with photographs while completing this task. Although I was primarily interested in the im-

---

**Figure 1.** Distribution of statements over four categories for younger and older jurors.

**Figure 2.** Proportion of probative, A, and evaluative, B, statements for younger and older jurors under standard and preinstructed conditions.
impact of array on source memory performance, it was possible that the presence of different cues might influence recognition performance. As in any analysis of recognition memory, there are a variety of possible variables. The variables selected here were $A'$ and $B_p$. $A'$ is a sensitivity index that measures the ability of the respondent to correctly identify statements made in the trial (hits) correcting for his or her rate of incorrectly claiming that statements not in the trial were made (false alarms). $A'$ is similar to $d'$ but is a nonparametric (distribution-free) statistic. This selection was made on the basis of the relatively small number of trials and the lack of normal distributions for correct hits (Grier, 1971). $B_p$ is a response bias measure based on false alarms adjusted for correct recognition. It ranges in value from $-1.00$ to $+1.00$, with $+1.00$ reflecting a conservative strategy (saying no frequently) and $-1.00$ reflecting a more liberal strategy (saying yes frequently).

On the basis of correlation analyses, education and vocabulary were entered into analyses of covariance for both $A'$ and $B_p$. Overall, recognition memory performance seemed high (.85), but this was inflated by a response bias to say yes, and estimated corrected recall was actually closer to .60. For the $A'$ measure of sensitivity, effects were found for vocabulary, $F(1,106) = 8.376, p < .005, \eta^2 = .073$; education, $F(1,106) = 17.342, p < .001, \eta^2 = .141$; and age, $F(1,106) = 11.845, p < .001, \eta^2 = .101$. Younger adults ($M = .607$) were better able to correctly identify statements made in the trial than older adults ($M = .577$).

Overall, participants made many false alarms ($M = .399$). This suggests that the lures were plausible and that distinguishing lures from real statements was difficult. This finding is consistent with the level reported by FosterLee and colleagues (1993). For $B_p$, effects were found for vocabulary, $F(1,106) = 6.276, p < .02, \eta^2 = .055$, and note taking, $F(1,106) = 5.324, p < .02, \eta^2 = .047$. Participants who took notes ($M = .288$) tended to be more conservative (fewer false alarms) than those who did not take notes ($M = .2644$). Participants with higher vocabularies were also more conservative. No other effects approached significance. Overall, the design variables and covariates accounted for less variance in response bias ($B_p$) than sensitivity ($A'$).

**Source Identification**

The source identification task determined how well participants could link particular statements to witnesses and other participants in the trial. Three types of information were analyzed: plaintiff facts, defense facts, and neutral facts. There were 12 statements of each type. Inspection of the correlations indicated that vocabulary was a significant correlate of source memory, so it was included as a covariate in these analyses. The overall level of performance was 21.2 of 36, suggesting this was a difficult task. The three types of information were examined independently because there were more plaintiff sources (eight) than defense sources (four). Plaintiff and defense sources, as well as the judge, presented neutral facts.

For plaintiff facts, there were main effects of age, $F(1,115) = 7.97, p < .005, \eta^2 = .069$, and timing of instructions, $F(1,115) = 6.07, p < .02, \eta^2 = .054$, with vocabulary as a significant covariate, $F(1,115) = 6.12, p < .02, \eta^2 = .054$. Younger adults ($M = 6.04$) performed better than older jurors ($M = 5.17$), and preinstructed jurors ($M = 6.18$) did better than those in the standard condition ($M = 5.2$). For defense facts, there was also an effect of age, $F(1,115) = 11.08, p < .001, \eta^2 = .094$, with younger adults ($M = 7.39$) correctly identifying more sources than older adults ($M = 6.46$). There was no effect of timing of instructions. Vocabulary was once again a significant covariate, $F(1,115) = 9.53, p < .01, \eta^2 = .082$.

For neutral facts, there were main effects of age, $F(1,115) = 8.49, p < .004, \eta^2 = .074$, and timing of instruction, $F(1,115) = 5.283, p < .02, \eta^2 = .047$, as well as an $Age \times$ Timing of Instruction interaction, $F(1,115) = 4.025, p < .05, \eta^2 = .067$, and an $Age \times Array$ interaction, $F(1,115) = 7.64, p < .01, \eta^2 = .067$. The $Age \times Timing$ of Instruction interaction is illustrated in Figure 3. Older adults performed significantly better when preinstructed; younger adults scored equally well under both conditions. The benefits of preinstruction virtually eliminated age differences in source identification for neutral facts. Similar patterns were observed for the plaintiff and defense facts, but the interactions did not reach statistical significance for those variables.

The interaction between array and age for neutral facts reflected several differences. First, the younger ($M = 7.26$) and older ($M = 7.75$) groups did not differ when presented with names only. The younger jurors ($M = 8.27$), however, did better ($p < .01$) than the older jurors ($M = 6.38$) when provided with photos as well as names. The younger adults provided with photos actually performed better, whereas older adults did more poorly when provided with photos, but this latter difference was not significant.

**Verdicts**

Jurors provided two types of verdicts: liability and compensation awards. Liability refers to the issue of whether Northern Chemical was responsible for damages sustained by the plaintiffs. As noted previously, the evidence was heavily slanted against Northern and the juror recall protocols reflected that bias, so it is not surprising that 63% of jurors found Northern liable. There was a trend for preinstructed jurors to be more pro-plaintiff (72% vs 59%), but the difference did not reach statistical significance. There were also no differences for age or note taking, nor were there any interactions.

The compensation results were more complex. Overall, the jurors were generous with the plaintiffs. Although there

---

**Figure 3. Interaction of age and instructions for source memory for neutral statements.**
was variance in the awards given, a number of jurors provided all four plaintiffs with the highest award possible. It is unclear whether this was due to difficulty in understanding differences in the seriousness of the damages or simply a statement that all of the damages merited at least $700,000. The jurors were not asked to award punitive damages (damages designed to punish the defendant), but some jurors may have decided to factor this into their awards at their own initiative because they had read of large awards being given to plaintiffs in some well-publicized cases.

Following after FosterLee and colleagues (1993), a Verdict Quality variable was calculated from the ratio of the award granted to the most seriously damaged individual (Mr. Lamont) to the award for the least seriously injured (Ms. Stengle). Jurors in all conditions favored Mr. Lamont; on average, he was awarded nearly twice the compensation awarded to Ms. Stengle. There were no simple main effects of age, note taking, or instruction. There was, however, an interaction between age and instruction, $F(1,116) = 4.85$, $p < .05$, $n^2 = .040$. Using Scheffé tests, the interaction reflected the finding that older preinstructed jurors ($M = 2.66$) favored Mr. Lamont more ($p < .05$) than older jurors in the standard condition ($M = 1.81$). There was no effect of instruction for the younger jurors who consistently favored Mr. Lamont.

**Discussion**

The experiment reported here demonstrates that both the information processing and the decision making of individual jurors may be enhanced by modifications in the procedural aspects of trial proceedings. Although the pattern is somewhat complex, it is generally accurate to state that older jurors benefit more from preinstruction than younger jurors, whereas the impact of note taking, where present, is equivalent across the age groups studied. Also, vocabulary, a marker of general intellectual functioning, is a salient predictor of several information processing variables, but education is salient for recognition memory. Neither vocabulary nor education correlate with the verdict variables.

The cohesiveness of the written accounts and the nature of the information contained in them provide a useful starting point for this discussion. Age is the most significant factor in predicting cohesiveness, accounting for just over 10% of the variance, but both note taking and preinstruction lead to higher cohesiveness ratings. Older and younger adults both benefit from these interventions, which suggests that viewed from the most global level of analysis, the current study would be one in which both forms of environmental support benefit both younger and older adults equally (Craik & Jennings, 1992).

At the next level of analysis, qualitative categorization of the statements within the protocols, note taking is again associated with age-equivalent improvements. Note takers are more evidence oriented; that is, their accounts have a higher proportion of probative information. The preinstruction intervention also has a positive effect, but only for older jurors, who produce a higher proportion of probative statements and a lower proportion of evaluative statements. The lack of an effect for younger jurors is somewhat surprising given that FosterLee and colleagues (1993) found an effect of preinstruction. Their participants, however, spanned a wider range of age and had a higher average age than the current sample of younger adults. Perhaps their effect was limited to the middle-aged participants in their sample, but it may also be that other differences in the samples or procedural differences, such as audio versus video presentation, are responsible. What is clear in the present study is that preinstruction helps older adults construct accounts that are relatively more evidence based.

The statements coded here as evaluative statements fall within the category of annotative elaborations studied by Gould and colleagues (1991) and G. Cohen (1979). Those authors report that older adults make more such elaborations across a variety of recall conditions. The importance of the proportion of evaluative statements is illustrated by the finding that this proportion is negatively correlated with cohesiveness ratings for both older ($r = -.31, p < .005$) and younger ($r = -.375, p < .005$) jurors. In fact, in a hierarchical regression analysis for the combined age groups, the proportions of evaluative statements accounts for 13.2% of the variance ($p < .001$) and age is reduced to 2.6% ($p < .06$).

The actual number of evaluative statements did not correlate with cohesiveness. However, the number of probative statements did correlate with cohesiveness ($r = .67, p < .001$). The overall pattern suggests that the proportion of evaluative statements is critical to the perception of older adults’ recall performance. Apparently, an account with many evaluative elaborations sounds more cohesive if it also contains a great deal of evidence.

There has been debate in the literature about the role of elaborations in memory performance. Adams (1991) and Labouvie-Vief (1990) have emphasized that qualitative differences in text processing stem from the fact that middle-aged and older adults rely more on inferential encoding style. They have emphasized the positive qualities of that style. The present data suggest that in this context the evaluative heavy output associated with that style results in protocols that sound less cohesive. The interventions of note taking and preinstruction reduce the proportion of evaluative statements, but the mechanism by which that reduction is achieved cannot be specified with the current methodology.

The recognition memory results suggest that individual differences in age, vocabulary, and education influenced performance more than the experimental manipulations. Unlike list learning studies, in the present study I found significant age differences for recognition memory. Recognition memory tasks are regarded as easier because they provide more environmental support at time of retrieval. The difference may be that in the present study, successful recognition performance depends upon recollection more than familiarity (Jennings & Jacoby, 1993). Younger and older adults correctly identified the same number of statements actually made in the trial. The problem for older adults and individuals with lower levels of education and verbal ability was with false positive responses to lures. Recall that the lures were constructed to be plausible; in fact, the lures were based upon errors that FosterLee and colleagues (1993) had identified from free-recall protocols. The participants may have false alarmed on the basis of the inferences rather than recollection of the specific testimony. Although it may be
appropriate in some contexts to function on the basis of the gist/familiarity of a text, trials would not seem to be one of them.

The source memory results require cautious interpretation. Unlike laboratory studies in which the experimenter is able to control the characteristics of the sources and the amount of information presented by each source, such control would not reflect real-world trials. Age accounts for 7–10% of the variance across the three types of facts (defense, plaintiff, and neutral). Thus, in this context source memory shows the similar negative effects associated with age in many laboratory studies. The timing of instructions has an impact on performance for plaintiff and neutral facts. The only significant interaction between age and instruction was for neutral facts. Preinstruction appears to be associated with positive effects that are stronger in older adults for neutral facts. Preinstruction totally eliminates the age differences for neutral facts. Similar but nonsignificant patterns were noted for the defense and plaintiff facts. However, because the two sides presented different amounts of information during the trial, comparisons between the two must be considered cautiously.

The verdict results reflect two general patterns. First, on the issue of liability, the trial materials were clearly perceived as providing more support for the plaintiffs than the defendant. Although there are modest indications of an interaction favoring the preinstructed jurors, the overall pattern suggests that the jurors thought that Northern Chemical was liable for damages to the plaintiffs. For the task of determining if any plaintiff merited greater compensatory damages, the results suggest that this was a difficult task. As indexed by the Verdict Quality variable, however, younger jurors distinguished between the most and least severely injured individuals equally well across all experimental conditions. Older jurors, however, more clearly distinguished between the most and least severely injured plaintiffs when preinstructed.

Overall, then, when there are effects of preinstruction, they are found primarily for older adults rather than younger adults. Significant interactions between age and the timing of instructions are found for the probative and evaluative variables for free recall, for the neutral facts variable for source memory, and for the verdict quality variable. Cohesion is the only recall variable that shows similar effects of preinstruction for both age groups. Note taking, in contrast, is associated with improved performance for fewer variables, but the effects are consistent across age groups when found. The consistency across age is consistent with the findings of Burack and Lachman (1996). The present data support the use of both note taking and preinstruction with jurors of all ages.

The present study has some clear limitations. In an actual trial, the presentation of information is spread out over a longer period of time. Individuals who are diligent in taking notes for a 2-hr experiment might not do so over 2 weeks or 2 months. Also, there is no way of knowing whether the beneficial effects of preinstruction would be sustained over a longer trial. The present procedures are also limited in that there were no deliberations and no opportunity for collaborative reconstructions. The jury system in the United States is premised on the notion that there is strength in numbers:

If there are several people assigned to the task, it is assumed they will construct a correct version of the evidence presented during the trial and arrive at a proper verdict. Studies such as this one, however, suggest that preinstructed jurors and those who take notes enter into deliberations with a more evidence-based story and a stronger possibility of reaching an accurate verdict.

Acknowledgments

I thank the Richard J. Barber Fund for Interdisciplinary Legal Research and John Friedl of the Wayne State University Legal Studies program for their support and patience in bringing this project to completion. I also acknowledge the role of the editor and three anonymous reviewers in the process of developing the manuscript.

Address correspondence to Joseph M. Fitzgerald, Department of Psychology, Wayne State University, Detroit, MI 48202. E-mail: joefitz@sun.science.wayne.edu

References


Received April 20, 1999

Accepted February 24, 2000

Decision Editor: Toni C. Antonucci, PhD

**Editor Nominations**

**Journal of Gerontology: Social Sciences**

The Gerontological Society of America’s Publications Committee is seeking nominations for the position of Editor of the *Journal of Gerontology: Social Sciences*.

The position will become effective January 1, 2002. The Editor makes appointments to the journal’s editorial board and develops policies in accord with the scope statement prepared by the Publications Committee and approved by Council (see the journal’s masthead page). The Editor works with reviewers and has the final responsibility for the acceptance of articles for his/her journal. The editorship is a voluntary position. Candidates must be members of The Gerontological Society of America and dedicated to developing a premier scientific journal.

Nominations and applications may be made by self or others, but must be accompanied by the candidate’s curriculum vitae and a statement of willingness to accept the position. The deadline for all nominations and applications is March 1, 2001. Nominations and applications should be sent to the GSA Publications Committee, Attn: Jennifer Campi, The Gerontological Society of America, 1030 15th Street, NW, Suite 250, Washington, DC 20005-1503.