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AN ABSTRACT OF THE THESIS OF David K. Blanchard for the
Master of Science in Psychology presented May 23, 1991.

Title: The Effects of Negligence and Causation Information
on Jurors' Determination of Liability.

APPROVED BY THE MEMBERS OF THE THESIS COMMITTEE:

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Thomas L. Mason

This study investigated the effect of arguments for
and against defendant's behavior being negligent and for and
against defendant's behavior being a cause of damages to the
plaintiff. The findings were (a) that negligence arguments
affected negligence ratings, causation ratings, and verdicts
and (b) that causation arguments affected none of the
measures.

THE EFFECTS OF
NEGLIGENCE AND CAUSATION INFORMATION
ON JURORS' DETERMINATION OF LIABILITY

by

DAVID K. BLANCHARD

A thesis submitted in partial fulfillment of the
requirements for the degree of

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IN
PSYCHOLOGY

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1991

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INTRODUCTION

In tort law, liability is composed of three elements: damage, negligence, and causation. In order for a jury to find a defendant liable for damages, all three elements must be present. First, damages must have been suffered; second, the defendant must have been negligent in his or her conduct; and, third, the defendant's negligence must have been a cause of the damages suffered by the plaintiff. Damage and negligence are defined, according to the Oregon Uniform Jury Instructions, as follows:

Damage refers, not just to physical damage, but also to financial and emotional damage, such as the costs and emotional pain and suffering. In general, it is the duty of every person in our society to use reasonable care to avoid damage that would be reasonably anticipated. Reasonable care is that care which persons of ordinary prudence exercise in the management of their own affairs to avoid injury to themselves or others. Common-law negligence, therefore, is the doing of some act that a reasonably careful person would not do, or the failure to do something that a reasonably careful person would do under the same or similar circumstances.

The third condition necessary for a finding of liability is a judgment, by the jury, that the existing negligence was, in fact, a cause of the damages suffered by the plaintiff. The process by which potential jurors arrive at a judgment regarding causation and negligence, and the impact those judgments have on their judgment regarding liability, is the

central topic of this research. The basic question under consideration is: 'How do jurors determine what caused the damage?'

HISTORICAL TREATMENT OF CAUSATION

Discussion of causation is perhaps as old as any topic in philosophy. Aristotle (?/1952), in discussing the theory of four causes, identifies them as material, formal, efficient, and final. Material cause is that from which a thing comes into being, such as the material from which a house is constructed or the notes from which a tune is composed. Formal cause is the form, pattern or essence of a thing, such as the relationship between the structural components of a house or the relationship between the notes of a tune. Efficient cause is that from which change first begins, the primary source of change, such as the person who conceived the house or wrote the tune. Final cause is that for the sake of which a thing is, such as a house being built to provide shelter or a tune being composed to provide entertainment.

Present day thought about legal causation reflects, to some extent, the Aristotelian view of cause. Shaver (1985), in The Attribution of Blame, points out that the contemporary meaning of cause most closely approximates Aristotle's concepts of efficient and final. Efficient and final cause refer respectively to the initiation of action

and the intent of the actor, and are relevant to discussions of material and proximate cause.

Efficient cause, in the modern legal sense, is also referred to as cause in fact or conditio sine qua non (without which not) (Hart & Honore, 1959, p. 85). In tort law, the question of 'were the damages, Y, the result of the act, or omission, X,' is usually considered as the bifurcated question of (1) Would Y have occurred if X had not? (efficient cause) and (2) is there a legal principle which would preclude the treatment of Y as a consequence of X under the law? (proximate cause). The former is a question of fact while the latter is a question of policy or law. If Y would not have occurred had X not occurred, then X is not only a sufficient condition, but also a efficient cause or sine qua non of Y (Hart & Honore, 1962, p. 104). What is meant by proximate cause is this:

Because of convenience, of public policy, of a rough sense of justice, the law arbitrarily declines to trace a series of events beyond a certain point. This is not logic. It is practical politics' (Pfalsgragh v. Long Island RR Co., 1928).

Hume (1748/1952) first discussed causality in Treatise of Human Nature and later in Enquiry Concerning Human Understanding. In this latter treatise, Hume divided perception into two classes; ideas and impressions. Impressions are vivid perceptions that occur as a direct result of experience, while ideas are reflections, memories, and constructions that occur based on these impressions.

Ideas are associated with one another by either resemblance, contiguity in time or space, or cause and effect. According to Hume, it is this latter relation which allows us to make inferences about matters of fact. Hume argued that causation can never be proven, that all we can ever admit to is constant conjunction. If however, in our personal experience two events are contiguous in time and space and have been reliably or constantly conjoined such that one event always has temporal precedence over the other, we tend to conclude that the former is the cause of the latter. Two important components of Hume's argument are .'.that causes and effects are discoverable, not by reason but by experience...' Hume (1748/1952 p. 476), and that there must be repeated observations of the conjunction between antecedent and subsequent events to infer causation. Hence, Hume's view has been termed regularity theory.

Even after one instance or experiment where we have observed a particular event to follow upon another, we are not entitled to form a general rule or foretell what will happen in like cases.... Hume (1748/1952 p. 476).

This fundamental requirement of repeated observations of conjunction is also the basis of Kelley's (1967, 1973) theory of the attribution of causation (see below).

The inadequacy of regularity theory to explain causation of events is simply that it denies any principle of causal necessity, for the only condition it recognizes is

constant conjunction. Regularity theory thus fails to distinguish causation from mere correlation.

The best known criticism of Hume's regularity theory is perhaps Kant's (1871/1952) Necessity Theory as presented in Critique of Pure Reason. Kant intended to provide an explanation of our ability to reason independent of experience and to show that a judgment of cause is an a priori judgment. Kant began his argument by referring to the distinction between empirical knowledge, which is gained as a result of experience, and a priori knowledge, that which is independent of experience. An a priori idea is distinguished from an empirical one on the grounds of necessity and universality. Kant used the concept of cause and effect to explain the principles of necessity and universality, since he felt that a judgment of cause admits no exceptions and therefore implies both necessity and universality.

The conception of a cause so plainly involves of a necessity of connection with an effect, and of a strict universality of the law, that the very notion of a cause would entirely disappear, were we to derive it, like Hume, from a frequent association of what happens with that which precedes... (Kant 1871/1952 p. 15).

Kant's argument that an a priori basis for the determination of causality does exist seems to be based in part on the observer's recognition of the necessity of a specific temporal order in the conjunctive relationship, a condition also acknowledged by Hume. On the basis of temporal order

alone, it can be argued that every effect has not just one, but at least one, possible necessary cause, since every event has at least one temporal precedent. The idea of necessity makes possible consideration of discounting alternative possible causes, since there are many events which precede a given effect, and the observer is faced with the task of determining whether a given antecedent event is necessary or simply conjoint, a circumstance that is not demanded using only Hume's constant conjunction principle (Shaver 1985).

The theories of Hume and Kant were proposed to explain causal laws of nature and pondered cause and effect in physical actions, not human interactions. Thus, the theories of regularity and necessity, although important to a discussion of the judgment of causation, offer an insufficient explanation of the psychological considerations involved in a judgment of causation in the context of attributing blame or liability because they do not take into account human agency (Shaver 1985).

Shaver's Treatment of Blame and Responsibility

Shaver (1985) discusses a philosophical position on causality, known as Activity Theory, which is relevant to a discussion of the attribution of blame. Activity theory is so named because it regards human activity as the paradigmatic instance of causality within a context of the attribution of blame or assessment of liability (Shaver 1985).

p. 25). Origins of activity theory can be found in the writings of Reid (1863), whose version of cause, in contrast with that of Hume and Kant, is used in the Aristotelian sense of efficient cause; that is, cause is that from which change first begins. The significance of activity theory lies in its emphasis on the instrumentality of human intervention in bringing about an effect. Activity theory searches not for universal laws of nature such as those that might be revealed by repeated instances of cause and effect, but for the cause of any particular thing happening (Shaver 1985 p. 26).

Although drawing on regularity and necessity theory as well, Shaver's theory of blame is derived primarily from activity theory. He states that,

Our conception of causation thus includes the following three concepts: (1) human agency as the fundamental idea, (2) necessity as part of agency, and (3) temporal priority of cause and effect (Shaver 1985 p. 31).

The concept of human agency as a condition of cause is relevant to the present experiment on two counts. First, this view supplements those of Einhorn and Hogarth (1986), Mackie (1974), and the attribution theorists (see below) in that it allows for the special place of human intervention or action in the set of possible causes of an event. While other theories appear to have no bias against including human agency among the possible causes, activity theory argues that the search for a causal chain begins with human

agency. Second, consideration of human agency or intention is a necessary prerequisite to a consideration of negligence, and thus allows for an explanation of the attribution of blame.

Attribution Theory and the Judgment of Causation

The work of attribution theorists is important in a discussion of assessment of blame and judgment of causation because these theorists attempt to explain how attributions of cause and intent arise from observations of action. Heider (1958) discussed four elements that are central to the way in which he felt an untrained observer would explain the causes of action. He argued first that the reason people engage in attributional analysis is to discover or infer the dispositional features underlying the behavior of others. Second, Heider stressed the distinction between intentional and unintentional behaviors, suggesting that personal dispositions are more readily inferred from intentional than unintentional acts. Inferences of intentionality are in turn governed by the three criteria of equifinality, local causality, and exertion. Equifinality refers to the goal-directed nature of human action. When several behaviors that tend toward the same goal are perceived to be employed by an individual, greater intentionality is inferred by an observer than when a single strategy is employed. Local causality is found to be present when an individual is perceived as originating

action rather than being acted upon. Exertion refers to the observation that effortful activity is regarded as intentional or goal directed. The third point made by Heider is that there are two sources of the production of an act: environmental and personal. The more an individual is seen as causing an action, the less the environment is seen to have contributed to the outcome. The fourth element of attribution suggested by Heider regarding the judgment of causality is that of covariation. An effect is attributed to a causal event if that event is present when the effect is present and absent when the effect is absent.

Jones and Davis (1965), building upon the work of Heider, introduced a theory of Correspondent Inference, which suggests that observers appraise the effects of acts in making inferences about the actor's dispositions and intentions. Correspondence refers to the extent to which the act and the underlying attribute are similarly described by the inference. Four factors which Jones and Davis identified as having influence upon the confidence with which inferences are made are normative behavior (or social desirability), non-common effects, hedonic relevance, and personalism. Acts which are low in social desirability indicate more about the actor's dispositions than do socially desirable ones. Second, unique consequences or effects of the chosen action, as opposed to consequences in common with unchosen action, indicate more about the actor's

disposition than do common effects. Third, acts with high positive or negative valence for the perceiver are judged to convey more information than do acts which are of low positive or negative valence. Fourth, acts seen as directed toward the perceiver are perceived as conveying more disposition information than are acts low in personalism.

Not only are these four factors influential in the strength of inferences, but, according to Jones and Davis, there are two stages in the process of correspondent inference: attribution of intention and attribution of disposition. Furthermore, the attribution of intention must precede the attribution of disposition. In other words, observers make attributions of disposition only on the basis of intention on the part of the actor. An attribution of intention is made when the observer believes that the actor knew his or her behavior would produce the consequences that resulted and that the actor had the ability to obtain the resultant consequences. Knowledge and ability are therefore important aspects of intention. Once an attribution of intention has been made, the observer will then attempt to infer a personal disposition on the part of the actor causing the act. Because correspondent inferences are made on the basis of both non-normative behavior and socially undesirable consequences of behavior, the inference of dispositions on the basis of not reasonable and prudent

(non-normative) behavior and damages suffered (non-common effects) is of concern in the present experiment.

Kelley (1967) proposed a model of attribution which suggested that observers attend to three types of covariation information in attributing locus of causality as situational or dispositional: distinctiveness (does the target person respond in like manner in different circumstances?), consistency (does the target person always respond in like manner in the same or similar circumstances?), and consensus (do others respond to similar circumstances in the manner of the target person?).

Kelley suggests that causal schemata are employed when it is not possible to obtain data necessary for the judgment of covariation. Perception of multiple sufficient cause means that any of several activities, events, or circumstances could produce the effect, while multiple necessary cause means that several activities, events, or circumstances must co-occur in order to bring about the observed effect. In the courtroom, these issues are dealt with as issues of sine qua non and substantial factor. The sine qua non rule states that the defendant's conduct is a cause of the event if the event would not have occurred without it. Conversely, that conduct is held not to be a cause of the event if the event would have occurred without the conduct. This test together with a finding that damages followed the negligent act can establish the act as a

necessary and sufficient condition for the damages, at least in these circumstances, and, hence, as a cause in fact. The sine qua non rule can be employed in the majority of cases, but fails when two events co-occur to bring about a result and either alone would have been sufficient to bring about the identical outcome. In this case, the defendant's conduct is considered a cause of the event if it was a material element and a 'substantial factor' in bringing it about. Whether the act was a substantial factor is for the jury to decide (Prosser p. 266-267).

The Contribution of Einhorn and Hogarth

Perhaps the most thorough treatment of the judgment of causation is given by Einhorn and Hogarth (1986). In 'Judging Probable Cause,' the authors review several theories relevant to the judgment of cause within a framework of four components. They discuss the roles of causal field, cues to causality, determinants of gross strength, and, finally, the role of specific alternatives. Einhorn and Hogarth argue that people use combinations of the above factors, according to systematic rules, to assess cause. Causal field refers to the context within which an act or event takes place, or in which a judgment is being made regarding that action or event. As an example of the role of causal field, Einhorn and Hogarth quote Hanson (1958).

There are as many causes to x as there are explanations of x. Consider how the cause of death might have been set out by the Physician as 'multiple hemorrhage', by the Barrister as 'negligence on the part of the driver', and by the carriage builder as 'a defect in the brake block'.

The authors also discuss the concept of causal field as treated by Mackie (1965, 1974). Einhorn and Hogarth point out that Mackie's conceptualization of difference in a background has three implications for understanding judgments of probable cause: The features of events which trigger the search for cause, the role of background in distinguishing causes from conditions, and shifts in the causal field which serve to make particular alternative causes more or less salient.

In discussing the features of events which trigger the search for cause, Mackie argues that judgments of causal relevance stem from the view of a variable as a 'difference in a background.' 'Difference-in-the-background, or Qb, refers to the degree to which an action or event deviates from the accepted or presumed background. Factors that are part of an accepted, or presumed, background are not considered in the search for cause or are judged to be of little causal relevance. There is experimental evidence in the literature to support this view. In a 1985 review of studies investigating spontaneous causal reasoning, Weiner (1985) stated, 'There is reasonable consensus in the reviewed research (six of eight publications) that search is elicited by an unexpected event... (p. 81).' Einhorn and

Hogarth, as did Mackie, noted that not all differences in a background are relevant to the search for cause because perceptions of cause are distinguished from perceptions of conditions. A particular genetic makeup, for instance, may predispose one to develop a certain disease once one is exposed to a certain virus or bacteria, but it would be incorrect to say that the physical condition was the cause of the disease (Einhorn and Hogarth p. 5). Mackie distinguishes perceptions of cause from perceptions of conditions as follows: Events (actions or activities) are seen as more causal than standing conditions (a state of nature); unusual or intrusive events are seen as more causal than commonly occurring events; and abnormal conditions or deviant behaviors are seen as more causal than are normal conditions or conforming behaviors.

Einhorn and Hogarth also point out that shifting causal fields may act to convert causes to conditions and vice versa, as in the following example which takes place in a watch factory . When asked to state the reason why a watch crystal had broken, as they imagine a hammer striking the watch face, subjects are likely to respond that it was the force of the hammer striking the watch which led to the breakage. When given additional information, that the crystal was struck by the hammer as part of a testing procedure, subjects are more likely to attribute the reason for the breakage to a defective crystal than to the hammer

blow. The shift in context, that is, shifts in the causal field, can alter the causal strength of competing alternatives.

The second component of the judgment of causation is cues to causality. Once a causal field has been established, the strength of the causal link is dependent upon various cues to causality. Einhorn and Hogarth use the term 'cue' in accord with the definition put forth by Brunswick (1952). According to Brunswick's model, cues are probabalistic, and because of their probabalistic nature, people learn to use multiple cues to guard against the failure of dependence on single cues. Although multiple cues can reduce uncertainty in causal inference, uncertainty can be increased if these cues are in conflict with one another. Examples of cues to causality, taken from Hume (1886) and Mill (1872), are temporal order and contiguity. Two other cues discussed by Einhorn and Hogarth are covariation and similarity.

Temporal order may confound judgment of probability, when it is integral to such judgment, in three-ways: First, people may confuse joint and conditional probabilities as illustrated by the following example, presented by Einhorn and Hogarth (1986). 'What is the probability of going into the supermarket, S, and buying some coffee, K,?' This can be interpreted as the probability of S and K or the probability of K given S. Second, people judge the probability of data

that have causal significance as greater than data that simply have diagnostic significance even when the two types of data have statistically equal information value. An example of this second phenomenon, given by Tversky and Kahneman (1980), is that subjects tend to judge the probability of a causally significant event, eg. a daughter having blue eyes (y) if her mother has blue eyes (x), to be greater than the probability of a diagnostically significant event, a mother having blue eyes if her daughter has blue eyes, although the probability of $p(y|x)$ is equal to $p(x|y)$. A third way in which temporal order may confound judgments of probability is because of what Dawes (1988) terms the confusion of inverse probabilities. People have difficulty distinguishing between causal probability and diagnostic probability when the two probabilities are not equal. In this case the information value of x and y is not equal and $p(x|y) \neq p(y|x)$. An example of this error is the cautious motorist who drives only when more than 25 miles distant from his home, since he is aware that most traffic deaths occur within 25 miles of one's home (Dawes 1988).

Contiguity as used by Hume and Mill refers to the extent to which events are close in time and space, and is an important cue to causality. Low contiguity makes perception of a cause-effect relationship difficult.

Similarity of cause and effect refers not only to the physical similarity of antecedent and consequent events but

also to similarity of the duration or intensity of posited causes and effects.

Einhorn and Hogarth's conception of covariation as a cue to causality is generally consistent with that of Mill and Hume. An important difference is that, in Einhorn and Hogarth's theory, covariation is not a necessary condition for causality, but trades off with similarity. An important question raised by the authors is why covariation need not be perfect in order to allow an inference of causality. When people say that X caused Y, they usually mean that X plus certain other conditions combined to produce Y rather than that X is necessary and sufficient to produce Y. Einhorn and Hogarth again call upon Mackie and distinguish between a minimally sufficient condition and a minimally sufficient scenario. A minimally sufficient condition, α , is such that given α Y always follows. A minimally sufficient scenario is defined as one that would no longer be sufficient to cause Y if any of its conjuncts were missing. If X is a probable cause of Y, then X is necessary for the scenario α , but it is not sufficient [$p(X|\alpha)=1$ but $P(\alpha|X) \neq 0,1$]. In this case X is an insufficient but necessary part of a scenario, α , which is itself unnecessary but sufficient for Y (INUS). According to Mackie (1974), in assessing the probability that X caused Y, people implicitly seek the counterfactual alternative, which is to say that

they employ the sine qua non rule, and ask: 'What would have happened with regard to Y if X had not occurred?'

Another factor which is important in the judgment of causation is the strength (QL) of the causal chain leading from potential cause to effect. Causal chains deal with the generative forces linking causes to effects. If no links are available, or the strength of any one link is zero, then the strength, QL, of the chain that links X and Y is zero.

In summary, factors influencing gross strength include differences in background (Qb), covariation of X and Y (Qc), temporal order of X and Y (Qt), contiguity (Qg), similarity of cause and effect (Qs), physical similarity (Q's), and the role of specific alternatives. Einhorn and Hogarth present a rather elegant model for combining multiple cues to causality which is of interest in the study of judgment of liability as a function of negligence and causation.

DEVELOPMENT OF THE HYPOTHESIS IN THE PRESENT STUDY

This study investigated the effect on a judgement of liability of arguments for and against defendant's behavior being negligent and for and against defendant's behavior being a cause of damages to a plaintiff. Subjects were assigned to either a plaintiff or defense group, and were presented with written scenarios arguing for the presences or absence of negligence and causation information.

Anderson and Smith (in preparation) recently completed a study which provided some of the basis for the present research. In that study they investigated the effect of presentation of defense counsel negligence and causation arguments on jurors' findings of liability. One of the major differences between the present study and that of Anderson and Smith is that their study examined the effects of defense arguments only, while the proposed study will examine the effects of both plaintiff and defense arguments. Inclusion of plaintiff arguments is believed to yield results that will both support and expand the findings of the previous study. Results of that study indicated that the correlation between judgments of negligence and causation, while significant ($r = .45$, $p = .001$), were low enough to suggest that subjects, in general, did distinguish between the concepts of negligence and causation. Anderson and Smith also found that subjects, in general, understood that the presence of both negligence and causation is necessary for a judgment of liability. This latter finding indicates that subjects understood the legal definition of liability as the conjunction of negligence and causation. Anderson and Smith also found, however, that negligence information appeared to have had a greater impact on verdict judgments than did causation information. Based on those findings, one of the tentative conclusions drawn from the study was that causation information might present subjects

with a greater problem in information coding than in information integration.

The following hypotheses were tested in the present study: (H1) Jurors in both plaintiff and defense conditions will have a tendency to make use of negligence information more than causal information and will tend to interpret negligence information as both negligence and causal information. This hypothesis suggests that negligence information will have a greater impact on juror determinations of defendant liability, negligence and causation than will causation information. This hypothesis also suggests that jurors who are presented with information indicating negligence but not causation will have greater confidence in their determinations of liability, negligence, and causation than those who were given information indicating causation but not negligence. This hypothesis is consistent with Einhorn and Hogarth's contention that a difference-in-a-background begins a causal search and is a component (Qb) of the judgment of probable cause (Einhorn and Hogarth, 1986). This hypothesis is suggested by other research as well. An event which occurs in close temporal proximity prior to, or co-exists with, the occurrence of a second event is likely to be interpreted as causally relevant due to temporal priority of cause and effect (Mill, Hume, Kant and others). An unusual, abnormal, or non-standard event is interpreted as causally relevant due to

difference in a background (Mackie 1974, Einhorn and Hogarth, 1986). Non-normative behavior is viewed as non-standard, unusual, or abnormal, and is therefore interpreted as a component of negligence (Jones and Davis 1965).

(H2) Jurors in the plaintiff condition will rely more upon negligence information than will jurors in the defense condition. This expectation stems from research on cognitive conflict by Berlyne (1962) and Janis and Mann (1977), who have argued that cognitive conflict stimulates thought. Subjects who are presented with both defense and plaintiff arguments would be expected to experience greater conflict, to think more deeply, and to be less prone to make use of post hoc ergo propter hoc reasoning (roughly translated as after therefore because) than subjects who are presented with only plaintiff arguments and be more prone to utilize sine qua non reasoning as prescribed by the court. Subjects who employ post hoc ergo propter hoc reasoning would conclude that damage, having followed negligence, was the result of negligence, while subjects who employ the sine qua non criterion for judging causation would reason that the defendant was not a cause of the damage unless the damage would not have occurred but for the action(s) of the defendant.

METHOD

SUBJECTS

Subjects were 150 undergraduate student volunteers who were given extra credit toward a final grade in a psychology class in exchange for participation in the experiment.

MATERIALS

Stimulus materials consisted of narrative accounts of testimony given in three separate civil trials. These narrative accounts are based on actual cases, heard on appeal, referenced in Prosser and Keeton on The Law of Torts, and cited in the discussion of causation in fact (Prosser and Keeton P. 265 f). These cases were amended somewhat by the investigator for use in the present experiment.

Data collection instruments consisted of instructions to the jury (Appendix A), a verdict form (Appendix B), a follow up questionnaire (Appendix C), and a manipulation check (Appendix D).

DESIGN

The experimental design is a 3 X 2 X 2 X 2 between-subjects planned comparison design with an extra condition

(described below) to check for order effects. The first independent variable is TORT which has three levels. Three different tort cases were presented. The second independent variable is PARTY which has two levels. Subjects were assigned to either a plaintiff condition or a defense condition, and heard arguments put forth by either plaintiff or defense counsel. The third and fourth independent variables, negligence information (NEGINFO), and causation information (CAUSINFO), each had two levels. Negligence and causation were either suggested, or negated. Thus, in the plaintiff condition of the PARTY variable, NEGINFO=1 indicates no plaintiff negligence argument, and NEGINFO=0 indicates a plaintiff argument that negligence information was present. In the defense condition of the PARTY variable, NEGINFO=0 indicates a defense argument that negligence was not present, and NEGINFO=1 indicates no defense negligence argument.

Five subjects were assigned randomly to each of the resulting 24 conditions, for a sub-total of 120 subjects. The remaining 30 subjects were assigned to those conditions in which subjects received both negligence and causation arguments, to counterbalance order of presentation. A summary of this design is presented in Table I. Figure 1 gives an explanation of the levels of the independent variables included in each condition.

TABLE I
TYPES OF INFORMATION PRESENTED

PLAINTIFF GROUP

CONDITION 1 (BASE)	B0
CONDITION 2	B0, N+
CONDITION 3	B0, C+
CONDITION 4	B0, N+, C+

DEFENSE GROUP

CONDITION 5 (BASE)	B+
CONDITION 6	B+, N-
CONDITION 7	B+, C-
CONDITION 8	B+, N-, C-

B0 = Base information indicating neither negligence nor causation behavior on the part of the defendant.

B+ = Base information indicating both negligent and causal behavior on the part of the defendant.

N+ = Indicates negligent behavior on the part of the defendant.

N- = Indicates non-negligent behavior on the part of the defendant.

C+ = Indicates defendant's behavior was a cause of injury.

C- = Indicates defendant's behavior was not a cause of injury.

Figure 1. Block diagram of experimental conditions.

In the plaintiff group, those assigned to the base condition were presented with stimuli giving neutral information (B0), while those in conditions two through four were presented with various combinations of information asserting negligence (N+) and/or causation (C+) on the part of the defendant. Subjects assigned to condition two were presented with base and negligence information (B0, N+), subjects in condition three were presented with base and causation information (B0, C+), subjects in condition 4a were presented with base, negligence, and causation information (B0, N+, C+). Subjects in condition 4b were presented with the same information as subjects in condition 4a except that the order of presentation of negligence and causation information was reversed (B0, C+, N+).

In the defense group, subjects assigned to the base condition (condition 5) were presented with stimuli giving information suggesting liability (negligence and causation) on the part of the defendant (B+), while subjects in

conditions six through eight were presented, in addition, with various combinations of information asserting an absence of negligence (N-), and/or causation (C-), on the part of the defendant. Within this defense group, subjects assigned to condition six were presented with base and negligence information (B+, N-), those subjects in condition seven were presented with base and causation information (B+, C-), and subjects in condition 8a were presented with base, negligence, and causation information (B+, N-, C-). Subjects in condition 8b were presented with the same information as subjects in condition 8a except that the order of presentation of negligence and causation information was reversed (B+, C-, N-). Dependent measures consisted of three dichotomous and three continuous variables summarized in Table II.

The dichotomous variables were obtained by asking subjects to respond by circling 'YES' or 'NO' to questions concerning verdict outcome (VERD), defendant negligence (NEG), and the causal nature of defendant's action (CAUSE). The continuous variables, considered interval and rated on a scale of 0-10 were obtained by asking jurors to circle the point on the scale corresponding to their certainty of defendant liability (VERDCERT), negligence (NEGCERT), and causal behavior (CAUSCERT). The data collection instruments are presented in appendices A and B.

TABLE II

DEPENDENT VARIABLES

	DICHOTOMOUS	CONTINUOUS
LIABILITY	VERD	VERDCERT
NEGLIGENCE	NEG	NEGCERT
CAUSATION	CAUSE	CAUSCERT
STRENGTH OF CAUSATION INFO	-----	SCAUSE
STRENGTH OF NEGLIGENCE INFO	-----	SNEG

As a manipulation check of the strength of information presented by the variables NEGINFO and CAUSINFO, subjects were given a definition of negligence and causation and asked to report, on a nine point scale ranging from 'no information' to 'full information', the strength of negligence (SNEG) and causation information (SCAUSE) present in the case which they read.

PROCEDURE

Subjects were randomly assigned to either the plaintiff or defense group, one of the five treatment conditions as explained in the design section, and one of the three torts. After reading their particular version of the case, subjects were given instructions and asked to complete a verdict form which asked them, as jurors, to decide whether the defendant acted in a negligent manner and if so, whether, that negligence contributed to or was a cause of the damages suffered by the plaintiff. After indicating their verdict in the case, subjects were asked several follow-up questions to determine how they made use of the information presented to them. Subjects were asked specifically how they considered negligence and causation information at the time of the verdict. Subjects also were asked whether or not they felt that the defendant's actions were negligent and, separately, whether or not they felt the defendant's actions were a cause of damage to the plaintiff.

Additionally, subjects were asked to rate, on a scale of one to ten, the confidence they had in their judgments of causation and negligence. Finally, subjects were asked to re-read the experimental treatment passage to which they were exposed, and to rate, on a scale of zero to nine, how much negligence information and, on a similar scale, how much causation information was presented with respect to the target testimony.

RESULTS

Analysis of Variance (ANOVA) was used in a preliminary analysis to determine the effect of order of presentation of evidence, and in the main analysis to determine the effects of TORT, PARTY, NEGINFO, and CAUSINFO, on continuous dependent measures. MANOVA was considered but not used because there was a single primary variable of interest. The only use of other outcome measures was to give information about the process by which a verdict was reached. Chi-square tests of independence and log linear analysis were used to test the effects of these IVs on dichotomous outcome measures. Planned comparisons were carried out to contrast differences between selected treatment conditions on these same verdict outcome measures.

ORDER OF PRESENTATION

As a preliminary step, a two-way analysis of variance was used to test for the effects of PARTY and order of presentation of NEGINFO and CAUSINFO on certainty of defendant liability (VERDCERT). This ANOVA compared conditions 4a with 4b and 8a with 8b. No significant order effects were found, $F(1, 56) = 1.479$, $p > .1$. Significant effects were found for PARTY, $F(1, 56) = 39.20$, $p < .01$.

Because no effects were found for order of presentation, subjects in conditions 4a and 4b, and subjects in conditions 8a and 8b, were combined, by randomly selecting five subjects from each of the two counterbalanced conditions in each pair, to form a total of eight conditions of five subjects each. A block diagram of this configuration is included in Table 1.

TORT BY PARTY BY NEGINFO BY CAUSINFO

The first step in the main analysis was to perform a four way ANOVA to test the effects of TORT, PARTY, NEGINFO, and CAUSINFO on certainty of defendant liability. The four-way interaction was found to be significant, $F(2, 96) = 3.181$, $p < .05$. Main effects were found for TORT, $F(2, 96) = 3.17$, $p < .05$, PARTY, $F(1, 96) = 17.32$, $p < .001$, and NEGINFO, $F(1, 96) = 27.32$, $p < .001$. The nature of this interaction was the presence, in tort one only, of a three way interaction involving PARTY, NEGINFO, AND CAUSINFO. One interpretation of this finding is that the interaction occurred a result of the particular story used as stimulus material in TORT one. An effort to determine if the stories used differed in the strength of negligence (SNEG) and strength of causation (SCAUSE) information was inconclusive. Mean levels of these variables were examined with the following result. For negligence information, the mean levels reported were: 5.74, 5.6, and 5.1, for TORTs one two

and three respectively. For causation information, the means were 5.44, 5.32, and 5.56 for TORTs one, two, and three respectively. No significant differences were found between cases in the strength of negligence, $F(2, 147)$ $P > .05$, nor causation information $F(2, 147)$.116, $P > .05$. A second interpretation is gleaned from open ended responses which were collected but not meant to be a part of the present research. It seems that in tort one, various subjects mentioned that they felt the plaintiff had contributed to cause his injuries in some way, where as in torts two and three this was not the case.

Log linear models represent relations among categorical variables in a contingency table by linear effects on logarithms of observed cell frequencies. In a log linear model, a main effect for a factor represents unequal marginal frequencies for the levels of the factor while the interaction effect represents the joint effect of the variables on cell frequencies. Log-linear analysis was used to model VERD as a function of TORT, by PARTY, by NEGINFO by CAUSINFO. Chi-Square was found to be non-significant, $\chi^2(1, N = 120) = 1.081$ $P > .05$, indicating that there was no effect of the four way interaction of TORT, by PARTY, by NEGINFO by CAUSINFO.

The reason for the difference in outcomes between analysis done using ANOVA and log-linear analysis is difficult to pinpoint, although it was consistent throughout

the research. It is possible that the difference was due to a difference in precision between the continuous and dichotomous measures. The dichotomous variable, because it is less sensitive, leads to a failure to reject the null hypothesis even when the same outcome, measured as a continuous variable allows for rejection.

PARTY BY Neginfo BY CAUSINFO

Given the significance of the four-way interaction effect on VERDCERT, the next step was to run three-way ANOVAs for each TORT to test the effects of PARTY, Neginfo, and CAUSINFO on the three outcome variables, VERDCERT, NEGCERT, and CAUSCERT. These results are presented in Tables III through VI. Only one significant interaction was found. The interaction of PARTY by Neginfo by CAUSINFO was found to have a significant effect on VERDCERT in TORT one $F(1, 32) = 4.17, p < .05$. Figure 2 shows Neginfo had an effect on VERDCERT in both the PLAINTIFF and DEFENSE conditions while CAUSINFO and the Neginfo x CAUSINFO interaction had no effect in either the PLAINTIFF or DEFENSE conditions. The absence of any difference in the pattern of these effects across plaintiff and defense conditions, coupled with the the appearance of this interaction in tort 1 only calls into question the practical significance of this finding and makes interpretation ambiguous at best.

TABLE III
THREE-WAY ANOVA DEPENDENT MEASURE VERDCERT

TORT 1						
SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P	
NEGINFO	84.100	1	84.100	9.909	0.004	
CAUSINFO	2.500	1	2.500	0.295	0.591	
PARTY	3.600	1	3.600	0.424	0.520	
NEGINFO*						
CAUSINFO	0.400	1	0.400	0.047	0.830	
NEGINFO*						
PARTY	4.900	1	4.900	0.577	0.453	
CAUSINFO*						
PARTY	0.900	1	0.900	0.106	0.747	
NEGINFO*						
CAUSINFO*						
PARTY	40.000	1	40.000	4.713	0.037	
ERROR	271.600	32	8.488			
TORT 2						
SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P	
NEGINFO	67.600	1	67.600	9.166	0.005	
CAUSINFO	0.400	1	0.400	0.054	0.817	
PARTY	78.400	1	78.400	10.631	0.003	
NEGINFO*						
CAUSINFO	4.900	1	4.900	0.664	0.421	
NEGINFO*						
PARTY	4.900	1	4.900	0.664	0.421	
CAUSINFO*						
PARTY	4.900	1	4.900	0.664	0.421	
NEGINFO*						
CAUSINFO*						
PARTY	10.000	1	10.000	1.356	0.253	
ERROR	236.000	32	7.375			
TORT 3						
SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P	
NEGINFO	55.225	1	55.225	8.258	0.007	
CAUSINFO	2.025	1	2.025	0.303	0.586	
PARTY	81.225	1	81.225	12.146	0.001	
NEGINFO*						
CAUSINFO	1.225	1	1.225	0.183	0.672	
NEGINFO*						
PARTY	3.025	1	3.025	0.452	0.506	
CAUSINFO*						
PARTY	0.025	1	0.025	0.004	0.952	
NEGINFO*						
CAUSINFO*						
PARTY	0.225	1	0.225	0.034	0.856	
ERROR	214.000	32	6.688			

TABLE IV
THREE-WAY ANOVA DEPENDENT MEASURE NEGCERT

TORT 1						
SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P	
NEGINFO	168.100	1	168.100	20.850	0.000	
CAUSINFO	22.500	1	22.500	2.791	0.105	
PARTY	0.400	1	0.400	0.050	0.825	
NEGINFO*	10.000	1	10.000	1.240	0.274	
CAUSINFO						
NEGINFO*						
PARTY	0.100	1	0.100	0.012	0.912	
CAUSINFO*	0.100	1	0.100	0.012	0.912	
PARTY						
NEGINFO*	0.400	1	0.400	0.050	0.825	
CAUSINFO*						
PARTY	0.400	1	0.400	0.050	0.825	
ERROR	258.000	32	8.063			
TORT 2						
SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P	
NEGINFO	105.625	1	105.625	11.851	0.002	
CAUSINFO	0.625	1	0.625	0.070	0.793	
PARTY	105.625	1	105.625	11.851	0.002	
NEGINFO*	1.225	1	1.225	0.137	0.713	
CAUSINFO						
NEGINFO*	0.225	1	0.225	0.025	0.875	
PARTY						
CAUSINFO*	0.625	1	0.625	0.070	0.793	
PARTY						
NEGINFO*	5.625	1	5.625	0.631	0.433	
CAUSINFO*						
PARTY	5.625	1	5.625	0.631	0.433	
ERROR	285.200	32	8.913			
TORT 3						
SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P	
NEGINFO	60.025	1	60.025	8.251	0.007	
CAUSINFO	0.625	1	0.625	0.086	0.771	
PARTY	81.225	1	81.225	11.165	0.002	
NEGINFO*	7.225	1	7.225	0.993	0.326	
CAUSINFO						
NEGINFO*	0.225	1	0.225	0.031	0.862	
PARTY						
CAUSINFO*	24.025	1	24.025	3.302	0.079	
PARTY						
NEGINFO*	1.225	1	1.225	0.168	0.684	
CAUSINFO*						
PARTY	1.225	1	1.225	0.168	0.684	
ERROR	232.800	32	7.275			

TABLE V
THREE-WAY ANOVA DEPENDENT MEASURE CAUSCERT

TORT 1						
SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P	
NEGINFO	112.225	1	112.225	13.320	0.001	
CAUSINFO	3.025	1	3.025	0.359	0.553	
PARTY	0.625	1	0.625	0.074	0.787	
NEGINFO*						
CAUSINFO	11.025	1	11.025	1.309	0.261	
NEGINFO*						
PARTY	0.225	1	0.225	0.027	0.871	
CAUSINFO*						
PARTY	1.225	1	1.225	0.145	0.705	
NEGINFO*						
CAUSINFO*						
PARTY	3.025	1	3.025	0.359	0.553	
ERROR	269.600	32	8.425			
TORT 2						
SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P	
NEGINFO	16.900	1	16.900	1.578	0.218	
CAUSINFO	6.400	1	6.400	0.597	0.445	
PARTY	40.000	1	40.000	3.734	0.062	
NEGINFO*						
CAUSINFO	3.600	1	3.600	0.336	0.566	
NEGINFO*						
PARTY	0.400	1	0.400	0.037	0.848	
CAUSINFO*						
PARTY	36.100	1	36.100	3.370	0.076	
NEGINFO*						
CAUSINFO*						
PARTY	4.900	1	4.900	0.457	0.504	
ERROR	342.800	32	10.713			
TORT 3						
SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P	
NEGINFO	27.225	1	27.225	2.643	0.114	
CAUSINFO	1.225	1	1.225	0.119	0.732	
PARTY	46.225	1	46.225	4.488	0.042	
NEGINFO*						
CAUSINFO	9.025	1	9.025	0.876	0.356	
NEGINFO*						
PARTY	4.225	1	4.225	0.410	0.526	
CAUSINFO*						
PARTY	3.025	1	3.025	0.294	0.592	
NEGINFO*						
CAUSINFO*						
PARTY	4.225	1	4.225	0.410	0.526	
ERROR	329.600	32	10.300			

TABLE VI
 MEAN RATINGS OF VERDICT OUTCOME,
 CERTAINTY OF NEGLIGENCE, AND CERTAINTY OF CAUSATION

TORT ONE

CONDITION	VERTCERT		NEGCERT		CAUSCERT	
	mean	Sd	mean	Sd	mean	Sd
CONDITION 1	1.2	2.1	1.2	2.1	2.0	3.9
CONDITION 2	6.6	3.6	4.2	3.9	3.6	2.5
CONDITION 3	3.8	1.7	1.6	2.0	.6	1.3
CONDITION 4	5.6	3.9	7.0	3.5	6.6	1.8
CONDITION 5	6.0	2.2	6.4	2.2	5.6	1.9
CONDITION 6	1.6	3.0	1.6	2.6	1.6	2.6
CONDITION 7	3.6	2.9	4.2	3.9	4.2	4.2
CONDITION 8	3.6	2.9	1.0	.70	1.2	1.3

TORT TWO

CONDITION	VERTCERT		NEGCERT		CAUSCERT	
	mean	Sd	mean	Sd	mean	Sd
CONDITION 1	6.2	3.9	5.8	4.6	6.6	3.6
CONDITION 2	7.8	1.5	7.8	1.5	6.8	2.6
CONDITION 3	4.0	2.4	4.2	2.2	4.2	2.9
CONDITION 4	9.0	1.0	8.4	3.0	7.0	3.3
CONDITION 5	5.2	3.1	4.8	3.3	6.0	3.8
CONDITION 6	3.6	3.5	1.8	4.0	5.0	4.5
CONDITION 7	4.6	3.0	5.2	2.1	3.4	2.5
CONDITION 8	2.4	1.8	1.4	1.3	2.2	2.2

TORT THREE

CONDITION	VERTCERT		NEGCERT		CAUSCERT	
	mean	Sd	mean	Sd	mean	Sd
CONDITION 1	4.0	3.8	6.0	2.6	4.6	3.8
CONDITION 2	6.4	2.0	7.4	1.9	7.2	1.9
CONDITION 3	4.0	3.3	3.0	3.5	6.4	3.2
CONDITION 4	7.4	2.3	6.8	2.4	5.8	3.7
CONDITION 5	3.8	3.0	5.0	4.0	4.4	3.3
CONDITION 6	1.8	2.0	2.2	1.9	2.4	1.6
CONDITION 7	3.2	2.0	3.2	2.8	5.6	4.2
CONDITION 8	1.6	.5	1.4	.9	3.0	2.7

Figure 2. Tort one: three way interaction party by negligence by causation.

PARTY

Main effects of PARTY on VERDCERT were found in TORT two, $F(1, 32) = 10.63$, $P < .01$, and TORT three $F(1, 32) = 12.14$, $P < .01$. In both torts, subjects in the plaintiff condition assigned significantly higher liability ratings to the defendant than did those in the defense condition. Main effects of PARTY on NEGCERT were also found in TORT two $F(1, 32) = 11.85$, $P < .01$, and TORT three $F(1, 32) = 11.16$, $P < .01$. Again, in torts two and three, subjects in the plaintiff condition assigned significantly higher certainty of liability ratings to the defendant than did those in the defense condition. The only significant effect of PARTY on

CAUSCERT was a main effect found in tort three in which plaintiff subject's ratings of the certainty of defendant's behavior as a cause of damage to the plaintiff were significantly higher than those of defense condition subjects $F(1, 32) = 4.48, p < .05$.

NEGINFO

Main effects of NEGINFO on VERDCERT, NEGCERT, and CAUSCERT were found in all three TORTs with $p < .01$. In all instances the presence of negligence information resulted in a higher level of certainty of defendant liability, negligence, and causation than did its absence. These results support hypothesis one. Other than the three-way interaction between PARTY, NEGINFO, and CAUSINFO, found in Tort one, $F(1, 32) = 4.17, p < .05$, no other interaction effects involving NEGINFO were found.

CAUSINFO

For no tort was a significant main effect of CAUSINFO found on the continuous verdict outcome measures.

The findings of significant main effects of NEGINFO and non-significant effects of CAUSINFO on jurors' certainty of judgment of liability replicate the findings of Anderson and Smith.

A proper understanding by jurors of the negligence - causation relationship requires that these be treated as

separate concepts, and that the existence of one not be inferred on the basis of evidence of the other, the post-hoc-ergo-propter-hoc fallacy. In the present experiment, the conditional probability of a finding of causation, given information suggesting negligence, was .50 (30/60), while the conditional probability of a finding of negligence, given information suggesting causation, was .37 (22/60). There is no direct test of the significance of the difference between these probabilities; however, in testing the null hypothesis that each of these proportions was significantly above .5, it was found that they were not. Another analysis looked at the relationship between NEGINFO and CAUSE, and CAUSINFO and NEG. A chi-square test of the independence of NEGINFO and CAUSE was significant, χ^2 (1, N = 120) = 6.91 P < .01, while a chi-square test of the independence of CAUSINFO and NEG was not significant, χ^2 (1, N = 120) = .036 P > .8. In the presence of NEGINFO subjects found CAUSE to be present half the time and found cause to be absent half the time (30/60). In the absence of NEGINFO subjects found cause to be present 27% (16/60) of the time and absent 73% (44/60) of the time. These findings tend to support Hypothesis one. Jurors did have more tendency to infer causation when presented with evidence of negligence, than to find negligence when presented with causation information. It also appears that the absence of NEGINFO rather than the presence of NEGINFO is driving the verdict.

Another way to assess jurors' understanding of the concepts of negligence and causation is to look at the frequency with which findings of negligence and causation co-occur. The conditional probability of a causation-present judgment given a negligence-present judgment was .744 (32/43), while the conditional probability of a negligence-present judgment given a causation-present judgment was only slightly lower at .695 (32/46). Because these proportions are derived from the same matrix, a direct test of the significance of the difference between these two conditional probabilities is possible. A chi-square test of independence between the variables negcert and causcert was significant, $\chi^2 (1, N = 120) = 36.91$ $p < .001$. Dividing the difference between the two proportions by the standard error of the difference yields a normal deviate Z-score of 3.18. These results along with the previous Chi-square analysis suggests that jurors, although treating negligence and causation information as fairly distinct concepts, also tend to infer causation from a negligence judgment. The results of these chi-square tests are presented in Table seven.

TABLE VII

NEGLIGENCE CAUSATION RELATIONSHIP

		NEG		TOTAL
		ABSENT	PRESENT	
ABSENT NEGINFO PRESENT	ABSENT	53	7	60
	PRESENT	24	36	60
TOTAL		77	43	120

PEARSON CHI-SQUARE = 30.480 $p = 0.000$

		CAUSE		TOTAL
		ABSENT	PRESENT	
ABSENT NEGINFO PRESENT	ABSENT	44	16	60
	PRESENT	30	30	60
TOTAL		74	46	120

PEARSON CHI-SQUARE = 6.910 $p = 0.009$

		NEG		TOTAL
		ABSENT	PRESENT	
ABSENT CAUSINFO PRESENT	ABSENT	39	21	60
	PRESENT	38	22	60
TOTAL		77	43	120

PEARSON CHI-SQUARE = 0.036 $p = 0.849$

		CAUSE		TOTAL
		ABSENT	PRESENT	
ABSENT CAUSINFO PRESENT	ABSENT	36	24	60
	PRESENT	38	22	60
TOTAL		74	46	120

PEARSON CHI-SQUARE = 0.141 $p = 0.707$

		NEG		TOTAL
		ABSENT	PRESENT	
ABSENT CAUSE PRESENT	ABSENT	63	14	77
	PRESENT	11	32	43
TOTAL		74	46	120

PEARSON CHI-SQUARE = 36.914 $p = 0.000$

		NEG and CAUSE				TOTAL
		NEG=0 CAUSE=0	NEG=1 CAUSE=0	NEG=0 CAUSE=1	NEG=1 CAUSE=1	
VERD	0	54	5	10	1	70
	1	9	6	4	31	50
TOTAL		63	11	14	32	120

PEARSON CHI-SQUARE = 61.300 $p = 0.000$

THE NEGLIGENCE/CAUSATION/LIABILITY RELATIONSHIP

A proper understanding of the concept of liability requires that jurors not only be able to distinguish the concepts of negligence and causation, but also are able to render a finding of liability only on the occurrence of their conjunction. Of 50 subjects who found liability present, 31 instances (62%) occurred under a joint negligence-present judgment and causation-present judgment condition. Nineteen liability judgments occurred under a condition in which negligence or causation or both was judged to be present.

A chi-square test of independence was used to examine the frequency of liability judgments under the condition of a joint finding of negligence and causation. The resulting chi-square test was significant $\chi^2 (1, N = 120) = 4.94$ $p < .05$, leading to the conclusion that jurors did, in fact, understand the concept of liability as composed of the joint occurrence of negligence and causation. It also appears that jurors, although they understand the concept of liability as composed of the joint occurrence of negligent and causal behavior on the part of a defendant, none the less have trouble distinguishing negligent from causal behavior, and therefore tend to interpret negligent behavior as evidence of causal activity.

MANIPULATION CHECK

As a manipulation check of the variables NEGINFO and CAUSINFO, subjects were given a definition of negligence and causation and asked to report, on a nine-point scale ranging from 'no information' to 'full information', the strength of negligence and causation information present in the case which they read. One use of the manipulation check was to determine if the strength of negligence and causation information was equal across torts. For negligence information, the overall mean was 5.48 with mean levels of 5.74, 5.6, and 5.1, for torts one, two, and three respectively. For causation information, the overall mean was 5.44 with means of 5.44, 5.32, and 5.56 for cases one, two, and three respectively. No significant difference found was between means of the strength of negligence and causation information for any tort. Another purpose of the manipulation check was to insure that the variables NEGINFO and CAUSINFO did in fact lead to negligence and causation ratings. To accomplish this, a variable, DIF, was created by subtracting SCAUSE from SNEG. The expectation was that paragraphs containing only NEGINFO should have DIFs significantly higher than zero and paragraphs containing CAUSINFO should have DIFs significantly less than zero. T-tests were conducted to see if the mean DIF of conditions 2, 3, 6, and 7 did in fact differ significantly, and in the expected direction, from zero. None of these tests were

significant and in all cases the difference was negative. This finding suggests that whether subjects were subjected to Neginfo or Causinfo, they had a tendency to judge Scause to be greater than SNEG.

DISCUSSION

Hypothesis one predicted that jurors in both plaintiff and defense conditions would tend to take into account negligence information more than causation information in reaching a determination of liability. This tendency was operationalized by a higher frequency of plaintiff verdicts rendered by those jurors presented with evidence suggesting non-causal negligence than by those jurors presented with evidence suggesting the causal nature of non-negligent behavior. This hypothesis also predicted that jurors who were presented with information indicating negligence but not causation would have greater confidence in their determinations of liability, negligence, and causation than those who were given information indicating causation but not negligence. This hypothesis received partial support. No significant differences were found, for any TORT, on any dependant measure, between condition two, in which negligence was indicated and causation was neutral, and condition three, in which negligent behavior was indicated and causation was negated. Significant differences were found, for tort one only, in confidence of verdict outcome between conditions seven and six. This latter finding, that in the defense condition information indicating negligence but negating causation resulted in higher ratings of

liability than did information indicating causation but negating negligence, suggests that jurors did in fact tend to interpret negligence information as both negligence and causation information. Additional support for this hypothesis is shown by the difference in certainty of causation ratings between condition seven and condition six for TORT one. When information indicating negligence but negating causation was presented, it resulted in higher ratings of confidence in both defendant liability and causation than did information negating negligence but indicating causation. Similar significant findings were not found in the other torts.

Significant differences in verdict outcome were found between conditions two and seven for torts two and three. This finding supports hypothesis two, suggesting that the presence of negligence information in the plaintiff group, where the causation information was neutral, resulted in higher certainty of liability ratings than did negligence information in the defense group, where negligence information was presented in conjunction with information negating causation. This hypothesis is also supported by the finding of a significant difference in certainty of defendant negligence ratings between those in groups two and seven in torts two and three. Those in the plaintiff group, who were given causation neutral and negligence present information, were more certain of the defendant's

negligence than those in the defense group who were given causation absent and negligence present information.

CONCLUSIONS

The results of this study show fairly strong support for hypothesis one and mixed support for hypothesis two. Jurors in both the plaintiff and defense conditions had a tendency to make use of negligence information as evidence of both negligent and causal behavior on the part of a defendant. Additionally, jurors in the plaintiff group tended to have a higher degree of confidence in defendant liability than those in the corresponding defense group.

Ideally, the narrative accounts used as stimuli in this study would have allowed a sharp distinction between full and no information regarding the elements of negligence and causation to have been introduced. The obtained results suggest that although the strength of the information presented to subjects was not as great as desired, there was nonetheless a balanced presentation of negligence and causation information. By assimilating the open ended responses given by subjects to the follow-up questions in this study, adjustments in this stimulus strength can be made and incorporated into future research.

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APPENDIX A

DATA COLLECTION INSTRUMENTS

JUDGE'S INSTRUCTIONS TO THE JURY

It is now the duty of the court to instruct you as to the law. Under our legal system, the court decides all questions of law and procedure arising during a trial, and it is the jury's duty to follow the court's instructions in these matters.

On the other hand, the jury is the sole and exclusive judge of the facts and of the reliability of the evidence. The jury's power, however, is not arbitrary; and, if the court instructs you as to the law on a particular subject or how to judge the evidence, you must follow such instructions.

Negligence and causation. The law assumes that all persons have obeyed the law and have been free from negligence. Accordingly, the fact that there has been an injury or death is no indication that anyone was negligent.

In order for the plaintiff, to establish fault on the part of the defendant, the plaintiff must prove by a preponderance of the evidence that the defendant was negligent in at least one of the ways alleged which was a cause of injury or damage to the plaintiff. 'Damage' refers, not just to physical damage, but also to financial and emotional damage, such as the costs and emotional pain and suffering.

In general, it is the duty of every person in our society to use reasonable care to avoid damage that would be reasonably anticipated. Reasonable care is that care which persons of ordinary prudence exercise in the management of their own affairs to avoid injury to themselves or others. Common-law negligence, therefore, is the doing of some act that a reasonably careful person would not do, or the failure to do something that a reasonably careful person would do under the same or similar circumstances.

FOLLOW UP QUESTIONS

The verdict form you just completed asked whether the defendant was liable, that is, NEGLIGENT in one or more of the particulars alleged by the plaintiff, and, if so, whether such negligence was a CAUSE of damage to the plaintiff.

1. At the time you were completing the form, how were you thinking about negligence and causation?
(Circle 'a' or 'b' below.)
- a. I treated negligence and causation as roughly the same
 - b. I treated negligence and causation as distinct concepts.
- 2a. Do you believe that the defendant's actions were negligent?

NO YES

2b. On the scale below please indicate how confident you are in this judgment by circling the appropriate point on the scale.

*	*	*	*	*	*	*	*	*	*	*
100%				50/50						100%
certain				completely						certain
defendant				uncertain						defendant
was not										was
liable										liable

2c. Briefly explain how you arrive at this judgment. Give the reasons that you believe justify this judgment.

3a. Do you believe that the defendant's action or failure to act was a cause of damage to the plaintiff?

NO YES

3b. On the scale below please indicate how confident you are in this judgment by circling the appropriate point on the scale.

*	*	*	*	*	*	*	*	*	*	*
100%				50/50						100%
certain				completely						certain
defendant				uncertain						defendant
was not										was
a cause										a cause

3c. Briefly explain how you arrive at this judgment. Give the reasons that you believe justify this judgment.

APPENDIX B

MANIPULATION CHECK

APPENDIX C

STIMULUS MATERIALS

PLAINTIFF GROUP ELEMENTS (B0, N+, C+)

JONES v. NEPTUNE FISHERIES

BACKGROUND

Jerome Jones was drowned while employed as the mate of the 'Long Island,' a Boston fishing boat. The boat is owned by Neptune Fisheries Company, which is the defendant in this case. Mr. Jones' widow, Alice Jones (the plaintiff), is suing, on behalf of herself and her four young children, to recover damages from the defendant for her husband's death. On December 21, 1983, about 5 o'clock in the afternoon, the 'Long Island' left T wharf, Boston, bound for 'Georges,' which are fishing banks in Massachusetts waters. About 6 o'clock, shortly after the vessel passed Boston Light, the plaintiff's husband came on deck to relieve Ole Olson at the wheel. As Jones was ascending a flight of four steps leading from the deck to the pilot house, a freak wave struck the vessel, and Jones was thrown overboard.

(B0) Immediately upon seeing Jones go overboard, McCue, who was the only person on deck at the time, went to the rescue boat. He undid the lashings which held the boat in place, prepared the boat for lowering, and then lowered the boat into the water in an effort to rescue Jones, but by the time the boat had been lowered into the water, Jones was nowhere to be seen.

(N+) An expert witness from the Coast Guard testified that it is unusual for Massachusetts fishing vessels to lash their lifeboats down in the manner employed by Neptune Fisheries, since lashing makes it more difficult to launch the boat. He further testified this practice is not in accordance with Coast Guard regulations.

(C+) Olson testified that, immediately after seeing Jones fall overboard, he threw the engine into reverse to stop the vessel and thereafter continuously kept track of Jones while McCue attempted to launch the life boat. However, by the time the life boat was actually launched, Jones had slipped beneath the surface of the water.

STATEMENT OF THE JUDGE TO THE JURY

You should disregard the fact that Jerome Jones was not wearing a life jacket at the time of the accident as this not at issue in the present case. The plaintiff, Mrs. Jones, acknowledges that Neptune Fisheries did provide life jackets for use by crew members, and the defense, Neptune Fisheries, acknowledges that life jackets are not worn by fishing crew members in these waters except under extreme weather conditions. Both parties agree such weather conditions did not exist at the time of the accident.

DEFENSE GROUP ELEMENTS (B+, N-, C-)

JONES v. NEPTUNE FISHERIES

BACKGROUND

Jerome Jones was drowned while employed as the mate of the 'Long Island,' a Boston fishing boat. The boat is owned by Neptune Fisheries Company, which is the defendant in this case. Mr. Jones' widow, Alice Jones (the plaintiff), is suing, on behalf of herself and her four young children, to recover damages from the defendant for her husband's death. On December 21, 1983, about 5 o'clock in the afternoon, the 'Long Island' left T wharf, Boston, bound for 'Georges,' which are fishing banks in Massachusetts waters. About 6 o'clock, shortly after the vessel passed Boston Light, the plaintiff's husband came on deck to relieve Ole Olson at the wheel. As Jones was ascending a flight of four steps leading from the deck to the pilot house, a freak wave struck the vessel, and Jones was thrown overboard.

(B+) Immediately upon seeing Jones go overboard, McCue, who was the only person on deck at the time, went to the rescue boat. He undid the lashings which held the boat in place, prepared the boat for lowering, and then lowered the boat into the water in an effort to rescue Jones. This process took two to three minutes, and by the time the boat had been lowered into the water, Jones was nowhere to be seen. The plaintiff argues that had the lifeboat been mounted on davits (a pulley system for lowering boats) the boat could have been lowered in time to have saved Jones, that Neptune Fisheries was negligent in the manner in which they mounted the life boat and that such mounting was the cause of Jones' death since Jones would have been saved if the boat could have been launched more quickly.

(N-) An expert witness from the Coast Guard testified that it is usual for Massachusetts fishing vessels to lash their lifeboats down in the manner employed by Neptune Fisheries, since lashing makes the boat more secure and less likely to be damaged or lost in heavy weather. He further testified that this practice is in accordance with Coast Guard regulations. Neptune Fisheries argues that they were not negligent in securing their lifeboats in this manner.

(C-) Olson testified that, immediately after seeing Jones fall overboard, he threw the engine into reverse to stop the vessel and then scanned the water for Jones continuously thereafter until McCue gave up the search. However, Olson never saw either Jones or any of his clothing. Neptune Fisheries argues that Jones slipped beneath the surface of the water immediately and that even if they had mounted the lifeboat on davits, allowing the lifeboat to be lowered more

quickly, there never would have been any chance of recovering Jones.

STATEMENT OF THE JUDGE TO THE JURY

You should disregard the fact that Jerome Jones was not wearing a life jacket at the time of the accident as this not at issue in the present case. The plaintiff, Mrs. Jones, acknowledges that Neptune Fisheries did provide life jackets for use by crew members, and the defense, Neptune Fisheries, acknowledges that life jackets are not worn by fishing crew members in these waters except under extreme weather conditions. Both parties agree that such weather conditions did not exist at the time of the accident.