Adding a Numerical Description to Civil Standard of Proof Jury Instructions:

Probabilistic Evidence Still Defies Correct Liability Assignment

John A. McKinlay

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Approved: Dr. Robert J. Konopasky
Supervisor

Approved: Dr. David Bourgeois
Examiner

Approved: Dr. Ronald Landes
Examiner

Approved: A. Wayne MacKay, CM, Q.C.
External Examiner

Date: November 30, 2017

Abstract

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Abstract: Responses from 67 law students were obtained using an online study that presented a mock civil jury trial. Each participant was asked to determine liability. The study explores whether more correct assignment of liability occurs when the verbal "more probable than not" standard of proof is also quantified as a 51% probability, and when probabilistic evidence establishes a 70%, 51% or 50.01% likelihood of liability.

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Introduction

Prevalence of Canadian civil litigation: A considerable amount of civil litigation takes place in Canada. Over 920,000 active civil court cases were identified in the period 2012-2013 (Allen, 2014). By one recent estimate, the Supreme Court of Canada alone receives an average of 375 civil appeals each year (Cameron-Huff , 2014). In 2015, the Canadian federal government alone paid over $525 million to settle civil lawsuits, and an additional $32 million in court-awarded damages (Thompson, 2015). Outside of courtrooms, litigation maintains a high profile in society, with civil trial storylines remaining popular in print (Grisham, 2011) and television dramas such as *Damages* and *The Good Wife.*

Important role of standard of proof: By any measure, fair resolution of civil legal disputes is considered an appropriate and often important societal objective (Hanson, 2016). Given the prominence of litigation, it is important that court cases be decided in a principled manner free of arbitrary, irrelevant, or unfair considerations. To promote fair determination of legal disputes, litigation demands that the trier-of-fact (whether a single judge, or a collective judicial panel, tribunal, board or jury) correctly apply the operative standard of proof to the evidence, to determine if liability or guilt has been proven. The term "standard of proof" refers to the degree to which a disputed fact or issue must be proven by the evidence (Gastwirth, 1992).

Standards of Proof

Criminal standard of proof: In Canadian criminal trials, the standard of proof required to find guilt is "beyond a reasonable doubt". While some suggest it should be quantified (Weinstein & Dewsbury, 2006), this standard is qualitative, and therefore no

judge or jury considers whether the accused's commission of the alleged offense has been established to a specific degree of probability (R. v. Lifchus, 1997, para. 27).

As physical liberty is prized as a fundamental right of all citizens, a just criminal justice system must seek to prevent the conviction of the innocent, who have committed no crime. "It is better that ten guilty persons escape than that one innocent person suffer" (Blackstone, 1769; *contra* Halvorsen, 2004). Therefore, it is not accidental that "beyond a reasonable doubt" sets a high standard of proof to establish criminal guilt (In re Winship, 1970, p. 364).

Research suggests that jurors in criminal matters accept this standard. They consider the term "beyond a reasonable doubt" to require proof of guilt at 90%, or even 95%, probability (Daftary-Kapur, Dumas & Penrod, 2010; Dhami, 2008; McCauliff, 1982). In one study, American judges, potential jurors, and students, on average, identified the minimum probability required for criminal guilt as .89, .79, and .89 respectively (Dane, 1985). Another study involving only students found similar values (Kerr et al., 1976).

Civil standard of proof: The standard of proof applied in civil litigation in Canada is not the high standard of "beyond a reasonable doubt", but the lesser standard of "more likely than not" or "more probable than not", also described as relying "on a balance of probabilities" or "a preponderance of the evidence" (Redmayne, 1999; F.H. v. McDougall, 2008). This standard is to be applied to all determinations of fact in civil litigation, and of ultimate civil liability, as it is this standard that judicial precedent, developed through the examination of common law jurisprudence, has declared the appropriate standard (F.H. v. McDougall, 2008).

The civil standard necessarily involves the application of probability, as the trier-of-

fact must assess whether the available evidence establishes that a disputed fact is likely or probable. "On a balance of probabilities" invokes the notion of a set of scales that, weighing the evidence, must tip in favor of a disputed fact for it to be found established (McIver v. Power, 1998). On this model, a bare preponderance is sufficient, "though the scales drop but a feather's weight" (Livanovitch v. Livanovitch, 1926; Demougin & Fluet, 2002).

Uniform civil jury instructions used in Canadian trials do not reference a specific probability value (Continuing Legal Education Society of British Columbia, 2012), but the Supreme Court of Canada in *McDougall* did reference legal scholarship that quantified "more likely than not" as a "51% probability" (Rothstein, Centa & Adams, 2004).

In civil trials involving, for example, claims of personal injury or commercial losses, the societal interest in protecting personal liberty is not engaged, and instead the trial process examines disputes such as the enforcement of contracts, intentional torts and injury occasioned by negligence. Appropriately, these types of disputes attract the lesser civil standard of proof. That a plaintiff's claim may succeed, on the basis that their case was proven "on a balance of probabilities", means that in some cases it is quite possible that the defendant is incorrectly found liable, but absent the primacy of a personal liberty interest, the legal system views this outcome as not only defensible but just. Society has been described as *indifferent* to whether a plaintiff or defendant wins a particular civil suit, and therefore "it is unnecessary to protect against an erroneous result by requiring a standard of proof higher than a balance of probabilities" (Sopinka, Lederman & Bryant, 1999, p. 154). It is assumed that the civil standard of proof divides the risk of erroneous decisions in roughly equal fashion but not exactly equal fashion between plaintiffs and defendants

(Kagehiro & Stanton, 1985, p. 160; Clermont, 2009, p. 469). After all, the defendant must be deemed more likely than not to have caused the damage suffered by the plaintiff.

Other legislated standards of proof: In the absence of specific legislation (Penner v. Niagara, 2013), the Supreme Court of Canada firmly declared in *McDougall* that there is no standard of proof that resides above the civil, but below the criminal, standard of proof. This is the case even where the consequences for an individual may involve moral stigma inflicting significant prejudice to personal reputation, serious consequences that at one time in Canada attracted an intermediate standard of "clear and convincing" evidence (Rothstein, Centa & Adams, 2004). For very recent American reconsideration of the "clear and convincing" standard for university student disciplinary tribunals, see Saul and Goldstein (2017).

The philosophical reasons behind the criminal and civil standards of proof are certainly plausible ones, and each of these standards appears well designed to achieve justice in its respective legal sphere. But given the prevalence of civil litigation in Canada, it is not enough that the civil standard of proof looks fair on paper. It is important that the civil litigation system resolves cases where the civil standard of proof is correctly applied to evidence of varying degrees of probative value.

Research undermining civil litigation's legitimacy: In extensive psychological research, mock jurors drawn from various educational and professional groups have incorrectly assigned civil liability despite sufficient probabilistic evidence (Kahneman & Tversky, 1973; Kagehiro, 1985, 1990; Wells, 1992; Niedermeier, Kerr & Messe, 1999). The reluctance or inability to rule against civil defendants in the face of sufficient "naked" statistical evidence has come to be called the Wells Effect, named for the novel research in

this area conducted by psychologist Gary Wells (Niedermeier, Kerr & and Messe, 1999; Arkes, Shoots-Reinhard, & Mayes, 2012; Lariviere, 2015). Wells' experiment remains widely cited, including in psychological dictionaries (Colman, 2014):

> . . . [E]vidence from tyre tracks providing an 80 per cent probability that a particular bus company was responsible for running over a dog persuaded fewer than 20 per cent of experienced judges and people without legal training to rule against the bus company, although they were instructed to decide on the balance of probabilities. In contrast, evidence that the particular bus company was responsible for running over the dog, based on an analysis of tyre tracks that was said to be 80 per cent reliable, persuaded almost 70 per cent to rule against the company. Thus, evidence that is 80 per cent reliable is sufficient to persuade most people, but naked statistical evidence of an 80 per cent probability is not, although the mathematical probability is the same in both cases.

The tendency to ignore "naked" statistical evidence, often referenced as "base rate" information, or at least to misuse it, was identified in influential studies almost twenty years before Wells' research (Kahneman & Tversky, 1973; Tripp, 2010).

Improving civil liability decision making: The implication, that probabilistic evidence may not yield correct outcomes in real life civil litigation cases, invites further research on how better civil trial decision making may be achieved. Therefore, the design of the present study considered how the correct application by mock jurors of the term "more likely than not" could be improved by the addition of a numerical explanation that expressly referenced a 51% likelihood. Augmenting the explanation in this way appeared not only reasonable but necessary, as studies on the numerical probability assigned to the terms

"likely" and "probable" identified a range of 69 – 70% probability, well beyond the "51% probability" threshold enunciated in *McDougall* (Mosteller & Youtz, 1990).

Unlike the pivotal Wells' study, this study presented the participant with the raw, simple facts on which a simple probability calculation could be made. In Wells' study, one treatment relied on the pure, relative number of buses operated by two separate companies, but in another treatment participants were asked to assign liability based on an expert's analysis of tire tracks that identified one bus company's unique tire tread, an analysis deemed accurate or "reliable" 80% of the time, a concept to which the civil standard of proof, "on a balance of probabilities", is not easily applied.

Method

Participants: In September, 2012, all enrolled law students at a prominent Canadian law school received an email from a law school professor, the Associate Dean of Research, providing the approved advertisement for the study, and an external web address for a Qualtrics study, at which an interested participant could access the preliminary phase of the study (See Appendices 1 and 1.1). This was repeated in the Spring academic term.

In September, 2013, all incoming *first year* law students received the same approved advertisement, and on-line study web address, in an email from the Associate Dean. This was repeated in the Spring academic term. In addition, the approved advertisement was distributed by email to first year law students by the student law society. The second period seeking participants was restricted to first year law students to reduce the chance of any student participating in the study twice.

Consent: Upon logging on to the Qualtrics survey website, a participant was presented with an online, electronic version of the Informed Consent Form (as per Appendix "A").

A participant could stop participating at any time, and was advised that a completed on-line questionnaire would not be associated with a participant's name, and would remain anonymous. If a participant wished to consent to participate in the study, the participant confirmed consent by electronically "checking off" their consent in the box specified on the Informed Consent Form. Only if the Informed Consent Form box was checked off in the affirmative did a participant gain access to the study questionnaire itself.

After responding to this Informed Consent form by consenting to participate in the study, a participant could receive an advertised cash incentive, by providing a unique identifier – the first 3 letters of the participant's surname, and the month and day of the participant's birthdate. An envelope containing $10.00 in cash, labeled with the participant's unique identifier, was then made available for pick up by the participant at an advertised location in the law school on a specified, advertised date. The participant was required to attend in person, and orally provide their unique identifier in order to receive the compensation envelope. All unclaimed compensation payments were forfeited, and instead directed to the law school as a contribution by the study administrator. It was possible for a participant to advance to the study without providing the unique identifier required to receive the cash incentive.

Design: The civil litigation scenario presented to the participants involved the two Defendants (here to be called Company A and Company B) supplying ball bearings for the Plaintiff's rocket motor (See Appendix B). The rocket motor explodes, and the Plaintiff's telemetry system identifies that the cause of the explosion is solely attributable to the failure of a single ball bearing, although the specific supplier of the failed bearing cannot be determined by any post-explosion investigation. The Case 1 scenario involves a motor

containing a total of 100 bearings, with 70 bearings from Company A, and 30 from

Company B. Case 2 involves 100 bearings, with 51 from Company A, and 49 from

Company B. Case 3 involves a total of 10,000 bearings, with 5,001 from Company A, and

4,999 from Company B. As such, each participant was required to consider a civil litigation

scenario containing _one_ of three levels of probability involving two Defendants causing the

Plaintiff's loss:

Case 1:   Probabilistic evidence that Company A caused the damage was 70%;
             Company B, 30%.

Case 2:   Probabilistic evidence that Company A caused the damage was 51%;
             Company B, 49%.

Case 3:   Probabilistic evidence that Company A caused the damage was 50.01%;
             Company B, 49.99%.

Figure 1: Representations of bearings for each litigation scenario

Case 1:
70A - 30B

Case 2:
51A - 49B

Case 3:
5001A
4999B
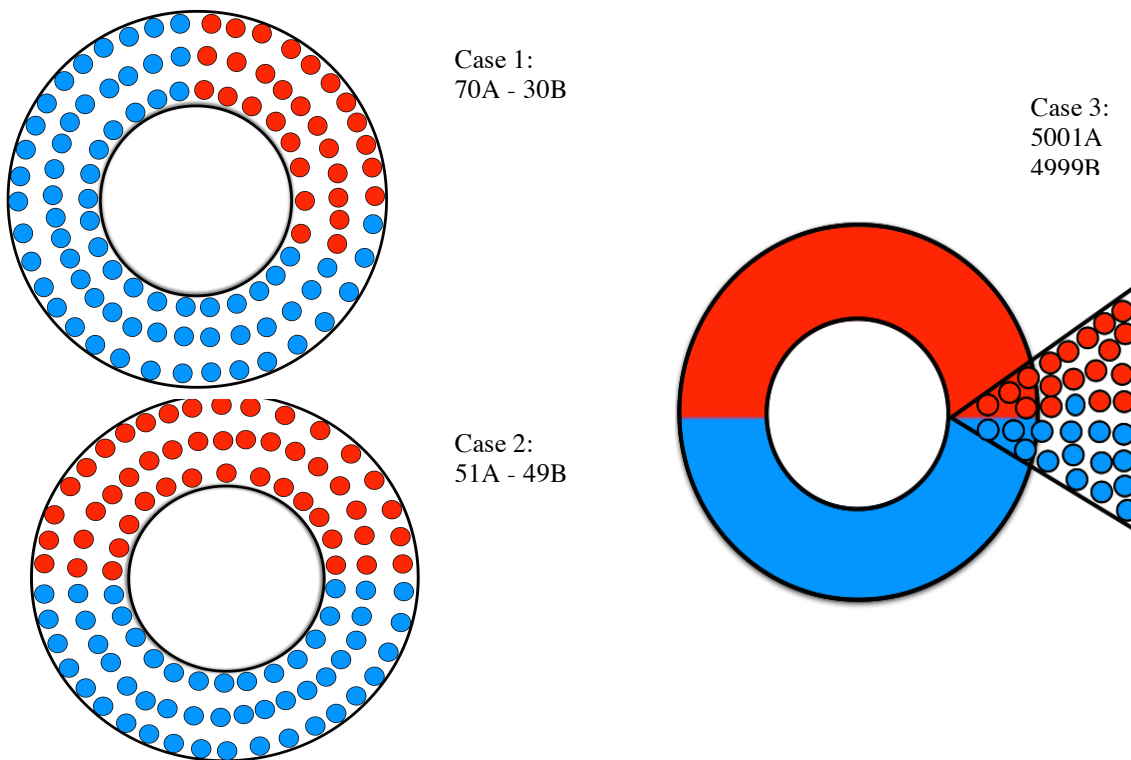
This study was based on a completely between-subjects design: Each participant served

as a juror required to assign civil liability in the Plaintiff's lawsuit against both of the

defendant companies. One-half of the participants in all cases randomly received only the

typical linguistic definition of the civil standard of proof, "more probable than not". The

other half of the participants received the same linguistic definition, and, in addition, were

told: "In other words, that there is a 51 percent probability that the fact in issue happened."

Before a particpant reached the stage requiring their assessment of liability, the study

sought to ensure the participant was truly conversant with the details of the case presented to

them, and with the nature of the civil standard of proof. Each participant faced questions

requiring the correct selection of the number of bearings manufactured by each defendant,

from a group of five possible selections. Where a participant answered incorrectly, the

participant was unable to advance, and was told that their first answer was incorrect, and the question and group of selections were presented for a second time. All but one participant immediately identified the number of bearings supplied by each defendant correctly; this participant was incorrect when forced to re-assess their answer for Company A, but made the correct choice of bearings for Company B. This participant was allowed to proceed to the phase in which they made a liability decision.

The same system, asking participants to recognize the correct definition of the standard of proof, and re-questioning if the initial selection was incorrect, was used to test participants' knowledge of the civil standard of proof. No participant was required to answer twice. Moreover, on their first attempt, all participants correctly selected "more probable than not" as an alternative description of the civil standard of proof described as "on a balance of probabilities".

Each participant was then required to determine liability by selecting from one of five decisions, *verbatim*:

- **Neither company is liable**.

- **There is insufficient information to make this decision.**

- **Company [A] is 50% responsible; Company [B] is 50% responsible**

- **Liability is based on the number of bearings supplied by each company:**
  (The line immediately below was "customized" to reflect the proportion of bearings in the litigation scenario, and therefore the participant saw one of the following:)

  Company [A] is 70% responsible; Company [B] is 30% responsible.
  Company [A] is 51% responsible; Company [B] is 49% responsible.
  Company [A] is 50.01% responsible; Company [B] is 49.99% responsible.

- **Only one company is liable:**
  Company [A] is 100% responsible; Company [B] is not responsible

The order or position of the five liability decisions was varied to counter or balance any answer effects.

After assigning liability for the rocket motor's destruction, each participant was asked for biographical information, their facility in English and in reading comprehension, and previous exposure to the civil standard of proof. Participants were also asked to what degree they felt they could put themsleves 'in the shoes" of a real juror, the level of care taken reviewing the study material, and what would have made the participant feel more "in the shoes" of a real juror. Finally, the participant was asked the degree to which the participant's behavior participating in the study reflected the way the participant would act on a real jury.

After irretrievably filing their completed survey responses, participants received an electronic Debriefing Form (See Appendix "C").

Hypotheses

1.   All participants should correctly assign liability.

2.   If all participants do not correctly assign liability, then those encountering the strongest probabilistic evidence against Company A, that is, that it was 70% likely that Company A supplied the faulty bearing, should correctly assign liability to Company A more often than these participants who were informed that it was 51% likely that Company A supplied the faulty. In the same way, those participants encountering probabilistic evidence that it was 51% likely that Company A supplied the faulty bearing should correctly assign liability to Company A more often than those encountering evidence at a 50.01% level of probability.

3.   If all participants do not correctly assign liability, then those receiving both the linguistic and numerical explanations of the standard of proof should correctly assign liability significantly more often than those only receiving the linguistic explanation.

4.   Greater legal education should significantly increase correct assignment of liability.

Results

Participants: The content of the advertisement used to attract participants, including the details of the $10 incentive payment, was subject to approval by the applicable research ethics board, and was not only posted on prominent law school bulletin boards as a poster, but also comprehensively distributed as an email attachment when distributed by the Associate Dean (Research) and later by the law students' society. When the study was first made available online in the 2012 academic year, it was open to law students in all three years of study, a total population of approximately 450 students. In the 2013 academic year, when the study was advertised among only first year students, a further 170 students could complete the study. In all, a total of 80 students accessed the Qualtrics online study site.

Of these 80 students, usable data was obtained from 67 participants, with 13 students excluded as they immediately abandoned the study, or otherwise failed to assign liability. The study obtained usable data from roughly 10% of the available law students (n = 67, approximately, N = 620).

Of the participants who provided usable study data, significantly more women, 42, participated in the study compared to men, 25 (n = 42, N = 67, 62.7%, x^2 = 4.313, P = 0.0378).

The ability of participants to understand the online study, offered exclusively in English, was strong. 98.5% identified English as the language in which their reading

comprehension was highest. Moreover, 76.1% (n = 51, N = 67) described their understanding of information written in English as "extremely high", and a further 22.4% (n=15, N = 67) as "excellent". The only participant to rate their understanding of information in English as "reasonable" nevertheless correctly assigned liability.

The number of participants who took part in the study from each of the three years of study was roughly equal (1st Year: 34.3%; 2nd Year: 35.8%; 3rd Year: 29.9%).

It was reasonable to assume that there would be a significant difference between 1st and 3rd year students in correct assignment of liability. In fact, 91.3% of first year students (n = 21, N = 23) completed the study within 30 days of their arrival on campus, likely before they had engaged in significant law school studies. The rate of correct assignment of liability was not a function of legal knowledge, as correct assignment did not significantly improve as students advanced (1st Year: 26.1% correct assignment of liability, n = 6, N = 23; 2nd Year: 20.8% correct assignment of liability, n = 5, N = 24; 3rd Year: 25.0% correct assignment of liability, n = 5, N = 20).

There was no time limit for a participant to complete the study. Therefore, correct assignment of liability was not affected by performance anxiety or other influences brought on by time limitations. On average, mock jurors correctly assigning liability required 22.7 minutes to complete the study. The average time taken by incorrect mock jurors was 23.8 minutes (with the elapsed times excluded for the 5 participants who took in excess of 10 hours to submit their responses). All but one correct mock juror completed the entire study in under 60 minutes.

Participants exhibited a uniformly high awareness of the linguistic explanation provided for the civil standard of proof. Moreover, participants clearly understood the

central numerical facts presented in their specific experimental scenario. Before assigning

liability, all but one participant was able to immediately confirm the number of ball bearings

supplied by Company A and Company B. Accordingly, each participant knew the facts

necessary to calculate a single probability question.

Participants were asked to rate how representative their actions were when completing

the study compared to how they would act on a real jury. While only 8 of 67 participants

selected the most representative rating ("I acted as I would in a real case. If everyone acted

like me the results would be very representative"), 50% of the correct answers came from

participants who admitted they would "act more carefully in a real case" and therefore their

responses were "somewhat representative".

Hypotheses 1 and 2 - assignment of liability: There was one correct decision offered

the mock juror in five of the six treatments – Company A is 100% liable. For the 6th

treatment (5001-4999, with both linguistic and numerical explanations of the standard of

proof), the only correct decision was neither company was liable. Beyond these correct

answers, there was no other "next most correct" decision on liability. Assigning liability

equally to Companies A and B, or assigning liability on the basis of the proportional split in

the bearings (i.e., 70% liability to Company A and 30% to Company B) was no more correct

or principled an assignment of liability.

There was sufficient information to permit each participant to assign liability, despite

15 of 67 participants indicating they required more information before liability could be

decided.

There was sufficient probabilistic evidence to find only Company A liable in five of

the six treatments. Only in the sixth study cell, where the numerical explanation of the

standard of proof - "51% probability" – was included, was it correct to find Company A's supply of 5001 bearings out of 10,000 total bearings insufficient to meet the standard of proof.

Nevertheless, only 16 of 67 participants correctly assigned liability (23.9%), disproving Hypothesis 1. The dependent variable was dichotomous: Participants assigned liability correctly, or did not. Accordingly, the data was suitable for Chi-square analysis, and also a proportional z-score test. While assessing correct and incorrect assignment of liability responses by participants, Chi-square analysis permits identification of significant assignment differences under varied study conditions. In this study, the content of the standard of proof instruction was varied (from linguistic only to both linguistic and numerical explanations), as was the strength of the probabilistic evidence presented in the litigation scenarios.

Table 1: *Participant performance given strength of evidence and type of instruction*

Proportion of bearings	Standard of proof instruction	Correct liability assignment
Cell 1: Company A supplied 70; Company B supplied 30	Linguistic only	1/11 = 9.1%
Cell 2: Company A supplied 70; Company B supplied 30	Linguistic and Numerical	3/13 = 23.1 %
Cell 3: Company A supplied 51; Company B supplied 49	Linguistic only	4/12 = 33.3%
Cell 4: Company A supplied 51; Company B supplied 49	Linguistic and Numerical	5/9 = 55.6%
Cell 5: Company A supplied 5001; Company B supplied 4999	Linguistic only	3/12 = 25 %
Cell 6: Company A supplied 5001; Company B supplied 4999	Linguistic and numerical	0/10 = 0%

Hypothesis 2 – strength of evidence affecting correct assignment: If participants resisted assigning liability to Company A when the evidence barely met the standard of proof, or established a 51% probability that Company A's bearing caused the explosion, the participants in the case involving 70 bearings supplied by Company A should have correctly

assigned liability to Company A more than the participants in the other cases in which Company A supplied 51% of the bearings, and 50.01% of the bearings.. After all, in the two scenarios in Case 1 (where Company A supplied 70% of the bearings) there was probabilistic evidence well in excess of the civil standard, in particular when the standard included the numerical "a 51% probability" explanation. Nevertheless, of the participants receiving both the linguistic and numerical explanations, 5 out of 9 in the 51/49 bearings scenario correctly assigned liability, exceeding the 3 of 13 participants in the 70/30 bearings scenario. Also, if participants found a 51% likelihood that Company A caused the damage, significantly fewer should have refused to assign liability when the probabilistic evidence was only 50.01% probability that Company A caused the damage. There were no differences among the cells, not even between the 70/30 and 5001/4999 scenarios.

Hypothesis 3 – numerical definition improving correct assignment: The linguistic explanation of the civil standard of proof ("more probable than not") was simple and could be readily understood. However, for 32 participants, a numerical explanation of the civil standard ("a 51% probability") was added to this linguistic explanation. Only 8 of these 32 participants assigned liability correctly, only marginally better than the 8 of 35 who did so guided by solely the linguistic explanation. It is true that for the 70/30 and 51/49 scenarios, a greater percentage of participants correctly assigned liability when provided with the additional numerical explanation, but this improvement in mock juror performance was not statistically significant. Hypothesis 3 was not supported by the data.

Table 2*: Mock juror performance given extent of legal studies*

Year of law school	Correct liability assignment
1st year	6/23 = 26.1%
2nd year	5/24 = 20.8%
3rd year	5/20 = 25%

Hypothesis 4 – greater legal education improving correct assignment: Usable data

was received from 23 students in first year, 24 in second year, and 20 in third year. 26.1%

of first year students correctly assigned liability, 20.8 % of second year students, and 25% of

third year students. While it was reasonable to assume that there would be a significant

difference between 1st and 3rd year students in correct assignment of liability, there was no

significant difference. Hypothesis 4 was not supported by the data**.**

Discussion

Introduction: The litigation of civil law suits consumes enormous resources,

including not only the time and money of litigants, but significant public funds needed to

operate myriad judicial systems. To justify the expenditure of these resources, the

application of the civil standard of proof in contested trials is meant to deliver outcomes that

are correct, just, defensible.

The role of probability in juror decision making, and the standard of proof required for

a fact or event to be considered legally proven, were directly considered by the United

States' Supreme Court (Addington v. Texas, 1979). At that time, the Court wondered if

analyzing what lay jurors understood about different standards of proof might not be

"largely an academic exercise" given the paucity of relevant empirical studies (pp. 424-425).

Now, extensive research exists concerning trier-of-fact decision-making, including

application of the legal "standard of proof" after various linguistic and numerical

explanations (Kagehiro & Stanton, 1985; Kagehiro, 1990).   From this research, and the

results of the present study, whether civil litigation trials deliver justice when probabilistic

evidence is adduced, must be questioned. Reliance on probability, when a probability-based

standard of proof controls the decision making process, seems perfectly appropriate, yet it

does not deliver the degree of certainty, of "truth", study participants seem to require.

The United States Supreme Court wrestled with the fundamental inadequacy of the

legal system as a means of determining truth (Radford, 1988, p. 843). In *Philadelphia*

Newspapers Inc. v. Hepps (1986, p. 776) the Court, considering libel suits, identified the

issue at the heart of the present study:

> There will always be instances when the fact finding process will be unable to
>
> resolve conclusively whether.., speech is true or false; it is in those cases that the
>
> burden of proof is dispositive. Under a rule forcing the plaintiff to bear the burden
>
> of showing falsity, there will be some cases in which plaintiffs cannot meet their
>
> burden despite the fact that the speech is in fact false.... Similarly, under an
>
> alternative rule placing the burden of showing truth on defendants, there would be
>
> some cases in which defendants could not bear their burden despite the fact that
>
> the speech is in fact true .... Under either rule, then, the outcome of the suit will
>
> sometimes be at variance with the outcome that we would desire if all speech
>
> were either demonstrably true or demonstrably false.

The dilemma expressed in *Hepps* "seems remarkably similar to the general statistical

concept of Type I and Type II errors" however, "this identification has been strongly resisted by jurists and scholars who claim that legal decision-making cannot (or should not) be analogized to the quantitative methods of social science" (Radford, 1988, p. 844).

The participants in the present study (excluding the 23.9% who correctly assigned liability to Company A in the five cases where sufficient evidence met the civil standard of proof as it was described), committed a Type II error, in that they failed to assign liability to Company A despite sufficient evidence to do so. As examined in greater detail below, they committed a Type II error despite legal training, a simple, clear litigation scenario that required a single computation of probability, and despite clear understanding and command of the salient facts and applicable standard of proof. Their making this Type II error is consistent with the findings in other mock jury studies where assignment of liability did not occur despite sufficient probabilistic evidence (Lariviere, 2015).

Given the superior design of the present study, that is, that the probability that the defendant caused the plaintiff's damages can be calculated with absolute precision, the cases in the study were simple, the evidence was sufficient, the standard of proof was clearly stated, and there were no confusing elements, the low rate of correct assignment of liability (23.9%) suggests that the participants sought the truth and not justice. When compared with earlier studies, better mock juror performance should have been obtained. Potential factors, which may have contributed to this finding of poor mock juror performance, demand examination, but their influence appears minimal or can be completely rejected.

Attracted participants: Whether certain study samples are sufficiently large to be considered representative of the populations from which they are drawn is a question continuously and energetically debated (Bartlett, Kotrlik & Higgins, 2001). Also, whether

information obtained strictly from university student volunteers permits legitimate extrapolation to broader human behaviour has been questioned for some time (Rosenthal, 1965). Without further consideration of these two issues here, it is nevertheless noted that voluntary participation by approximately 10% of the law students receiving the study advertisement was lower than hoped, and reduces the power of any statistical findings that support or refute this study's research hypotheses.   Repeated attempts were made to attract law student participants: the advertised call for participants was augmented by emails from the Associate Dean (Research). The potential participants knew that the study was relevant to the law. They knew that the online study could be completed in a reasonable period of time. A financial incentive of $10.00 was offered. To obtain a greater number of participants, the only realistic option is to advertise the study at multiple law schools. On the positive side of it, the participant group did reflect reasonably balanced representation from all three years of law school students.

Capable participants: The choice of participants drawn from a prominent Canadian law school was deliberate. Using law student volunteers was presumed to draw upon well educated, well motivated individuals interested in the law, more inclined to complete the online survey seriously, and quite familiar with completing surveys and academic examinations delivered in an online format.   The assumption that law students would prove capable participants is supported by earlier findings that undergraduates performed better than participants drawn from the judiciary (Guthrie, Rachlinski & Wistrich, 2007). Based on the almost perfect performance of the entire participant group when responding to preliminary questions on the names of the parties, their relative contributions of ball

bearings, and the verbal definition of the civil standard of proof, poor reading comprehension does not explain the poor rate of correct assignment of liability.

Unexciting scenario: The study was designed to minimize potentially confounding emotional elements which might cause a participant to add or subtract from the strength of the probabilistic evidence present in the litigation scenario before them. No criminal or immoral conduct was depicted that might cause participants to act impulsively, or to serve notions of retribution or punishment (Bright & Goodman-Delahunt, 2006).

Simple, sparse central facts: The central elements used in the litigation scenario were deliberately simple and few:

- A rocket motor contained ball bearings supplied by two separate corporate manufacturers, Company A and Company B. All bearings were the exact same design.
- The failure of a single ball bearing in the motor caused it to explode, notwithstanding all ball bearings were required to meet exacting durability standards.
- That one defective ball bearing caused all of the damage was not in dispute, but it was not possible forensically to determine which defendant company had supplied the faulty bearing.
- The exact number of bearings in the motor made by each defendant manufacturer was not in dispute.
- The proportion of 100 or 10,000 total bearings made by each defendant company was manipulated:
    Case 1: Company A supplied 70 bearings, Company B supplied 30
    Case 2: Company A supplied 51 bearings, Company B supplied 49
    Case3: Company A supplied 5001 bearings, Company B supplied 4999

Having established the number of bearings supplied by Company A and Company B, and having specified the total number of bearings in the motor, the likelihood of each company having supplied the faulty bearing was easy for participants to calculate;

> Case 1: Probabilistic evidence that Company A caused the damage was 70%, Company B, 30%.

> Case 2: Probabilistic evidence that Company A caused the damage was 51%, Company B, 49%.

> Case 3: Probabilistic evidence that Company A caused the damage was 50.01%, Company B, 49.99%.

The use of a rocket motor explosion caused by a single faulty ball bearing established the strength of the probabilistic evidence clearly and without any collateral considerations affecting the exact probability created. By making one mental calculation, each participant knew the strength of the probabilistic evidence created by the proportion of ball bearings identified in their litigation scenario.

The simplicity of the experimental design, and the individual mock juror's front line obligation to calculate the probability arising from the proportion of ball bearings, appear unique when compared to respected research performed outside Canada. (Wells, 1992; Kagehiro, 1985, 1990; for prior Canadian studies using variants of the rocket motor litigation scenario, see Lariviere, 2015). Given the simplicity and clarity of the facts provided to participants, the likelihood of complexity or confusion affecting the accuracy of their assignment of liability was judged to be small. The assumption was that law students, who had completed undergraduate studies or, as mature students, experienced employment-related tasks, were generally capable of making those calculations.

By precluding any collateral considerations about the quality or unsuitability of the bearings generally made by Company A and Company B, participants were presented with a clear path to the ultimate determination of liability. This contrasts with the facts present in the preliminary motion ruling rendered in *Cuillerier v. André's Furnace* (2011). Two companies manufactured exactly the same iron elbow for a fuel pipe system. One company supplied about 90% of the elbows used by the defendant, a second company approximately 10%. The plaintiff suffered damage as a result of the failure of a fuel pipe system installed by the defendant, who as usual used an iron elbow as part of the sequence of parts. It appeared a failure of the iron elbow installed by the defendant caused the system to fail, harming the plaintiff's property. Therefore, the defendant joined the two companies that manufactured iron elbows as "Third Parties", asserting one or both of them were liable for a defective iron elbow, and therefore liable for the plaintiff's loss. The two elbow companies sought to be released from any further involvement in the lawsuit between the plaintiff and defendant, arguing the defendant admitted it could not identify the source of the iron elbow involved in the mishap.

The role that probabilistic evidence could play in determining liability was directly considered and rejected in *Cuillerier*, at paras. 26-27:

> Though proof need not be scientifically precise to be accepted by the court, it will not do to simply argue that there is a 90% probability the fitting was purchased from [the 90% supplier]. [The Plaintiff] has admitted that it cannot prove the source of the fitting in question. The question is whether the court could impose liability notwithstanding that admission. This would require the court to depart from the usual requirements of proof. […]

The primary reason the motion was not granted was the suggestion that, at a later stage of the litigation, the iron parts produced by both third party companies could be shown to be fittings the they knew or ought to have known were unsuitable or illegal. This would permit a departure from the usual requirements of proof for public policy reasons. No such possibility of unsuitability or illegality was suggested in the facts presented to participants serving as mock jurors. The notion of assigning joint, equal liability to Company A and Company B, for public policy reasons, would appear misplaced and incorrect (Summers v. Tice, 1948; Cook v. Lewis, 1951).

Countering ratio-bias phenomenon: Multiple studies report that people find it difficult to correctly calculate the probability of events. For example, participants have shown a preference to draw a bean from a bowl containing 10 winning beans and 90 losing beans than from a bowl containing 1 winning bean and 9 losing beans (Kirkpatrick & Epstein, 1992; Denes-Raj, Epstein & Cole, 1995, Windschitl & Wells, 1998). The present study asked subjects to make a similar calculation, that is, the likelihood that it was 50.01% (Case 1), 51% (Case 2) or 70% (Case 3) 70% likely that Company A supplied the faulty bearing. As the total number of bearings was at a minimum 100, it was assumed that the problem of ratio-bias identified in prior research (Windschitl & Wells, 1998) did not prove an obstacle here.

Use of mock jurors: In Canada, there is no ability to question civil or criminal jurors concerning their deliberations, and judges consistently state that their final decisions, whether delivered orally or in writing, must speak for themselves (CBC News, 2000). Therefore, studies involving *mock* jurors permit examination of legal decision making not otherwise possible. Not surprisingly, the insufficient realism achieved by online, mock

litigation studies has been cited as a strong reason to discount this type of research (MacCoun, 2005). Additionally, as this study sought responses from individual participants, and not participants in a group, it avoided for good or bad the potential influence of one juror over another (Seidman-Diamond & Casper, 1992; Bornstein & Greene, 2011). While jurors working together, talking to each other, and probably influencing each other, is what happens in the field, having people interact in this way does not necessarily improve the quality of the decision (English & Sales, 1997).

Participants in this study were asked if they responded as they would in a real case. Only 8 of 67 participants indicated they had acted as they would in a real legal case; 2 of these 8 correctly assigned liability (25%). Of the 28 participants who indicated their efforts were only "somewhat representative" of how they would act on a real jury, 8 nevertheless correctly assigned liability (28.6%).

The degree of care taken by participants did not significantly improve correct decision-making. Of the 16 correct assignments of liability, 1 came from a participant claiming they had read the study "with extreme care", 3 from participants reading "very carefully", 6 reading "as carefully as needed" and 6 reading "somewhat carefully".

Time taken to complete the study: It was possible to assess the time taken by each participant to complete their online study, which offers the ability to assess whether realistic, adequate deliberation took place. As detailed in the Results section, on average successful participants spent 22.7 minutes to complete the study; this was sufficient time for genuine effort to be applied. There was no significant difference between the average time taken for correct versus incorrect assignment of liability: those who answered correctly took less time

on average (22.7 minutes), but not significantly less time than those who did not (23.8 minutes).

Independent variables

    Imposing a decision-making perspective: For each participant, a demand was ultimately made that they assign liability by choosing one of five (5) possible decisions:

- Neither company is liable.

- There is insufficient information to make this decision.

- Company [A] is 50% responsible; COMPANY [B] is 50% responsible

- Liability is based on the number of bearings supplied by each company:
  Company [A] is 70% responsible; Company [B] is 30% responsible.
  (Company [A] is 51% responsible; Company [B] is 49% responsible.)
  (Company [A] is 50.01% responsible; Company [B] is 49.99% responsible.)

- Only one company is liable:
  Company [A] is 100% responsible; Company [B] is not responsible

    This design feature had the effect of asking each participant to make a decision that potentially imposed liability against a defendant that had not supplied the faulty bearing, even if the probabilistic evidence made it *likely* that they had supplied it. Most participants resisted assigning liability even where the evidence against Company A was sufficient to meet the standard of proof.

    The rate of correct assignment of liability by mock jurors may have been improved had the study instead emphasized that, absent the imposition of liability based on sufficient probabilistic evidence, the plaintiff would be denied damages despite correct assignment to Company A *being likely,* in fact at least 51% probable. Overall, the study design (and, one could argue, the perspective inherent in any civil litigation trial) demanded that the participant determine if it was just to impose liability upon a

defendant based on probability-based evidence, rather than whether it was just to deny

the plaintiff compensation based on that same evidence. The civil standard of proof

may be characterized as "indifferent" to the outcome as between a plaintiff and a

defendant, but the study imposed a duty to actively assign liability, rather than protect

entitlement to damages justified by sufficient probabilistic evidence.

      Explanations for small number of correct liability assignments: A participant was

tasked with selecting, from five options, the assignment of liability the participant

considered appropriate. For ease of reference, the possible liability decisions are again

reproduced:

    - Neither company is liable.

    - There is insufficient information to make this decision.

    - Company [A] is 50% responsible; COMPANY [B] is 50% responsible

    - Liability is based on the number of bearings supplied by each company:
     Company [A] is 70% responsible; Company [B] is 30% responsible.
     (Company [A] is 51% responsible; Company [B] is 49% responsible.)
     (Company [A] is 50.01% responsible; Company [B] is 49.99% responsible.)

    - Only one company is liable:
     Company [A] is 100% responsible; Company [B] is not responsible

Some of these options invite the participant to assign liability in a manner that is not

offered to a citizen sitting on an actual civil trial jury. The first stage decision for a jury

would be whether Company A, Company B, or both, should be found liable for the

plaintiff's loss. This study allowed participants to "escape" this stage by deciding that there

was insufficient information. The second stage would involve the jury apportioning the

established damages to any defendant or defendants found liable.

In real trials, except where some sort of "hung jury" occurred, and the jury could not come to any decision on liability, the jury would be expected to render its decision on liability. While a jury might seek clarification from the trial judge on any element of the evidence, or the applicable law, a jury would not be permitted to refuse to render a liability decision by stating there was insufficient information to make this decision.

If insufficient evidence existed to find neither Company A nor Company B liable, then it would not be open to a real jury to request additional evidence, the jury would be expected to find no liability attributable to any defendant. The converse is also true: where in a juror's mind, liability was established provided some piece of missing evidence did not detract from the proof marshaled by the plaintiff, the juror would be expected to assign liability, not hold out until the missing evidence was adduced. If the student participants were not offered this "neutral" decision and were forced to make a liability decision, more may have assigned liability correctly.

This was a popular choice; 22.4% of participants ($n = 15$, $N = 67$) indicated that they needed more information. It is possible that the very inclusion of this option suggested it was a legitimate mock juror decision. A participant refusing, without further information, to make a liability assignment respecting the two named defendants (including no assignment of any liability) may have identified evidential omissions that, if addressed, would make assignment of liability feel more comfortable, reliable or correct.

As written above, in real trials jurors must decide first whether or not liability can be attributed to any defendant. In this study, participants may have sought to bypass this stage and go directly to apportioning the amount of total damages that should be attributed to Company A relative to Company B. Given the impossibility of knowing which company in

fact supplied the faulty bearing, and the fact that the statistical evidence against Company A was "weak" (excepting the 70-30 scenario), some of those who did not assign all liability to Company A might have thought that spreading the harm of paying damages across both companies was the fairer choice.

Overall, participants may have been presented with too many options, some of which are not offered in real trials. Fewer options, and a forced choice between making the defendant against whom the evidence meets the standard of proof pay, and not making the defendant against whom the evidence fails to meet the standard, may have produced more correct assignments. A real juror would face only four options: no company is liable, Company A is liable, Company B is liable, and companies A and B are liable.

Conflating liability assignment with damages apportionment: The most popular liability decision was "Liability is based on the number of bearings supplied by each company", selected by 34.3% of participants. Notwithstanding many participants "leaning" toward what may intuitively seem a fairer assignment of liability, the standard of proof is a balance of probabilities. In Case 1 (70-30), Company A is fully liable. So too in Case 2. Case 3 is more interesting: participants who were given only the linguistic definition of the standard of proof and told that Company A supplied 5001 of 10,000 bearings should have assigned all liability to Company A, and none to Company B. The evidence against Company A met the standard but against Company B it did not. It is different where participants received not only the linguistic definition but were also told that "more probable than not" equates to at least 51% probability. For these participants, the correct decision was not to assign liability to either defendant.

Strength of evidence not affecting liability assignment: It was a test hypothesis that if not all participants assigned liability correctly, then more participants should have assigned

liability better where the evidence of liability was strongest. The strongest probabilistic evidence (for example, 70% probability of Company A's bearing having failed) should have attracted the greatest correct assignment of liability, this was not the case. That 50.01% probabilistic evidence, evidence that barely exceeded the linguistic standard of "more probable than not", did not result in significantly fewer assignments of liability than 70% evidence was a surprise.

Treating litigation scenarios as involving sampling: If in the 51/49 case, a participant incorrectly viewed the proportion of Company A and Company B bearings as being determined from samples taken from a vast number of bearings, for example, 100 bearings drawn randomly from 1,000,000 bearings, 510,000 of which were supplied by Company A, and 410,000 of which were supplied by Company B, then estimating the likelihood of Company A and Company B would be a challenging statistical problem. In such a case, the likelihood of Company A supplying more than 50 of the 100 bearings in the motor would be less than half, and it would make sense for a mock juror not to assign liability to Company A, nor Company B.

In the present study, in all three cases, the parties have agreed on the exact number of bearings supplied by Company A, and Company B: Case 1: Of 100 bearings, Company A supplied 70 bearings, Company B, 30; Case 2: Of 100 bearings, Company A supplied 51 bearings, Company B, 49; Case 3: Of 10,000 bearings, Company A supplied 5001 bearings, Company B, 4999.

In each case, the bearings in the motor comprise the population of bearings; the bearings are not a sampling of a larger population of bearings. As such, the likelihood of each company supplying the faulty bearing in each case is known with precision: Case 1: The likelihood is 70% that Company A supplied the faulty bearing, Company B, 30%; Case

2: The likelihood is 51% that Company A supplied the faulty bearing, Company B, 49%;

Case 3: The likelihood is 50.01% that Company A supplied the faulty bearing, Company B,

49.99%

      Poor performance explanations: In litigation between a corporate rocket company

and a corporate manufacturer of ball bearings, where the interests in dispute are more

monetary than personal, the correct application of the civil standard of proof to sufficiently

probative probabilistic evidence does not chafe against the concept of justice; careful,

deliberate and logical considerations created the current standard (F.H. v. McDougall, 2008).

Nevertheless, in the impersonal, clinical, mechanical scenario presented to participants, an

inescapable, persistent need for something more than probative statistical evidence seems to

have arisen.

      Having to calculate probability may have been intimidating. It is accepted that study

participants will assign liability when provided with a third-party's assessment of the

evidence where they will not if required to perform their own assessment (Wells, 1992). To

some extent, the level of unconscious comfort that may be enjoyed by accepting another's

opinions in matters mathematical, rather than forming one's own opinions after direct

examination of the evidence, supports the legal professions' penchant for offering the

opinions of expert witnesses to juries. It may also put in question the judiciary's frequent

attempts to limit the role of experts telling judges and juries what the evidence "really

means". If it seems unnecessary to have experts, but it is actually necessary, then having an

expert explain statistical concepts is imperative.

      Efforts to improve performance: Other studies have reported similar results, that is,

that too few participants assign liability correctly (Kagehiro & Stanton, 1985; Kagehiro,

1990). These studies focussed on the means by which better standard of proof explanations could be provided to mock jurors, for example, using definitions of the standard of proof in words, words plus a numerical component, or even using diagrams or examples illustrating the necessary evidential threshold (Glockner & Engel, 2010).

Other studies (Greene & Bornstein, 2000; Forster, Horowitz & Bourgeois, 1993; Goldberg, 1981) have focussed on the timing of the delivery of the standard of proof information, for example, presenting the information before learning the facts involved in the matter, or after, or both before and after. Seeking to build on these efforts, the present study involved pre-decision testing of each participant on their knowledge of the exact proportion of bearings supplied by each supplier, and on the qualitative nature of the civil standard of proof as it is worded in widely used Canadian civil jury instructions.

Strength of evidence not determinative: In addition, the strength of the probabilistic evidence has been manipulated in other studies, testing whether stronger evidence will inevitably result in correct assignment of liability. Even a very strong manipulation of the probative value of evidence had no significant effect on ultimate juror findings (Glockner & Engel, 2010; Lariviere, 2015). Given that an intermediate "clear and convincing" standard of proof no longer exists in Canada, except by legislated exception, the "indifferent" or "roughly equal" civil standard must be applied. It seems that prospective jurors must be persuaded that the current standard is fair, and while it does not necessarily reflect the "truth", it is just and worthy of application. Additionally, it seems that lay jurors need an expert's help to calculate the probability that a defendant caused the plaintiff's damage. It may be that judicial instructions can be improved, to include guidance on the proper calculation of probability.

While some initiatives to improve the quality of the mock juror's understanding of the civil standard of proof have resulted in better assignment of liability, it remains the case that no researcher has achieved anything approaching *uniformly* correct assignment of liability whatever strategies and approaches have been used to improve the juror's understanding of the civil standard of proof.

If mock jurors understand the strength of the probabilistic evidence, and understand the application of the civil standard of proof to probabilistic evidence, one is left to ask: Why don't they do better? It is here that one must consider the merit of those decision-making theories in which a human subject will, under certain circumstances, refuse to apply dispassionate probability-based processes. A mock juror may know what the strength of evidence and applicable law require, but they are unwilling to apply them, or incapable of applying them despite adequate knowledge.

Rejection of dispassionate decision-making: The role of mathematical analysis in the making of legal decisions was examined in a prominent law journal article over 40 years ago (Tribe, 1971). Whether it was appropriate for the law to operate on the basis of mathematical precision was questioned, but so too was the law's reliance on imprecise, ritualized approaches to the assessment of evidence (Tribe, 1971). The philosophy attributed to Tribe (1971) asserts that the law should never operate in a mechanical, dispassionate manner and should allow for deciders to make use of their sense of justice even if that is at odds with the law as written. If one can not rely on the explanations of ignorance of the standard, or ignorance of its application, then, it seems, one must entertain the possibility of participants refusing to assign liability because they disagree with the standard, and use a different one. For others, rejection of dispassionate modes of

adjudication simply invites excessively subjective, "intuitive" decision-making (Kahneman & Tversky, 1973; Tillers, 2011). It is possible that it was study participants' intuitive sense of fairness that served to override their application of appropriate liability.

Conclusions

Given that the number of civil suits in Canada, their scale, and their importance as part of our system of justice, triers-of-fact, whether judges or jurors, must assign liability correctly for public confidence and litigation predictability to be maintained. Therefore, it is concerning that the study results indicate that despite the addition of a numerical explanation for the civil standard of proof, significantly better assignment of civil liability did not occur.

Even if other research data suggest that more extensive, and different, jury instructions are required to improve decision making performance, a clear linguistic explanation supported by a clear numerical component is not enough to eliminate erroneous civil trial outcomes (Lieberman & Sales, 2000). Nevertheless, it is surprising that the uniform instructions on which Canadian judges base their jury instructions lack any numerical explanation, or any other means of explanation beyond a simple linguistic description of the "more probable than not" standard of proof.   It is clear from the decision in *McDougall* that that the civil standard of proof may be usefully described as " a 51% probability" without in any way distorting or confusing the linguistic description that has come to be adopted through the common law.

While the evidential onus must remain on any plaintiff seeking to establish a defendant's liability, the results of this study point to the clear possibility of Type II error, and this error invites re-examination of how the civil litigation system's "neutrality" may, in reality, demand evidence that exceeds the civil standard of proof.

While it runs contrary to the Supreme Court of Canada's philosophy that there should be only the criminal and civil standards of proof, the willingness of a mock juror to refuse to assign liability suggests there may continue to be (even if only unconsciously) an expectation that the strength of evidence must be even greater to ascribe immoral fault, or egregious professional irresponsibility or misconduct.

The easy conclusion is that the participants in this study did not understand the standard of proof, or could not apply it, but this not a reasonable conclusion. These law school participants did understand the civil standard of proof both in its linguistic and numerical formats. It is easy to speculate that the participants did not assign liability correctly because the cases supplied insufficient information to assign liability, but in all cases, sufficient information was provided to decide the matter, and these law school students did, or should, know it.

It is a reasonable conclusion that these law students substituted their own standard of proof for the current standard of proof. This suggests the present civil litigation system, when dealing with probabilistic evidence, may not operate in a manner that delivers justice. It leaves open the question of how to convince jurors to accept the standard as fair and just, and to apply it dispassionately.

Future Research

Could a future study achieve much better assignment of liability in a case that turned solely on the consideration of probabilistic evidence? The study would require very significant resources, involving:

- Sampling from students attending numerous law schools,

- The performance before an individual mock juror of a simulated trial including:

- Extensive submissions by counsel using visual aids such as diagrams to explain probability and the probabilistic evidence adduced (such as those shown in Figures 1, 2 and 3 above);

- Detailed judicial instructions concerning the juror's' duty to apply the civil standard of proof to the evidence; and,

- The opportunity for the juror to receive additional explanations as required.

After rendering a decision on liability, the study could then include interaction between the participant and researcher, including completion of a standardized interview questionnaire to determine the basis on which liability was initially assigned.

Where incorrect assignment of liability initially occurred, this interaction would permit the participant to make a further decision after the benefit of greater explanation of probability and the correct application of the civil standard of proof. The interaction would also permit detailed exploration of the participant's attitudes on decision-making fairness, correctness, indifference to wrong outcomes, and other considerations affecting the participant's assignment of liability.

This study design would face challenges, including protection of participant anonymity if the interaction with the researcher was not strictly online. Also, significant funding would be required in order to offer a financial incentive that was commensurate with the hours that each participant might be required to spend in a mock civil trial. Securing a greater number of participants, by seeking students from a number of law schools, would also increase the overall cost of participant incentives. As any study participant would be free to end their participation at any time, the extended period of time

necessary to conduct a mock jury trial, even if online with video vignettes, could give rise to

a significant "drop-out" rate.

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Table 3: Liability assignment by instruction type by evidence strength

Assignment chosen (* denotes correct)	Standard of proof instruction	Bearing proportions (Company A – Company B)			Total participants making assignment
		70-30	51-49	5001-4999	
Insufficient information to decide liability					15
	Linguistic	2	2	2	
	Linguistic/Numerical	5	4	0*	
Liability based on the proportion of bearings					23
	Linguistic	6	2	3	
	Linguist/Numerical	3	0	9	
Equal liability					9
	Linguistic	1	2	3	
	Linguistic/Numerical	2	0	1	
Neither defendant is liable					4
	Linguistic	1	2	1	
	Linguistic/Numerical	0	0	0	
(Only) Company A is liable					16
	Linguistic	1*	4*	3*	
	Linguistic/Numerical	3*	5 *	0	

APPENDIX 1

REB #12-289

TEXT OF EMAIL
TO BE SENT IN SEPT 2013 TO ALL 1st YEAR XXXXX LAW STUDENTS
BY THE ASSOCIATE DEAN OF LAW- RESEARCH

Dear 1st year law student:

Attached please find an advertisement seeking exclusively 1st year law student
participants for an anonymous, online study, for which $10 compensation is
available.

You may access the study
at: https://smupsychology.qualtrics.com/SE/?SID=SV_73SbQEcn0r2uFp3

The study is being conducted by John McKinlay, a 1989 graduate of the XXXXX
School of Law. It broadly investigates how jurors deal with the issue of causation
in civil cases.

Thank you for your attention to this email.

John McKinlay
johnamckinlay@me.com

APPENDIX 1.1

ADVERTISEMENT/PROMO SCRIPT

Standard of Proof Study JM
REB File # 12-289

Researcher: John McKinlay – johnamckinlay@mac.com - 902.219.1459
Faculty Supervisor: Dr. Robert Konopasky – rkonopasky@me.com - 902.420.5855
Faculty Supervisor: Dr. Lucie Kocum – lucie.kocum@smu.ca- 902.491.6356

Psychology Department -- Saint Mary's University, Halifax, NS

Standard of Proof JM Study

Brief Description: This study involves collecting online responses from participants like those a juror makes when deciding causation in a civil law suit in Canada.

The Researcher: John McKinlay, who is an M.Sc. (Applied Science) student at Saint Mary's University, is administering this study. In addition to John's present interest in Psychology, he is a practicing lawyer who is interested in how decisions in civil suits are made.

Participants: The participants for this study will be students attending the XXXXX School of Law, XXXXX University, who access the study after being provided with the applicable Qualtrics online web address: https://smupsychology.qualtrics.com/SE/?SID=SV_73SbQEcn0r2uFp3

Background of this Study: Inquiries into the "standard of proof" have been made in many American studies, but this study relates to Canadian circumstances.

No Risks: There are no foreseeable risks associated with this study. The content of the study is similar to what can be found in newspapers, textbooks, and electronic news and entertainment communications. It is possible (though highly unlikely) that some level of stress or anxiety of a very small magnitude may be experienced when completing the study.

Anonymity: Individual participants in this study cannot, and will not, be identified directly or indirectly in any article, paper, or other form of report of the study. Only group data will be presented.

What You Will Do: Participants are asked to make the same sort of decisions made by a jury member when deciding a civil law suit.

Time and Compensation: **The study requires completion of a web-based questionnaire, and is not expected to require more than 30 minutes to complete. To receive compensation, and for no other purpose, each participant is required to provide a unique identifier, permitting the research administrator to prepare an envelope containing $10.00 in cash. The envelope can be picked up at an advertised location in the law school as of February 4, 2014. Each participant is required to attend in person, and provide his/her unique identifier orally in order to receive the compensation envelope. All compensation payments not collected by 5:00 p.m. on April 7, 2014, shall be deemed forfeited, and instead paid as a contribution to the XXXXX School of Law.**

1

APPENDIX A

INFORMED CONSENT FORM

Standard of Proof Study - JM
REB File # 12-289

Researcher: John McKinlay – johnamckinlay@mac.com - 902.219.1459
Faculty Supervisor: Dr. Robert Konopasky – rkonopasky@me.com - 902.489.9611
Faculty Supervisor: Dr. Lucie Kocum – lucie.kocum@smu.ca - 902.491.6356

Psychology Department
Saint Mary's University, Halifax, NS

Standard of Proof Study - JM
REB File # 12-098

Researcher: John McKinlay – johnamckinlay@mac.com -902.219.1459
Faculty Supervisor: Dr. Robert Konopasky – rkonopasky@me.com - 902.489.9611
Faculty Supervisor: Dr. Lucie Kocum – lucie.kocum@smu.ca- 902.491.6356

Psychology Department, Saint Mary's University, Halifax, NS

INTRODUCTION

I am John McKinlay and I am administering this research study. I am pursuing an MSc. in Applied Science and this research will form part of my Master's Thesis. My **thesis** is being supervised by Dr. Robert Konopasky and Dr. Lucie Kocum, professors teaching in Saint Mary's University's Psychology Department, and by Dr. John McMullan of the Department of Sociology and Criminology, Saint Mary's University.

You are invited to report the responses you would make as a juror in a civil law suit.

PURPOSE OF THIS RESEARCH

We are interested in how you would apply the Canadian standard of proof in a assign liability in a civil law suit.

WHO IS BEING INVITED TO PARTICIPATE?

The participants for this study will be **1ˢᵗ Year** students at the XXXX School of , XXXXX University, who access the online study at the Qualtrics Survey website.

WHAT DOES PARTICIPATING MEAN? (OR WHAT WILL YOU HAVE TO DO?)

The entire study process (starting with your reading this Informed Consent Form for this research experience) is expected to require not more than **thirty (30)** minutes of your time.

1

You will be asked to read this Informed Consent Form. If you consent, you will select the appropriate consent box below.

You will then be provided with brief written instructions. The instructions will ask all study participants for their serious consideration of the study materials.

You will then be asked to proceed to the web questionnaire, where, to begin, you will be required to read a factual scenario, and answer a very brief series of comprehension questions that are based on it.

You will also be provided with an explanation of the civil standard of proof that is used in Canadian law suits, and required to answer a very brief series of questions that are based on this explanation.

You will then be asked to respond to a question requiring the assignment of liability as a juror.

After responding to all questions related to the scenario, you will be asked to provide some basic biographical information concerning yourself (age, gender, linguistic and reading comprehension information, law school year, number of years of school, and whether you have had legal training or work in any legal field, etc). You will also be asked to report your experience in completing the questionnaire. This information will assist with the broader interpretation of participant responses, but again will not be linked to you personally.

Your responses will be anonymous, and at no time will you provide any information that could be used to link your completed questionnaire to you.

WHAT ARE THE POTENTIAL BENEFITS OF THIS RESEARCH?

A direct benefit is the opportunity to participate in a research study as a participant, which may aid in your understanding of research methods, ethical considerations relating to psychological studies, and the mental and physical experience of being **a participant in** a research study.

An indirect benefit of participating in this study is greater awareness of a central legal concept in the adjudication of civil law suits in Canada.

Benefits to science may be obtained by this study in terms of adding to the psychological literature that examines civil findings of causation.

Benefits to society may be obtained from this study in terms of furthering our understanding of how individuals deal with adjudicative tasks when serving as judges or jurors.

COMPENSATION FOR YOUR PARTICIPATION

Compensation for participation in the study will take the form of a $10.00 payment.

After responding to this Informed Consent form by consenting to participate in the study, a participant must provide a unique identifier – the first 3 letters of the participant's surname, and the month and day of the participant's birthdate.

By providing this information, the research administrator can prepare an envelope containing $10.00 in cash, labeled with the participant's unique identifier, which will be available for pick up by the participant at an advertised location in the law school as of February 3, 2014.   The participant must attend in person, and provide his or her unique identifier in order to receive the compensation envelope.

All compensation payments not collected by 5:00 p.m. on April 7, 2014, shall be deemed forfeited, and instead paid as a contribution to the XXXXX School of Law.

Notices will be posted in the law school starting on February 3, 2014, identifying numerous locations/times in the law school where unique identifier envelopes may be collected, in person, by study participants.

WHAT ARE THE POTENTIAL RISKS FOR YOU AS A PARTICIPANT?

There are no potential, reasonably foreseeable, risks that may emerge from this study. There is no written content to which a participant may be exposed that is not present on a daily basis in newspapers, psychological textbook case studies, and many forms of electronic news and entertainment communications.

It is possible (though highly unlikely) that some level of stress or anxiety of a very small magnitude may be experienced by a participant when asked to complete the study, which asks for answers to minimally demanding comprehension questions concerning scenario details **and the applicable standard of proof**. The study is designed so that for each of these comprehension oriented questions, the participant is presented with a range of possible answers, including the correct answer.

A participant is free to withdraw at any time, including as soon as any such stress or anxiety arises.

HOW CAN YOU WITHDRAW FROM THIS STUDY?

You are entitled to withdraw from this research study at any time without penalty.

You may terminate your participation at any time, by terminating your "log on" to the web.

However, please note that if you withdraw at any time after entering your consent electronically below, any responses you have made will NOT be withdrawn, but will continue to be considered as part of the data gathered for the study.

WHAT WILL BE DONE WITH YOUR INFORMATION? (OR WHO WILL HAVE ACCESS TO IT?)

As explained above, your responses are confidential, and your participation is anonymous. Only my faculty supervisors and I will have access to the group's responses. Your completed questionnaire data will be downloaded electronically by me, the study administrator, and retained in a data storage device which will be kept in a locked cabinet in a locked office in McNally Main, Saint Mary's University, under the control of the study administrator and faculty supervisors.

The data will be retained for a period of not more than 7 years, when it will be destroyed.

Anticipated uses of the aggregate data gathered by this study may include presentation at psychology conferences or publication.

Individual participants in this study cannot, and will not be identified directly or indirectly in any article, paper or other form of report that I may produce concerning this study. Only group data will be presented.

HOW CAN A PARTICIPANT LEARN ABOUT THE OUTCOME OF THE STUDY?

A summary of the outcome of the study will be available after April 1, 2013. You may contact me and my faculty supervisors at the following coordinates:

John McKinlay - johnamckinlay@mac.com   - 902.219.1459

Dr. Robert Konopasky – rkonopasky@me.com   - 902.489.9611

Dr. Lucie Kocum – lucie.kocum@smu.ca   - 902.491.6356

(These contacts are for the purposes of scholarly discussions about the research or reporting adverse events related to the research.)

REPORTING AN ADVERSE EVENT THAT A PARTICIPANT EXPERIENCES

If you choose to participate in this study, you are encouraged to contact the researcher, John McKinlay, if you experience an adverse event as a result of participating in the study.

Any adverse event made known to the researcher, John McKinlay, must be reported to the Research Ethics Board.

If you feel discomfort as a result of your participation in this study you may want to seek assistance from XXXXX University Health Services, XXXXX. For an appointment, the Booking Line is XXX-XXX-XXXX. To ask the NURSE a question, you may email: the nurse@XXXXX.ca

Certification:
This research has been reviewed and approved by the Saint Mary's University Research Ethics Board **and XXXXX University's Social Sciences and Humanities Research Ethics Board.** If you have any questions or concerns about ethical matters, you may contact the Chair of the Saint Mary's University Research Ethics Board at ethics@smu.ca or 420-5728.

Checking box below to confirm your Agreement:
I confirm that I am now 18 years of age. I understand what this study is about and appreciate the risks and benefits. I have had adequate time to think about this and have had the opportunity to ask questions. I understand that my participation is voluntary and that I can end my participation at any time.

YES, I confirm that I agree and consent

NO, I do NOT consent

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

YES, I confirm that I agree and consent

For you to receive $10.00 compensation for your participation in this study, you must now provide a unique identifier.

Please type in the first 3 letters of your surname ("family name"), and the month and day of your birthdate.

__   __   __   __   __   __   __

                                  M   **M**   **D**   **D**

By providing this information, the research administrator can prepare an envelope containing $10.00 in cash, labeled with your unique identifier.

This envelope will be made available for pick up at an advertised location in the law school as of February 3, 2014.

You are required to attend in person, and must provide your unique identifier in order to receive the applicable compensation envelope.

All compensation payments that have not been collected by 5:00 p.m. on April 7, 2014, will be forfeited and no longer paid to the applicable study participants. The research administrator will instead direct them as a contribution to the XXXXX School of Law.

PART I – GENERAL INSTRUCTIONS

For this study, please imagine that you are an individual juror who is hearing a civil suit in Canada. **The case presented is the kind of case that can be litigated in a Canadian civil suit.**

The Plaintiff (the party who is suing) is the **Andrian Space Group (ASG), a private company.**

The Defendants (the parties who are being sued) are two companies with contracts to supply specialized rocket parts to **ASG***.*

We ask for your serious consideration of the materials.

PART II – THE CASE

The ASG is a private company that builds motors for the Canadian Government's Canadian Space Agency.

Inside each rocket, there is one part of the many motors that requires 100 (1000) identical ball bearings. The bearings must be perfectly round, meet certain technical specifications, and be the same size, weight and composition.

The part that holds the 100 bearings looks like a circular track. The bearings are placed so they sit side-by-side, in slots, all the way around the track. Each bearing is installed in a specific slot.

When the motor is running, the part containing the bearings rotates at very high speed. The bearings reduce friction when the part rotates inside the motor.

ASG placed a heat sensor at each of the 100 (1000) positions on the ring where a bearing is located. Each sensor continuously monitors a single bearing, and information on each individual bearing is sent wirelessly to a central computer at CSA where the data is analyzed.

In 2011, ASG had contracts with two (2) companies to supply ball bearings, COMPANY AirFit and COMPANY Ronlay. Identical contracts with the two companies indicated that if a bearing fails or bearings fail prematurely, that is the bearing or bearings could not rotate 250 billion times, and rotate this number of times while being subjected to gamma rays, then the company that supplied the deficient bearing or bearings was liable for all damage caused by it.

The two companies contracted to supply ball bearings that met these technical specifications set by ASG. Both companies warranted that their bearings would

work for 250 billion revolutions without wearing out and could do so while being subjected to gamma rays.

On December 3, 2011, ASG conducted a laboratory test of a rocket motor. The motor was bolted to the floor and surrounded by a special circular screen. The screen was made of a low-level radioactive material, to simulate the gamma rays encountered in space.

After the motor has run for just 1 hour, and made about 1 million revolutions, a heat problem developed in the motor, and CSA's sensor system pinpointed a specific, single ball bearing. The bearing had stopped moving and began to overheat. It overheated very quickly and before the test could be canceled, the circular track seized up and exploded, causing pieces of the track to fly off violently in all directions.

As a result, the radioactive screen surrounding the motor was completely destroyed. The loss of the screen was entirely the result of the failure of the single defective bearing.

===
Every participant's scenario concludes with probabilistic information contained in one of the following three (3) cases.

_____

51 – 49

"In the motor, the part that failed contained 51 bearings supplied by COMPANY COMPANY AirFit, and 49 bearings supplied by COMPANY Ronlay."

_____

70 – 30

"In the motor, the part that failed contained 70 bearings supplied by COMPANY COMPANY AirFit, and 30 bearings supplied by COMPANY Ronlay."

_____

5001 - 4999

"In the motor, the part that failed contained 5001 bearings supplied by COMPANY AirFit, and 4999 bearings supplied by COMPANY Ronlay."

_____

Every participant is then asked 3 comprehension questions concerning the case shown the participant.

If a participant answers any of the questions incorrectly, immediately after giving the answer, the participant is told the answer was wrong, the case is presented again, and the participant is asked to answer the question again.

The participant must answer the question a second time before proceeding to the next question.

For a participant who receives a 51 – 49 scenario, or a 70 – 30 scenario, the questions are as follows:

Q1. For the part of the rocket motor containing the 100 ball bearings, which of the following companies supplied bearings to ASG?

   COMPANY AirFit only
   COMPANY Ronlay only
   COMPANY AirFit, and COMPANY Ronlay.
   COMPANY AirFit and COMPANY I.A.N.
   COMPANY Halmar only

We're sorry, your answer to this question is not correct. Please review the facts of the case, and provide the response you now believe is correct.

Q1 repeated, along with the CASE.

Q2.   For the part of the rocket motor containing the 100 ball bearings, how many bearings in a single motor were supplied by COMPANY AirFit?

   50
   51
   70
   30
   49

We're sorry, your answer to this question is not correct. Please review the facts of the case, and provide the response you now believe is correct.

Q2 repeated, along with the CASE.

Q3. For the part of the rocket motor containing the 100 ball bearings, how many bearings in a single motor were supplied by COMPANY Ronlay?

    50
    51
    70
    30
    49

We're sorry, your answer to this question is not correct. Please review the CASE, and provide the response you now believe is correct.

Q3 repeated, along with the CASE.

XXXXXXXX   MODIFICATION   XXXXXXX

For a participant who receives a 5001 – 4999 scenario, the questions are as follows:

Q1. For the part of the rocket motor containing the 1000 ball bearings, which of the following companies supplied bearings to CSA?

    COMPANY AirFit only
    COMPANY Ronlay only
    COMPANY AirFit, and COMPANY Ronlay.
    COMPANY AirFit and COMPANY I.A.N.
    COMPANY Halmar only

We're sorry, your answer to this question is not correct. Please review the facts of the case, and provide the response you now believe is correct.

Q1 repeated, along with the applicable factual scenario.

Q2. For the circular track containing the 1000 ball bearings, how many bearings were supplied by COMPANY AirFit?

    5000
    5001
    5999
    4001
    4999

We're sorry, your answer to this question is not correct. Please review the facts of the case, and provide the response you now believe is correct.

Q2 repeated, along with the applicable factual scenario.

Q3. For the part of the rocket motor containing the 100 ball bearings, how many bearings in a single motor were supplied by COMPANY Ronlay?

5000
5001
5999
4001
4999

We're sorry, your answer to this question is not correct. Please review the facts of the case, and provide the response you now believe is correct.

Q3 repeated, along with the applicable factual scenario.

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

PART III – THE LAW SUIT

CSA sues both COMPANY AirFit and COMPANY Ronlay for the damage caused when the single bearing did not meet the specifications of the contract, the bearing stopped moving, the bearing overheated, and the bearing caused damage to the laboratory screen.

COMPANY AirFit's position is that both COMPANY AirFit and COMPANY Ronlay manufactured the bearings that were tested, and that liability for the damages should be shared between them.

COMPANY Ronlay's position is that it did not manufacture the defective bearing, or that it is more likely than not that Company AirFit manufactured the defective bearing and, therefore, COMPANY Ronlay is not liable for any damages.

PART IV – JUDGE'S INSTRUCTIONS

Each participant then receives one of two versions of the judge's instruction.

In one version the term "balance of probabilities" is explained only with words ("linguistic").

In the other version this linguistic explanation is fortified with numerical information by the addition of the sentence, "In other words, that there is a 51 percent probability that the fact in issue happened" ("linguistic/numeric").

To be in accordance with the proportion of bearings from COMPANY Air Fit and COMPANY Ronlay described in the case shown to the participant, the linguistic and linguistic/numeric instructions contain the same 50-49, 70-30 or 5001-4999 proportion of bearings the participant read in the case presented to the participant.

===

You are now a juror in this law suit. The judge presiding in the case provides you and all of the other jurors with the following instructions.

In civil actions such as this one, the party who asserts the affirmative of an issue must carry the burden of proving it on a balance of probabilities. Usually the burden of proof in a civil trial is on the plaintiff, but from time to time issues may arise where the burden shifts to the defendant or defendants.

There are three (3) parties in this case. The Plaintiff is the Andrian Space Group (ASG). One of the Defendants sued by the ASG is COMPANY AirFit, the second company sued is COMPANY Ronlay.

In this case, all three of the parties came to a pre-trial agreement on a number of facts. All parties agree that:

a) bearings were supplied by both COMPANY AirFit and COMPANY Ronlay under identical contracts;

b) [100] [10,000] brand new bearings were installed properly into the rocket motor;

c) the number of bearings supplied by COMPANY AirFit was [51] [70] [5,001], and the number of bearings supplied by COMPANY Ronlay was [49] [30] [4,999];

d) a single bearing failed in the motor, and it is now impossible to determine which company supplied this single bearing;

e) all damage to equipment suffered by the Plaintiff, ASG, was the direct result of the failure of this single bearing, there was no other cause of the damage;

f) both COMPANY AirFit and COMPANY Ronlay supplied bearings under an identical contract with the Plaintiff, ASG;

g) one of the terms of the contract required that if the premature failure of a part

caused ASG to suffer damage, then the company that supplied such a part was liable for all damage caused by it; and,

h) because all of the bearings were brand new when installed, and because the motor had only completed about 1 million revolutions, far short of the required 250 billion revolutions required under the contract, there was a premature failure of the single bearing.

In this case, the Plaintiff, ASG, has the burden of proving on a balance of probabilities all of the facts needed to establish the following assertion:

a) that COMPANY AirFit is, or COMPANY Ronlay is, or both companies are, liable for the damage suffered by ASG when the single bearing prematurely failed.

What does "proof on a balance of probabilities" mean? It does not mean proof beyond a reasonable doubt—that standard of proof applies only in criminal trials.

In civil trials, such as this one, the party who has the burden of proof on an issue must convince you that what it asserts is more probable than not—that the balance is tipped in its favour. [In other words, that there is a 51 percent probability that the fact in issue happened.]

You must examine the evidence and determine whether the party who has the burden of proof on an issue is relying on evidence that is more convincing than the evidence relied on by the other side. In short, you must decide whether the existence of the contested fact is more probable than not.

If the evidence on an issue is evenly balanced, so that you are unable to say where the balance of probabilities lies, then your decision on that issue must be against the party who had the burden of proving it.

In deciding whether an issue has been proven on a balance of probabilities, you should consider all of the evidence relevant to that issue no matter who produced it.

As a juror, the decisions you must make in this case are important to the parties, and how you carry out your obligations will affect how Canada's system of justice is viewed by the parties, and by citizens generally. The obligation of any juror is to carefully consider the evidence, understand and apply the law to that evidence, and to make determinations that are free of any personal bias or interest.

QUESTIONS

Q4. As presented in the judge's instructions to you, what is the standard of proof in civil cases?

> clear, cogent and convincing
> beyond a reasonable doubt
> on a balance of probabilities
> compelling and irrefutable
> There is insufficient information to provide a response

We're sorry, your answer to this question is not correct. Please review the full judge's instructions, and provide the response you now believe is correct.

Q4 repeated, along with the full judge's instructions in Part IV.

Q5. As presented in the judge's instructions to you, what is another description of the standard of proof in Canadian civil cases?

> more unlikely than proven
> more probable than not
> not proven likely
> possibly unlikely in the circumstances
> There is insufficient information to provide a response

We're sorry, your answer to this question is not correct. Please review the full judge's instructions, and provide the response you now believe is correct.

Q5 repeated, along with the full judge's instructions in Part IV.

PART V – Assignment of Liability

Based on the information provided (reproduced below), you are asked to assign liability or "legal responsibility" for the <u>cause</u> of the screen's destruction.

An exact reproduction of the PART II Factual Narrative received by the participant earlier, including the applicable probabilistic information, is again presented to the participant.

As a juror, the decision you must make is whether any Defendant or Defendants is liable or "legally responsible" for <u>causing the destruction</u> of the laboratory screen.

Based on the information provided, you are asked to assign liability for the <u>cause</u> of the screen's destruction.

Please choose the response which best describes your assignment of liability:

Neither company is liable.

There is insufficient information to make this decision.

COMPANY AirFit is 50% responsible; COMPANY Ronlay is 50% responsible

Liability is based on the number of bearings supplied by each company: COMPANY AirFit is 51% responsible; COMPANY Ronlay is 49% responsible.

Only one company is liable:
COMPANY AirFit is 100% responsible; COMPANY Ronlay is not responsible

Neither company is liable.

There is insufficient information to make this decision.

COMPANY AirFit is 50% responsible; COMPANY Ronlay is 50% responsible

Liability is based on the number of bearings supplied by each company: COMPANY AirFit is 70% responsible; COMPANY Ronlay is 30% responsible.

Only one company is liable:
COMPANY AirFit is 100% responsible; COMPANY Ronlay is not responsible

Neither company is liable.

There is insufficient information to make this decision.

COMPANY AirFit is 50% responsible; COMPANY Ronlay is 50% responsible

Liability is based on the number of bearings supplied by each company: COMPANY AirFit is 50.01% (5001/10,000 X100) responsible; COMPANY Ronlay is 49.99% (4999/10,000 X100) responsible.

Only one company is liable:
COMPANY Air Fit is 100% responsible; COMPANY Ronlay is not responsible

PART VI - PARTICIPANT INFORMATION

What is your age (in years)?

17 or younger
18
19
20
21
22
23
24
25
26 or older

What is your gender?

Male
Female

What is your preferred language of communication?

French
Other
English

In what language is your level of reading comprehension highest?

    French
    Other
    English

How would you describe your understanding of information that is written in English?

    Extremely high understanding
    Excellent understanding
    Reasonable understanding
    Moderate understanding
    Low understanding

How many years of post-secondary (after high school) education have you received?

    1 year
    2 years
    3 years
    4 years
    5 years
    6 years
    7 years
    8 years or more

Before you completed this research study, did you receive any type of legal training or other education concerning the term "balance of probabilities"?

    YES
    NO

If you answered YES above, please select ALL sources where you received this education/training:

    High School
    Community College
    Undergraduate University
    Graduate School
    Law School
    Jury Duty
    Other

Before you completed this study, were you ever employed in a job where you encountered the term "balance of probabilities"?

    YES
    NO

If you answered YES above, please indicate the type of employer you were working for:

    Law Firm
    Insurance
    Law Enforcement
    Medical
    Other

PART VII – PARTICIPATION

As was stated earlier on the Informed Consent form, I hope to learn about the way in which individual Canadian jurors make decisions in civil court suits. I also appreciate that you are busy with your work at University.

Please answer the following questions honestly. It will help me in making use of the information you have provided in your earlier responses. As with all of the study, your answers are anonymous and I cannot link answers to any participant.

Were you able to put yourself in the shoes of an individual juror who would hear the case that I provided?

    NO
    YES

If you answered "NO" to being able to put yourself in the shoes of an individual juror, what would have made it more likely that you would put yourself in the place of a juror?

    Nothing would make a difference.

    If the study were conducted in a real court room.

    If the study were conducted in a real court room, and I was shown real contracts, ball bearings, rocket and laboratory parts.

    If the study were conducted in a real court room, I was shown real contracts, ball bearings, and rocket and laboratory parts, and real lawyers

presented their cases in front of a real judge.

If the study were conducted in a real court room, I was shown real contracts, ball bearings, and rocket and laboratory parts, real lawyers presented their cases in front of a real judge, and I could talk about the case with other jurors in the way jurors would talk to each other about the case

What level of care did you take in reading the material?

Did not read carefully
Read somewhat carefully
Read as carefully as needed
Read very carefully
Read with extreme care

This question is the most difficult one and I will appreciate your honesty in answering it.

If everyone participated the way you did, should the results of this study be understood to represent the way in which jurors would act in hearing a civil suit in Canada?

No, the results do not reflect the way I would act in a real case. If everyone acted like me, the results would not be representative.

I would act more carefully in a real case. If everyone acted like me, the results would be somewhat representative.

This was about the way I would act in a real case. If everyone acted like me, the results would be close to being representative.

I acted almost the same as I would in a real case. If everyone acted like me, the results would be representative.

I acted as I would in a real case. If everyone acted like me, the results would be very representative.

APPENDIX C

DEBRIEFING FORM

Standard of Proof Study - JM
REB File # 12-289

DEBRIEFING FORM

Standard of Proof Study - JM
REB File # 12-289

Researcher: John McKinlay
– johnamckinlay@mac.com - 902.219.1459

Faculty Supervisor: Dr. Robert Konopasky
– rkonopasky@me.com - 902.420.5855

Faculty Supervisor: Dr. Lucie Kocum
– lucie.kocum@smu.ca - 902.491.6356

Psychology Department Saint Mary's University, Halifax, NS

Thank you for your participation in this online study.

As indicated on the Informed Consent Form, participants provided responses as if they were jurors in a civil law suit.

Your responses were anonymous. Only group data, not individual data, will be reported. Finally, the groups' responses will be downloaded from the online survey website, and all data relating to the survey maintained on an electronic data storage device (like a USB data key) in a locked laboratory at Saint Mary's. The data will be destroyed in seven (7) years.

A summary of the outcome of the study can be obtained from John McKinlay at johnamckinlay@mac.com after **April 7, 2014**.

As a participant in this study, you are encouraged to contact the Principal Investigator, John McKinlay, if you experienced an adverse event as a result of participating in the study.

Any adverse event that is made known to the Principal Investigator, John McKinlay, must be reported to the Research Ethics Board ("REB").

If you feel discomfort as a result of your participation in this study, you may want to seek assistance **from XXXXX University Health Services, XXXXX**

XXXXX. For an appointment, the Booking Line is XXX-XXX-XXXX. To ask the NURSE a question, you may email: the nurse@XXXXX.ca

If you have questions or concern regarding the study, you may contact:

John McKinlay at 902-219-1459, or johnamckinlay@mac.com;
Dr. Konopasky at 902-420-5855, or robert.konopasky@smu.ca;
Dr. Lucie Kocum at 902-491-6356, or lucie.kocum@smu.ca.

If you want to contact the REB regarding this study, it may be contacted at 902.420.5728, or ethics@smu.ca.

PLEASE REMEMBER: Your unique identifier – the first 3 letters of your surname, and the month and day of your birthdate.

Your unique identifier permits me to prepare an envelope containing $10.00 in cash, labeled with your unique identifier, and available for pick up at an advertised location in the law school as of February 3, 2013.

To receive this envelope, you must attend in person, and orally provide your unique identifier. You are not required to provide me with your name.

PLEASE REMEMBER: If you have not collected your compensation payment by 5:00 p.m. on April 7, 2014, the payment to you shall be deemed forfeited and no longer paid to you.

Instead, I will direct the compensation payment as a contribution to the XXXXX School of Law.

Again, thank you for your participation in this online study.

John McKinlay