Jurors use mental state information to assess breach in negligence cases

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A B S T R A C T

To prove guilt, jurors in many countries must find that the criminal defendant acted with a particular mental state. However, this amateur form of mindreading is not supposed to occur in civil negligence trials. Instead, jurors should decide whether the defendant was negligent by looking only at his actions, and whether they were objectively reasonable under the circumstances. Even so, across four pre-registered studies ($N = 782$), we showed that mock jurors do not focus on actions alone. US mock jurors spontaneously rely on mental state information when evaluating negligence cases. In Study 1, jurors were given three negligence cases to judge, and were asked to evaluate whether a reasonably careful person would have foreseen the risk (foreseeability) and whether the defendant acted unreasonably (negligence). Across conditions, we also varied the extent and content of additional information about defendant's subjective mental state: jurors were provided with evidence that the defendant either thought the risk of a harm was high or was low, or were not provided with such information. Foreseeability and negligence scores increased when mock jurors were told the defendant thought there was a high risk, and negligence scores decreased when the defendant thought there was a low risk, compared to when no background mental state information was provided. In Study 2, we replicated these findings by using mild (as opposed to severe) harm cases. In Study 3, we tested an intervention aimed at reducing jurors' reliance on mental states, which consisted in raising jurors' awareness of potential hindsight bias in their evaluations. The intervention reduced mock juror reliance on mental states when assessing foreseeability when the defendant was described as knowing of a high risk, an effect replicated in Study 4. This research demonstrates that jurors rely on mental states to assess breach, regardless of what the legal doctrine says.

Jurors in the US and many other countries must infer the defendant's subjective mental states ("mens rea") to decide whether his actions make him guilty of a crime. In civil negligence, however, this amateur form of mindreading is not supposed to occur (Kionka, 2020). Instead, jurors are expected to evaluate whether the defendant was negligent by attending only to "whether the defendant has deviated from the required standard of reasonable care, not his mental state at the time of the conduct" (Fischer v. City of Sioux Falls, 2018). While some judges have acknowledged that foresight may hinge on the defendant's knowledge (Streifel v. Bulkley, 2020) or perception (Bursiel v. Bos. and M.R.R, 1920), the "black letter" negligence doctrine states unequivocally that breach can and should be assessed by looking only at the defendant's *outward conduct* (Lytton, 1997; see also Goudkamp, 2004). This has been described as being "an objective, not subjective" inquiry (Abraham, 2012), meaning that "the primary question is whether the 'external'

conduct of the defendant was reasonably careful, not whether he maintained an 'internal' attitude of concern or care" (Goldberg, Kendrick, Sebok, & Zipursky, 2021). Legal scholars once debated whether negligence consisted of a subjective state of mind or a type of conduct. However, for the last century treatises and textbooks agree that there should be no mentalizing in negligence (Brown, 2022a, 2022b). One of the chief reasons given for this was that a subjective standard would be infinitely variable and require mindreading while an objective standard would be easier to apply (Edgerton, 1926; Moran, 2010).

In this article we seek to explore a potential tension resulting from the doctrinal orthodoxy just described and the practical reality of how jurors assess negligence. Specifically, we investigate whether jurors spontaneously mentalize when evaluating the necessary element of "breach" (i.e., whether the defendant's conduct was unreasonable, negligent, or careless). Notably, when evaluating breach jurors are *not*

told to focus exclusively on defendant's externally observable behavior. Instead, in most cases they are instructed to ask whether a reasonably careful person in the defendant's situation *would have foreseen the risk of harm.* This shift from "unreasonable conduct" to "failure to reasonably foresee a risk" complicates the idea that negligence is purely objective and involves no mentalizing.

The analytic step from assessing breach-as-conduct to breach-as-foresight is not straightforward and requires some unpacking. When a defendant violates a clearly established rule of conduct (such as speeding in a school zone) jurors can easily infer carelessness or breach without hearing about what the specific defendant knew. The defendant's externally observable actions are sufficient to prove breach. This may not be because the driver's mental states are irrelevant, but because we presume that all licensed drivers are aware of the risk of speeding near children such that speeding in a school zone is per se unreasonable.

However, in the vast majority of cases that make it to trial the defendant's conduct is not subject to any "bright line rules" (F.T. v. W. Linn-Wilsonville Sch. Dist., 2022) or pre-existing norms (Abraham, 2012). This makes it difficult to decide what is "objectively reasonable" based on actions alone. This is where foreseeability becomes paramount – it redefines unreasonable to mean the failure to mitigate foreseeable risks. Rather than being categorically different, however, standards of reasonable conduct can be thought of as incorporating common knowledge of routine and foreseeable risks. For example, obtaining a patient's informed consent to treatment became the standard of care in medicine because the risk of not doing so became common knowledge, i.e., it became widely foreseeable.

1. Legal foreseeability

As a legal concept *foreseeability* has not been rigorously investigated. However, we can get some sense of its contours by reviewing model jury instructions, which are meant to summarize uncontroversial statements of the law. There is modest variability between and within the United States on the definition of breach and its relationship to foreseeability. In Arkansas and New Mexico, jurors are told that to find breach, they must ask what "a reasonably prudent person would foresee" (Bhasker V. Kemper Cas. Ins. Co, 2019; Kelley & Wendt, 2002). In New York there are two acceptable versions of this instruction, with one focusing on the foreseeability of the injury and one on the foreseeability of the risk (Kelley & Wendt, 2002). These formulations vary in important ways, but they are treated as encapsulating the same basic idea, which is that if a reasonable person would have foreseen the risk, then the defendant should have too.

The case law reveals foreseeability to track ordinary concepts of what we would think of as "anticipating" or "reasonably expecting [something] to occur" (Chapman v. Mayfield, 2015). In Illinois, an event is reasonably foreseeable "if a reasonably prudent person could have foreseen as likely the events which did transpire" (Schmid v. Fairmont Hotel Co.-Chicago, 2003). The "reasonable" and "likely" modifiers indicate some probability threshold for liability, as events that are "highly extraordinary" or "tragically bizarre" are not *reasonably* foreseeable. Reasonable foreseeability does not capture what "might conceivably occur" but instead what one might "reasonably expect" (Stevens v. Home Depot U.S.A. Inc, 2013).

A deep dive into the case law does not tell us precisely how jurors are supposed to assess foreseeability. However, there are three well-settled principles that guide the analysis. First, the assessment of foreseeability requires that jurors (and judges in bench trials) consider the "surrounding circumstances" (Bhasker V. Kemper Cas. Ins. Co, 2019). As one court put it, "foreseeable risk depends on the specific facts of the case and cannot be usefully assessed for a category of cases; small changes in the facts may make a dramatic change in how much risk is foreseeable" (State v. Sollman, 2021). Second, to further ensure that foreseeability be grounded in the facts of the case, "jurors are asked to put themselves in

the shoes of the defendant" (Peters Jr, 1999; Schwartz & Perlman, 2000). Finally, jurors should take the perspective of the defendant "prior to the time that the accident occurred" (Victor v. Hedges, 1999). That is, an "after-the-fact assessment of facts or evidence cannot be the basis of a negligence claim" (Holbrook v. Fokes, 1990).

Putting themselves in the shoes of the defendant and considering the *ex ante* factual circumstances is not thought to convert the inquiry into a subjective one. Once they orient themselves to the "defendant's perspective" before the accident occurred, jurors then must ask what a reasonable person *in the defendant's shoes* would have done. In this sense, the reasonable person is a hypothetical ideal of a person who "exercise[s] those qualities of attention, knowledge, intelligence, and judgment which society requires of its members for the protection of their own interests and the interests of others" (Restatement (Second) of Torts § 285, 1965). This standard is the same for everyone and objective. A defendant is thus negligent "even if she could not have done better" (Abraham, 2012). Oliver Wendell Holmes famously recounted how if "a man is born hasty and awkward … no doubt his congenital defects will be allowed for in the courts of Heaven, but his slips are no less troublesome to his neighbors than if they sprung from guilty neglect" (Holmes, 1881).

Aside from these basic principles, little else is agreed upon regarding the interpretation of foreseeability. There is even considerable disagreement about how these three core principles should work in practice. Because there is much to say about the implications of these unresolved questions, we will explore them in greater detail in the discussion section.

Ambiguity surrounding the interpretation of legal foreseeability has led judges and scholars to call it a 'vexing morass' (Cardi, 2005), 'a malleable standard' (Wilson v. Moore Freightservice Inc, 2015), and even the 'dark matter of tort' (VerSteeg, 2011). Some have recommended that negligence doctrine jettison reliance on foreseeability because it is no better defined than 'strawberry shortcake' (VerSteeg, 2011) and is just a mask for discretion. This is unfortunate because in addition to being the most common test for breach it is also the primary test for judges when determining whether the class of defendants owes a *duty* of care to the plaintiffs ("which impose[s] an obligation upon the defendant to protect the plaintiff from the conduct and the injury he suffered"; Buckner, 1965) and for juries when deciding whether the defendant's breach was a *proximate cause* of the injury (which limits the scope of liability to those consequences that are reasonably foreseeable). While applied slightly differently to each element, foreseeability's role in negligence cannot be overstated (Cardi, 2005). Before we jettison foreseeability from its outsized role in negligence, we should at least *try* to do a better job investigating what it is. In a series of experiments, this paper seeks to do just that. Specifically, we asked whether incorporating psychological components of foresight into negligence doctrine may help us answer some of its unresolved questions.

2. The psychology of foresight

Foreseeability is understood by psychologists to be an epistemic construct that incorporates mental states such as prior knowledge, awareness, evaluation and probability calculations (e.g., Lagnado & Channon, 2008; see also Engelmann & Waldmann, 2022; Margoni & Surian, 2021; Nobes & Martin, 2022). A particular type of foreseeability called "episodic foresight" embodies the "capacity to imagine or simulate events that might occur" and to plan our behavior accordingly (Schacter, Benoit, & Szpunar, 2017). Episodic foresight is understood to help us plan for outcomes that are imminent, near, or distant, by relying on a complex suite of multiple cognitive systems (Gaesser, 2020). Specifically, it enables us to (a) construct a mental representation of a future event, (b) predict the likelihood of it occurring, (c) set an action goal, and (d) organize steps for following through on the plan (Miloyan & McFarlane, 2019). This appears to map on closely to what we described as legal foreseeability above – anticipating and planning for likely future

events that may be caused by our conduct. However, because the legal framework does not explicitly endorse any cognitive or psychological components, it fails to benefit from the conceptual clarity that "episodic foresight" provides.

Moreover, studies have shown that some mental state components (Malle & Knobe, 1997) such as *knowledge* (that certain acts lead or can lead to certain outcomes) and *awareness* (of the action being performed) are judged by laypeople to be essential for negligence attribution (e.g., to differentiate between a negligence action and a purely accidental outcome) and are taken into account in their moral evaluations and punitive decisions of unintended harm (Nuñez, Laurent, & Gray, 2014; see also Laurent, Nuñez, & Schweitzer, 2016; Sarin & Cushman, 2022). A model that nicely captures the spontaneous tendency of people to engage in mental state reasoning when assessing blame and punishment is Alicke's (2000) culpable control model, according to which harmful events lead people to search for both evidence of causal control (and potential control) over the actions and mental state information (see also Alicke, Rose, & Bloom, 2011). Other models also capture this fundamental notion that people spontaneously process mental state information before attributing blame (Malle, Guglielmo, & Monroe, 2014; Monroe & Malle, 2017, 2019).

And yet, the negligence doctrine has not adopted the "psychological view". That is, the doctrine we find in treatises and textbooks has held fast to the idea that jurors can (and will, and *should*) assess foreseeability without considering or knowing anything about what the particular defendant thought or knew. This leads to a worrying question: (how are jurors to assess foreseeability, if not through inferring the defendant's mental states?) and a potential conflict: (jurors are not supposed to engage in mindreading, and yet they are given a test for duty, breach, and proximate cause – the foreseeability test – that likely activates it).

There are thus one of two possibilities occurring. The *first* is that jurors comply with doctrinal expectations and assess foreseeability without mentalizing. The other possibility is that jurors *are* mentalizing when assessing foreseeability—revealing that there is a disconnect between the "law on the books" and "the law in practice". These distinct possibilities motivate the central question of this article, which is: *How do jurors actually assess foreseeability and attribute negligence*?

3. The current research

Here, across four pre-registered studies, we sought to answer whether mock jurors do indeed rely on mental state information when assessing negligence in civil cases. This would not be tantamount to claiming that jurors are incapable of doing otherwise, and indeed we conducted two studies showing that it is possible to reduce the extent to which jurors rely on the specific defendant's mental states when assessing negligence cases. In Study 1, US participants were asked to assume the role of a juror to evaluate three cases of negligence (modeled after real cases) where a plaintiff sued a defendant for causing harm. Participants were provided with instructions similar to those given to juries in real trials, which spelled out the elements of negligence that the plaintiff must prove. Our study focused on the element of breach. We therefore asked participants to evaluate whether a reasonably careful person in the defendant's situation would have foreseen the risk of harm and whether the defendant behaved unreasonably. Participants were explicitly instructed that reasonableness is an objective standard, and that foreseeability and negligence should *not* be assessed by inquiring into whether the defendant actually foresaw the risk. Instead, they were told to focus only on whether the defendant's outward conduct conformed to what a reasonably careful person would have done in that situation.

To assess mock jurors' reliance on the defendant's mental states, across four conditions we varied the content mock jurors received about defendant's prior knowledge of the risk that materialized. In two conditions, before making their evaluations, participants received additional evidence that either the defendant thought that the risk of an

accident was high (high-risk condition) or thought that the risk was low (low-risk condition). When participants were provided with the actor's subjective knowledge, it was not of a type that could be considered "common knowledge" (i.e., it would be unreasonable for participants to assume that the general population also had the subjective knowledge the actor was said to possess). For instance, in one of the scenarios we used, where a defendant's stack of alfalfa hay spontaneously ignited causing a fire that destroyed his neighbor's property, the defendant was said to know that "if the alfalfa is damp when it is bundled (with a moisture content above 15%) it triggers a chemical reaction that forms flammable gas so that if the outside temperature is high enough, the haystacks can ignite on their own", and either thought that "his hay's moisture content was 30%, well above the level that could cause flammable gas to be formed" (high-risk condition) or that "his hay's moisture content was under 5%" (low-risk condition). In the other two (control) conditions, participants were instead either provided with no such additional mental state information (no-prior-information condition) or they received the cases to judge but were not requested to assume the role of mock jurors and were not told that the conduct resulted in litigation (baseline condition).

The main predictions were that, compared to jurors in the no-prior-information condition, those in the high-risk condition would attribute greater negligence to defendants as they would deem the risk to have been more foreseeable. Conversely, we predicted those in the low-risk condition would attribute less negligence and foreseeability in light of the mental state information. Here, this is almost exactly what we found in Study 1. Participants in the high-risk condition attributed higher negligence and foreseeability scores than participants in the no-prior-information condition, and those in the low-risk condition attributed lower negligence (but not foreseeability) scores compared to participants in the no-prior-information condition. Furthermore, we found that negligence judgments (in high- and low-risk conditions) were partially mediated by foreseeability evaluations. Overall, these findings suggest that individuals who would serve as jurors in real negligence trials, despite being instructed to focus only on outward conduct and objective standards of reasonableness, may instead spontaneously rely on mental state information.

In Study 2 we sought to replicate and extend the findings of Study 1 to mild (as opposed to severe) negligence harms. Thus, instead of reading about cases where the harm was severe as in Study 1 (e.g., the plaintiff broke his neck and became paraplegic), participants were asked to judge a milder case (i.e., the plaintiff broke his foot and had to use crutches for six weeks). Predictions were the same as in Study 1. In this study we indeed replicated the results, which suggests that the effects are robust and generalize to scenarios where there is less moral outrage over the harm.

Next, having found evidence in both studies that jurors in the high-risk condition judge the defendant more negligent and the risk more foreseeable compared to participants in the other conditions, we wanted to test whether the reliance on mental state information can be decreased by means of a simple intervention we developed. Study 3 aimed to do that. Participants in low- and high-risk conditions were divided in two groups, where in one of them participants received an additional 'intervention text' to make them aware that judgments and foreseeability evaluations are susceptible to a number of cognitive biases, including thinking that people we are judging would have known at the time of the conduct what we know now, in hindsight (see 'curse of knowledge' and 'hindsight' biases; e.g., Birch & Bloom, 2004; Fischhoff, 1975; Kneer & Machery, 2019; Kneer & Skoczen, 2023).

Indeed, one possible mechanism through which jurors' negligence evaluations in Studies 1 and 2 increased in the high-risk condition is that jurors spontaneously infer that because the defendants knew about the general risks in advance, they could have foreseen the precise consequences that resulted. This is supported by recent evidence showing that legal professionals are biased to judge a defendant's action more negatively and its negative outcome as more foreseeable in hindsight than in

foresight (Strohmaier, Pluut, Van den Bos, Adriaanse, & Vriesendorp, 2021). Thus, the intervention was aimed at reducing participants' reliance on what is known to have occurred ex post, instead focusing their attention on what the defendant could have reasonably known about the risks ex ante. We predicted this intervention to decrease both negligence and foreseeability ratings in high-risk scenarios. Last, Study 4 was an attempt to directly replicate the main findings of Study 3. In both these studies, we found that the intervention reduced participants' reliance on mental states for the attribution of foreseeability.

3.1. Study 1

Across four conditions, participants received three negligence cases and judged to what extent a reasonable person in the actor's situation would have foreseen the risk of an accident (foreseeability) and to what extent the actor acted unreasonably (negligence). Secondarily, participants also judged to what extent the actor was blameworthy and should have been punished. Finally, they were asked whether they felt they had sufficient information to answer the foreseeability question and what type of additional information would have helped them answer. To test whether participants in the role of jurors evaluated negligence by relying on mental state information despite being explicitly instructed not to do so, we varied the extent and content of defendant's additional background mental state information.

In the two focal conditions, mock jurors were told that the defendant thought that the risk of a physical harm or property damage was high (high-risk condition) or low (low-risk condition). In two control conditions, instead, participants were either provided with no such background information (no-prior-information condition) or were simply asked to judge the negligence cases without assuming the role of a mock juror (thus, in the baseline condition, no information about pending litigation was provided to participants; this control condition was added to allow testing whether the mere fact of being asked to assume the role of a juror could inflate ratings in our main dependent variables).

The main pre-registered prediction was that mock jurors would rely on defendant's subjective mental state information when assessing both foreseeability and negligence, despite negligence doctrine assuming that this information is legally irrelevant. Specifically, we expected that compared to participants in the control conditions, those in the high-risk condition would judge the defendant/actor as more negligent because they would judge that a reasonable person in the actor's situation would have foreseen the risk of an accident (we further tested this prediction with a mediation analysis), and those in the low-risk condition would instead judge the actor as less negligent.

3.1.1. Method

The raw data of all the studies and the Supplementary Material (SM) are available on the Open Science Framework (OSF, 2022). Study protocol, predictions, exclusion criteria and analysis plan were pre-registered for each study (Study 1:; https://aspredicted.org/9e6rf.pdf Study 2:; https://aspredicted.org/kz2eu.pdf Study 3:; https://aspredicted.org/4ei43.pdf Study 4: https://aspredicted.org/wa8cm.pdf). The research project received approval from the University of Utah IRB (00137818).

3.1.1.1. Participants.
We recruited 260 participants online through Prolific (www.prolific.co); 14 participants were excluded because they reported having been convicted of a felony (3) or because they provided an incorrect answer to the attention check (11), leaving a sample of 246 US citizens (M_{age} = 37.56 years, SD = 12.90, age range 18–76; 121 female, 120 male, 5 other), who had on average 15.47 years of school education, and were jury-eligible (participants were asked whether they have been convicted of a felony, meaning that they are no longer eligible as a juror in some states). Participants were paid $3.17 for their participation, and all provided informed consent.

The sample size was determined by an a-priori power analysis for a simple one-way ANOVA comparing four independent groups (conditions: baseline, low-risk, high-risk, no-prior-info). To detect a Cohen's f = 0.25 (medium effect) with α = 0.05 and power = 0.80, a minimum sample of 180 participants (n = 45 per condition) was required. We recruited more participants (N = 260) as a safeguard measure to protect against the possibility of the unknown true effect being smaller than predicted (Perugini, Gallucci, & Costantini, 2014), and to have enough power even after excluding participants that did not meet the inclusion criteria. Please note that the effect size of choice (medium) for our a-priori sample size calculation was not based on any specific prior work or meta-analysis, and that the number of participants recruited for this initial study gave us the opportunity to detect a wide range of possible interesting effects, but not very small effects which however would have been of little interest to us due to the difficulty inherent in interpreting their practical relevance and generalizability to real-world contexts.

3.1.1.2. Materials and procedure.
Participants were randomly and equally distributed across the four conditions: baseline (n = 60), no-prior-information (n = 59), high-risk (n = 63), low-risk (n = 64). In each condition, participants were presented with three different negligence cases to evaluate. Each of the scenarios was modeled closely on actual negligence cases involving contested questions of breach. Notably, one of the scenarios was based on a canonical case (Vaughan v. Menlove, 1837) which is broadly considered to be the first case to establish that the standard for breach is "objective".

Participants were presented with a case of *property damage* (modeled after Vaughan v. Menlove, 1837) where a stack of hay owned by John, a farmer, spontaneously ignites and causes part of his neighbor's property to burn; a case of *physical injury* (modeled after Flood v. Southland Corp, 1993) where a person gets stabbed by a group of men at a gas station owned by Scott, who knew about the presence of this dangerous group and does nothing; and a case of *physical injury* possibly caused by employees of a *corporation* (modeled after Jaengana v. Nicole Equities LLC, 2015) where a grocery deliveryman breaks his neck by tripping on some loose carpet while descending the stairs of an apartment that was managed by a corporation ("Samantha Equities, LLC"). To illustrate, we provide below the full text that participants received for the property damage negligence case (for the complete battery see the SM).

John is a farmer. He grows alfalfa that he bundles into bales of hay. He stores the hay before selling it to other farmers to feed their livestock. John keeps his bundles in loose stacks on the edge of his property. He inspects the stacks several times a week. Unfortunately, in late September of last year, a stack of his hay spontaneously ignited. The embers then jumped nearly a quarter of a mile onto the property of his neighbor, Nancy. There, the embers hit Nancy's wooden home. Her home became immediately engulfed in flames. The roof and top floor of Nancy's home were destroyed.

All the participants, except those in the baseline condition, were first informed that they will be asked to assume the role of a juror in three civil cases and received a brief explanation of what a civil case is (e.g., no one goes to jail):

For this study, you are being asked to assume the role of a juror in a civil case. In civil cases the plaintiffs only need to prove their case by a "more likely than not" standard, which is less demanding than the criminal standard of "beyond a reasonable doubt." Also, no one goes to jail in civil cases. Usually, the plaintiff just gets money if he/she wins.

Right after each case, they were presented with relevant background information about the four elements of negligence the plaintiff must prove for the defendant to be found negligent. To focus the mock jurors' attention on the element of breach, we stated that a judge had already established that the defendant owed a duty of care to the plaintiff and that the defendant's actions or omissions were found to have caused the damage or the harm. Jurors then only had to determine whether the defendant breached this duty, by behaving unreasonably. We informed the participants about the main claims of both parties (i.e., the plaintiff

claims the defendant was negligent because it was foreseeable that its/ his action could have caused the damage/harm, whereas the defendant claims the opposite, that a damage/harm was not foreseeable). Here below we provide an example of relevant background legal information from the property damage case.

Nancy is suing John for negligence and seeking money damages to rebuild her home and for her pain and suffering. For Nancy to win her suit, she needs to prove four things:

1) John owed her a duty to take reasonable care in storing his hay
2) that he was negligent in doing so, which
3) caused the fire, resulting in
4) damage to her home.

A judge has already decided that John owed a duty of care to Nancy, and that it was his hay that ignited, causing the fire damage to her house. As a member of the jury, the only issue you must resolve today is whether John was negligent in the way he stored his hay (element #2 above). Nancy claims that John was negligent for storing the hay the way he did, so close to her property, because it was foreseeable it could ignite. John claims that it is common for farmers to store hay in the way he did, and it was not foreseeable that it would ignite and cause property damage.

Next, participants were provided with jury instructions, relying on model jury instructions from California, New York, and Massachusetts. We instructed participants as real jury members would be at trial. That is, we clarified that they were asked to consider what a *reasonably careful person* would have done under the circumstances described in the case, and whether this person would have foreseen the risk of a damage/harm and would have acted differently than the defendant in the story. Importantly, we clarified that reasonableness is an *objective standard*, meaning that the question for the mock juror was not to assess whether the defendant actually foresaw the risk, but whether the defendant, as a reasonable person, would and should have foreseen the risk. Participants were instructed to look only at the defendant's conduct and not at his/its mental states. An example of this text (for the property damage case) is provided here below.

We ask you, the jury, to consider what a reasonably careful person would have done under these circumstances. If a reasonable person in John's situation would have foreseen the risk of fire (before the hay ignited) and would have stored the hay differently, then John was negligent for failing to do so. If, however, a reasonable person would not have foreseen this type of risk, then John is not negligent. Reasonableness is an "objective standard." This means that we do not ask whether the defendant actually foresaw the risk, but whether he, as a reasonable person, should have foreseen the risk. To decide this, you should look only at John's conduct.

Finally, the participants assigned to the high-risk and to the low-risk conditions were presented with additional background information about the defendant's mental states. They were provided with evidence that the defendant thought that the risk of a damage/harm was high or low, in the respective conditions. Please find here below an example of this additional information for the property damage case.

If the alfalfa is damp when it is bundled (with a moisture content above 15%), it triggers a chemical reaction that forms flammable gas. If the outside temperature is high enough, the haystacks can then ignite on their own.

(only for the high-risk condition)

John knew about these risks, and he knew that these risks were even higher in his case. Indeed, last August he emailed his brother to say that unfortunately his hay's moisture content was 30%, well above the level that could cause flammable gas to be formed. With this knowledge, he decided to bundle the hay anyway. The temperatures lately had been quite low, and he looked forward to the proceeds from the sales.

(only for the low-risk condition)

John knew about these risks, yet he knew that these risks were lower in his case. Last August he emailed his brother to say that luckily his hay's moisture content was under 5%, well below the level that could cause flammable gas to be formed. With this knowledge, he decided to bundle the hay. The temperatures lately had been quite low, and he looked forward to proceeds from sales.

Participants then answered the following two questions on a nine-point scale (1 = strongly disagree; 5 = neither agree nor disagree; 9 = strongly agree):

- *Foreseeability:* A reasonable person in [defendant name's] situation would have foreseen the risk of [property damage/physical injury] to [people like the plaintiff].
- *Negligence*: [Defendant name] was negligent in the way [he/it] behaved, that is, [defendant name] acted unreasonably, or without due care.

Next, participants answered two additional questions with a nine-point scale (1 = not at all; 5 = somewhat; 9 = very much):

- *Blame*: To what extent is [defendant name] morally blameworthy for the way [he/it] behaved?
- *Punishment*: To what extent should [defendant name] be punished for how [he/it] behaved?

An additional set of ancillary questions was also presented (for details see the SM) to gauge whether, in the no-prior information condition, participants thought they could assess foreseeability without evidence of the defendant's subjective mental states. Participants were asked to judge to what extent (a) they felt they had sufficient information to answer the foreseeability question, (b) they thought it would have helped answer the foreseeability question having more details about the severity of the negative outcomes, the real intentions of the defendant, his/its prior knowledge of the risk and familiarity with similar situations, as well as his/its ability to perceive and understand the risk, and (c) they thought the scenario, the questions or the jargon used were confusing.

Following the property damage case, participants were presented with a comprehension check about the content of the story. They had to select among four options the one that best captured the facts they just read (see the SM). Across participants, and within each condition, we randomized the order of presentation of the foreseeability and negligence questions, the order of blame and punishment questions, as well as the order of the three cases.

3.1.2. Results

For each type of judgment (foreseeability, negligence, blame, punishment), we ran a simple one-way ANOVA with condition (baseline, high-risk, low-risk, no-prior-information) as a between-subjects variable (collapsing responses across the three scenarios, as analyses reported in the SM showed that participants responded consistently across scenarios). For all the judgments, we found that condition was a significant predictor, $F(3,242) \geq 51.31$, $p < .001$ (Table 1; full statistics are also displayed in the SM). Next, for each judgment, we conducted a series of post-hoc comparisons (*p*-values were adjusted using the Bonferroni method). In what follows, we focus on foreseeability and negligence attributions, but analyses on blame and punishment judgments can be found in the SM (across judgment types, results were similar).

Participants in the high-risk condition judged the risk of an accident to be more foreseeable compared to participants in the low-risk condition, $t(125) = 9.95$, $p < .001$, $d = 1.71$ ($M = 7.15$, $SD = 1.07$, and $M = 5.01$, $SD = 1.42$, respectively), to those in the no-prior-information condition ($M = 5.36$, $SD = 1.17$), $t(120) = 8.17$, $p < .001$, $d = 1.60$, and to those in the baseline condition ($M = 4.69$, $SD = 1.16$), $t(121) = 11.23$, $p < .001$, $d = 2.21$ (Fig. 1). Interestingly, we did not find a significant difference in foreseeability attributions between the low-risk and the no-prior-information condition, $p = .690$. Next, though not predicted, we found that participants in the no-prior-information condition attributed *more* foreseeability than those in the baseline condition, $t(117) = 2.98$, $p = .019$, $d = 0.57$.

The same pattern of results was found when analyzing negligence judgments (baseline: $M = 4.15$, $SD = 1.23$; high-risk: $M = 7.16$, $SD =$

Table 1

ANOVAs and Post Hoc *Comparisons for Foreseeability and Negligence Judgments in Study 1.*

ANOVAs							
	Cases	SS	DF	MS	F	p	η_p^2
Foreseeability	Condition	226.70	3	75.57	51.31	<0.001	0.39
	Residuals	356.41	242	1.47			
Negligence	Condition	336.94	3	112.31	79.11	<0.001	0.49
	Residuals	343.56	242	1.42			
Post Hoc Comparisons							
	Conditions		Mean$_{Diff}$	SE	t	p	d
Foreseeability	Baseline	H-risk	−2.46	0.22	11.23	<0.001	2.21
		L-risk	−0.32	0.22	1.45	0.894	0.24
		No-info	−0.66	0.22	2.98	0.019	0.57
	H-risk	L-risk	2.14	0.21	9.95	<0.001	1.71
		No-info	1.80	0.22	8.17	<0.001	1.60
	L-risk	No-info	−0.35	0.22	1.58	0.690	0.26
Negligence	Baseline	H-risk	−3.01	0.22	14.03	<0.001	2.64
		L-risk	−0.39	0.21	1.81	0.433	0.29
		No-info	−0.98	0.22	4.49	<0.001	0.85
	H-risk	L-risk	2.63	0.21	12.43	<0.001	2.13
		No-info	2.03	0.22	9.42	<0.001	1.93
	L-risk	No-info	−0.59	0.22	2.76	0.037	0.48

Note. SS=Sum of squares, DF=Degrees of freedom, MS = Mean square, d = Cohen's d, H-risk = High-risk, L-risk = Low-risk.
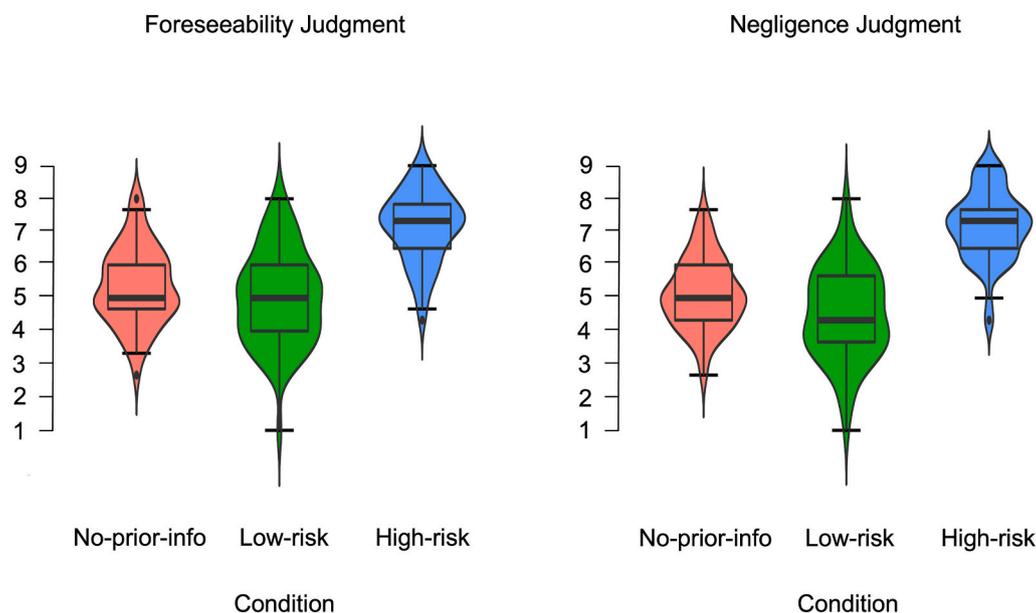

Fig. 1. Foreseeability and Negligence Judgments in Study 1.
Note. For the three main conditions (no-prior-information, low-risk, high-risk), foreseeability and negligence scores (left and right panel respectively) are displayed with a violin plot above a box plot.

1.05; low-risk: $M = 4.54$, $SD = 1.39$; no-prior-info: $M = 5.13$, $SD = 1.06$), with the exception that we also found that, compared to those in the no-prior-information condition, participants in the low-risk condition judged the defendant less negligent, $t(121) = 2.74$, $p = .037$, $d = 0.48$ (Fig. 1).

Next, we focused on the high- and low-risk conditions, and further assessed our main research question by investigating if the effect of mental state information on negligence judgments was *mediated* by foreseeability attributions. We ran a mediation analysis using 5000 bootstrapped samples and 95% CI, with condition (high-risk, low-risk) as predictor, foreseeability attribution as mediator, and negligence attribution as outcome (Fig. 2). We found a significant indirect effect of condition to negligence through foreseeability, $b = −1.70$, CI(−2.23,-1.25). The total effect of condition on negligence was reduced but still significant, suggesting a partial mediation of foreseeability, from $b = −2.63$, CI(−3.06,-2.19) to $b = −0.92$, CI(−1.26,-0.59). Thus, the

foreseeability assessment partially mediated the predictive relationship between condition (high-risk vs. low-risk) and negligence attribution.

Last, additional analyses revealed that participants in the high- and low-risk conditions reported agreeing more to having had sufficient information to judge the scenarios than participants in baseline and no-prior-information conditions, $t(\geq120) \geq 2.90$, $p \leq .025$, $d \geq 0.50$ (high-risk: $M = 7.07$, $SD = 1.21$; low-risk: $M = 6.65$, $SD = 1.49$; baseline: $M = 5.48$, $SD = 1.52$; no-prior-info: $M = 5.90$, $SD = 1.48$). Moreover, participants in the no-prior-information control condition also reported that more information about the defendant's prior knowledge of the risk and familiarity with similar situations would have been helpful, $t(\geq120) \geq 2.64$, $p \leq .053$, $d \geq 0.47$ (high-risk: $M = 6.51$, $SD = 1.79$; low-risk: $M = 6.40$, $SD = 1.88$; no-prior-info: $M = 7.31$, $SD = 1.61$). The full analyses supporting these statements are reported in the SM.
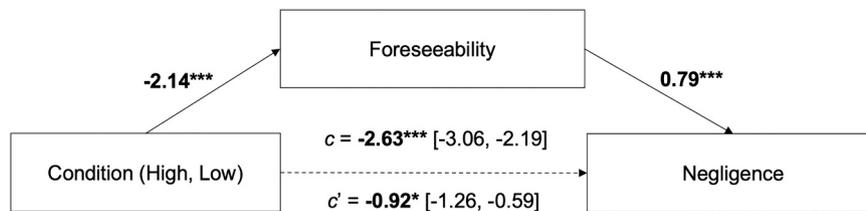
Fig. 2. Mediation Model Examining the Path from Condition to Foreseeability to Negligence.
Note. Mediation coefficients are unstandardized, 95% confidence intervals are in brackets. ***$p < .001$, **$p < .01$, *$p < .05$.

3.1.3. Discussion

We sought to explore whether and how jurors relied on defendant's subjective mental states when assessing breach. In sum, our data indicate that mock jurors' assessments of negligence and foreseeability were impacted by the defendant's mental states, even if they were asked to evaluate on the basis of an objective review of the defendant's behavior. Foreseeability and negligence scores were higher when participants were informed that the defendant had a subjective mental state indicating knowledge of high risk compared to mental state information indicating knowledge of low risk, or when no information of such kind was provided. Moreover, negligence scores were lower in the low-risk condition than in the no-prior-information condition, although foreseeability scores did not differ between the two conditions. Overall, this is consistent with psychological literature suggesting that people spontaneously look for the transgressor's awareness and knowledge states when assessing negligence (Nuñez et al., 2014; see also Laurent et al., 2016).

Importantly, the effect of the additional information about the defendant's prior knowledge and mental states on negligence attribution was mediated by participants' foreseeability assessment. Confirming the preference for jurors to take into account mental state information in judging negligence cases, we further found that participants wanted to know more about the defendant's prior knowledge when assessing foreseeability.

A last noteworthy result was that participants in the no-prior-information condition gave higher scores than those in the baseline condition. This could suggest that the mere fact that participants were asked to assume the role of a mock juror made them respond more severely. Perhaps, when mock jurors are not given any prior information about the defendant's risk knowledge, they just nevertheless filled it in. Indeed, work on character evidence has shown that mock jurors "fill the gaps" in ways that increase culpability when they are not given any information about how someone has behaved in the past (MacLeod, 2022).

In general, asking jurors to assess negligence in an objective fashion (by assessing not what the defendant knew or thought but only what a reasonable prudent person in his situation would have known and done) is likely to activate subjective assessments of defendant's mental states that will influence their decisions. Past research has for instance shown that people tend to rely on their own specific values and proclivities when evaluating what a reasonable person would have done in negligence or self-defense scenarios (Alicke & Weigel, 2021) and that mock jurors' evaluations of whether a defendant acted reasonably are outcome-dependent although, according to the legal doctrine, they should not be (Kneer, 2022) (for further debate about the reasonable person standard, see Jaeger, 2020; Tobia, 2018; see also Spruill & Lewis Jr, 2022). Adding to this evidence, we showed that mock jurors, again regardless of what the legal doctrine says, tend to rely on the defendant's unique mental states to assess breach in negligence cases.

3.2. Study 2

In Study 1, mock jurors relied on mental states information when assessing negligence. However, participants were asked to judge cases involving severe harm/damage (see SM). In one of these cases, an individual breaks his neck and becomes paraplegic, in another, an individual gets stabbed and is seriously injured; and in a third case, an individual loses the house in a fire. Whereas these outcomes vary in severity to some extent, still they are all examples of severe harm/damage (moreover, recall that participants in Study 1 overall responded similarly across scenarios). Thus, here we asked whether the main effects reported in Study 1 would replicate with a mild harm scenario. The aim of Study 2 was to answer this question and test the generalizability of the effects reported so far to cases of mild harm. Indeed, prior work has shown that compared to mock jurors or judges who evaluate mild harm cases, those who evaluate severe harm cases are more sympathetic and biased toward the plaintiff's requests (Bright & Goodman-Delahunty, 2011) and more likely to inflate intentionality ascriptions (Kneer & Bourgeois-Gironde, 2017). Despite the possible influence of these factors, we predicted that the effects reported in Study 1 were robust enough to generalize to cases of mild harm. Moreover, by expanding the set of scenarios used to test participants' evaluations we aimed at further increasing the external validity associated to our findings, which should eventually be used to predict how real jury members react in real trials.

3.2.1. Method

3.2.1.1. Participants. We recruited 170 participants through Prolific; 1 participant was excluded because she did not report being a US citizen, leaving a sample of 169 US citizens ($M_{age} = 37.05$ years, $SD = 13.41$, age range 19–86; 81 female, 85 male, 3 other), who had on average 15.28 years of school education, and were jury-eligible. Thus, all the recruited participants were jury-eligible and none of them failed the attention check. Participants were paid $0.90 for their participation, and all provided informed consent.

The sample size was determined by an a-priori power analysis for a simple one-way ANOVA comparing four groups of participants (as in Study 1). To detect a Cohen's $f = 0.68$ (i.e., the main effect of Study 1) with $\alpha = 0.05$ and power $= 0.99$, a minimum sample of 56 participants was required. We recruited more participants ($N = 170$) to have enough statistical power to detect a smaller effect $f = 0.40$ (at least 152 participants were required to detect such an effect).

3.2.1.2. Materials and procedure. Participants were randomly assigned to one of the four conditions: baseline ($n = 42$), no-prior-information ($n = 43$), high-risk ($n = 42$), low-risk ($n = 42$). Materials and procedures were identical to those of Study 1 with two exceptions. First, participants were presented with only one case, the physical injury corporate defendant case. Out of the three cases used in Study 1, we selected this case because it was the one we judged worked best, as it was the only one where negligence ratings in the no-prior-information condition differed reliably from both high- and low-risk condition ratings (these analyses are reported in the SM). Second, this case involved the defendant causing a *milder* harm. Rather than breaking his neck and becoming paraplegic, the plaintiff simply broke his foot and had to use crutches for six weeks.

3.2.2. Results

To assess whether the main results of Study 1 would replicate if the harm was mild, we performed the same analyses of Study 1. For both foreseeability and negligence, the effect of condition was significant, $F(3,165) \geq 4.26$, $p \leq .006$ (full statistics and analyses can be found in the SM). Post-hoc comparisons (*p*-values adjusted with the Bonferroni method) revealed that, as in Study 1, both foreseeability and negligence scores were higher in the high-risk condition ($M = 7.55$, $SD = 1.97$, and $M = 7.91$, $SD = 1.66$, respectively) than in the low-risk condition ($M = 6.05$, $SD = 2.19$, and $M = 5.86$, $SD = 1.95$, respectively), $t(82) \geq 3.42$, $p \leq .005$, $d \geq 0.75$, and in the baseline condition ($M = 6.41$, $SD = 1.95$, and $M = 6.26$, $SD = 2.05$, respectively), $t(82) \geq 2.61$, $p \leq .060$, $d \geq 0.57$, and higher than in the no-prior-information condition for negligence only ($M = 6.74$, $SD = 1.84$), $t(83) = 2.85$, $p = .030$, $d = 0.62$. Similar findings to those of Study 1 were obtained for blame and punishment judgments, and for the analyses on the additional measures about whether sufficient information was provided to judge the case (see the SM).

3.2.3. Discussion

In sum, the main findings of Study 1 replicate even if participants are asked to judge a case with milder harm. Once again, mock jurors took into account the defendant's mental states of prior knowledge in assessing negligence and foreseeability. Moreover, it is possible to observe that whereas our interest was on replicating the main differences between conditions, mean ratings in each condition were still comparable to those reported in Study 1. Additionally, although the case used for Study 2 involved a mild harm, mean ratings for both negligence and foreseeability judgments were above the midpoint of 5 (neither agree nor disagree), suggesting that participants still perceived this case as one where the defendant was more negligent than not.

3.3. Study 3

The aim of Study 3 was to test a novel intervention designed by us to reduce mock jurors' reliance on mental state information. Participants were presented with a negligence case (taken from those used in Study 1) and received identical background facts that participants in high-risk and low-risk conditions of Study 1 received. However, half also received the intervention, which consisted of being informed that often our judgments and foreseeability assessments are susceptible to various biases such as the 'curse of knowledge' (i.e. the tendency to assume that individuals we are judging would have known then what we know now, in hindsight) which is a type of hindsight bias (i.e., the tendency to overestimate the likelihood of an outcome occurring after the outcome is known; Bernstein, Erdfelder, Meltzoff, Peria, & Loftus, 2011; Kneer & Machery, 2019; Kneer & Skoczen, 2023; Roese & Vohs, 2012). Studies have shown that even legal professionals can be biased in their judgments, and tend to evaluate a defendant's action outcome as more foreseeable in hindsight than in foresight (Strohmaier et al., 2021). In keeping with this literature, we hypothesized that the curse of knowledge might lead to the inflation of ex ante foresight ascriptions and educating mock jurors on this bias might reduce this inflation.

Participants were thus instructed that jurors "should put themselves in the defendant's shoes before the accident happened, and not after" and assess how a reasonable person would have acted without knowing what they know now, in hindsight. We reasoned that raising participants' awareness that their foreseeability and negligence evaluations, as well as their responsibility attributions, are likely to be swayed by such cognitive biases would result in a decrease in foreseeability and negligence ratings of cases where the defendant was portrayed as thinking that the risk of an accident was high, and perhaps in an increase in these ratings for low-risk cases.

3.3.1. Method

3.3.1.1. Participants.
We recruited 200 participants through Prolific; 13 participants were excluded because they reported having been convicted of a felony (4), they provided an incorrect answer to the attention check (9), or because they did not report to be a US citizen (1), leaving a sample of 187 US citizens ($M_{age} = 38.89$ years, $SD = 14.01$, age range 19–84; 92 female, 90 male, 5 other), who had on average 15.55 years of school education, and were jury-eligible. Participants were paid $0.95 for their participation, and all provided informed consent.

The sample size was determined as in Study 1, resulting in a required minimum of 180 participants. However, because the analysis on the intervention on the low-risk scenario was exploratory (see pre-registration), we focused on analyzing the effect of our intervention on the high-risk scenario. This latter test (independent samples *t*-test to compare 48 participants in the no-intervention-high-risk condition and 47 in the intervention-high-risk condition) had sufficient power (0.80) to detect at least a medium effect $d = 0.51$ (the test comparing 47 participants in the no-intervention-low-risk condition and 45 in the intervention-low-risk condition had also power = 0.80 to detect a very similar effect $d = 0.52$). Here, we reasoned that a medium effect of approx. $d = 0.50$ was of minimum interest, so we did not recruit many more participants to be able to detect much smaller but in practice less interesting intervention effects (e.g., $d = 0.05$ or $d = 0.10$).

3.3.1.2. Materials and procedure.
Materials and procedures were identical to those of Study 1 with a few important exceptions. First, participants were presented with only one case, the property damage case. Second, participants were divided into four groups ($n = 47$ in the intervention-high-risk, $n = 45$ in the intervention-low-risk, $n = 48$ in the no-intervention-high-risk, $n = 47$ in the no-intervention-low-risk). They were all asked to assume the role of mock juror. Third, right before the focal questions, participants in the intervention conditions were presented with an additional 'intervention text' where they were made aware that "on average, we are worse at foreseeing the future than we realize [because] when we are judging whether someone should have predicted an outcome, we assume that they would have known then what we know now (with the benefit of hindsight)"; participants were thus warned that jurors "should put themselves in the defendant's shoes before the accident happened, and not after" (see the SM). We used the wording "put themselves in the defendant's shoes", which indirectly encourages mock jurors to rely on mental states. This was because we aimed to provide participants with ecologically valid instructions similar to those they would receive in a real negligence trial, with the notable exception of our intervention, which made them aware of possible cognitive biases affecting their interpretation of these instructions and their evaluations. Indeed, we hypothesized that part of the reason why participants relied consistently on mental state information when they evaluated the defendant's behavior was their tendency to attribute all the relevant knowledge one would possess in hindsight to what the defendant should have known with foresight.

3.3.2. Results

The aim of Study 3 was to test an intervention to reduce the participants' spontaneous reliance on mental states. Whereas we were predicting an effect of the intervention on foreseeability scores in the high-risk condition only, we included exploratory analyses on the low-risk scenario: no effect of the intervention on such a scenario was found. Participants in the intervention-low-risk condition and those in the no-intervention-low-risk condition judged that a reasonable person would have foreseen the risk of damage to a similar extent ($M = 4.38$, $SD = 2.37$, and $M = 4.43$, $SD = 2.34$, respectively), $t(90) = 0.10$, $p = .923$, $d = 0.02$. Next, we focused on the high-risk condition, and ran an independent samples *t*-test on each type of judgment with condition (intervention, no-intervention) as the grouping variable (full analyses are in the

SM). Participants in the intervention condition provided lower foreseeability scores than participants who did not receive the intervention ($M = 6.02$, $SD = 2.40$, and $M = 6.94$, $SD = 1.84$, respectively), $t(93) = 2.09$, $p = .039$, $d = 0.43$. The same effect however did not generalize to negligence attributions ($M = 6.64$, $SD = 2.05$, and $M = 6.90$, $SD = 1.87$, respectively), $t(93) = 0.64$, $p = .524$, $d = 0.13$.

3.3.3. Discussion

In sum, the novel intervention we designed to make jurors aware that hindsight bias can influence their judgments successfully reduced reliance on the defendant's mental states, at least when jurors received information suggesting that the defendant was thinking that the risk of an accident was high. This reduction of about 1 point (from $M = 6.94$ to $M = 6.02$) was found in foreseeability judgments but did not generalize to negligence assessments. If negligence doctrine continues to discourage jurors' reliance on mental state information, simple interventions such as the one we devised might be one way to go.

3.4. Study 4

In Study 4, we sought to replicate the main effect of Study 3, which was found for foreseeability scores in the high-risk scenario. As predicted, in Study 3 the intervention we devised had an effect on reducing the curse of knowledge bias, lowering foreseeability ascriptions in the high-risk scenario, but our exploratory analysis did not reveal an effect of the intervention in the low-risk scenario. Thus, in Study 4 we focused on the high-risk scenario only.

3.4.1. Method

3.4.1.1. Participants.
We recruited 200 participants through Prolific; 20 participants were excluded because they reported having been convicted of a felony (8), they provided an incorrect answer to the attention check (10), or because they did not report being a US citizen (2), leaving a sample of 180 US citizens ($M_{age} = 40.62$ years, $SD = 14.35$, age range 19–80; 89 female, 90 male, 1 other), who had on average 15.55 years of school education, and were eligible as jurors. Participants were paid $0.80 for their participation, and all provided informed consent.

The sample size was determined by an a-priori power analysis for an independent samples *t*-test comparing two groups (intervention: present, absent). To detect a $d = 0.43$ (based on the main finding of Study 3), with $\alpha = 0.05$ and power $= 0.80$, a minimum sample of 172 participants was required.

3.4.1.2. Materials and procedure.
Materials and procedure were identical to Study 3 with the exception that participants were only presented with the high-risk scenario ($n = 91$ were assigned to the intervention condition, and $n = 89$ to the no-intervention condition).

3.4.2. Results

First, to assess whether the main finding of Study 3 would replicate, we conducted an independent samples t-test comparing mean foreseeability scores in the two groups (intervention, no-intervention). As in Study 3, participants in the intervention condition gave lower ratings compared to those in the no-intervention condition ($M = 6.31$, $SD = 2.10$, and $M = 6.88$, $SD = 1.80$, respectively), $t(178) = 1.95$, $p = .053$, $d = 0.29$, although the effect was smaller than the one reported in Study 3, which was $d = 0.43$ (for the full set of analyses see the SM). If we pool together data from Studies 3 and 4, we can estimate an effect size of $d = 0.34$ ($M = 6.21$, $SD = 2.20$, and $M = 6.90$, $SD = 1.80$, respectively in the intervention and no-intervention condition), $t(273) = 2.83$, $p = .005$. Second, we also replicated the null effect of the intervention on negligence scores found in Study 3, $t(178) = 1.61$, $p = .108$.

3.4.3. Discussion

In sum, Study 4 replicated Study 3, although the effect reported in Study 4 was slightly smaller than the one found in Study 3 ($d = 0.29$ vs. $d = 0.43$). This difference is almost entirely explained by the fact that the intervention in Study 4 lowered ratings only to $M = 6.31$, whereas in Study 3 ratings were lowered to $M = 6.02$. Because the difference between the two effect sizes in the two studies could be due to chance only, here we decided to pool together the samples to get a better estimate, which was $d = 0.34$. Overall, these results suggest that when made aware of the possible influence of the hindsight bias, jurors reduce their reliance on defendant's subjective prior knowledge when evaluating whether a reasonable person in the defendant's situation would have foreseen the risk of damage. The success of the intervention further suggests that mentalizing does occur in negligence assessments, and its impact can be manipulated. However, we cannot say that the result of the intervention leads to assessments that are more or less accurate or fair. With Studies 3 and 4 we merely sought to demonstrate that foreseeability ascriptions can be manipulated by increasing jurors' vigilance to mental state information and known biases in mindreading.

This result is noteworthy given the experimental psychology and jurisprudence research demonstrating how difficult it can be to mitigate hindsight and outcome biases, with some interventions simply not working and others showing small effects (e.g., Fischhoff, 1982; Kneer & Skoczen, 2023; Sanna, Schwarz, & Stocker, 2002; Smith & Greene, 2005). Future studies could further investigate the possibility that above and beyond well-known measures adopted to reduce biases in court, such as trial bifurcation or attempts to raise the standard of proof, perhaps simply instructing judges and jurors about how their mental processes work could prove effective at leading them to disregard information which they are not supposed to focus on during their evaluations.

4. General discussion

4.1. Questions our studies answered

We asked whether mock jurors in negligence trials, both in their foreseeability and negligence assessments, spontaneously rely on the defendant's subjective mental states. The answer is yes, they do. Across four pre-registered studies, we provided evidence that (a) when mock jurors were informed that the defendant thought the risk was high, they judged him/it as more negligent and they judged the risk of a damage/harm as more foreseeable, compared to mock jurors who did not receive such mental state information; (b) they also were more likely to report having sufficient information to assess foreseeability, compared to participants who did not receive mental state information; and (c) the intervention, by making participants aware of the influence of cognitive biases on judgment, caused a decrease in reliance on mental state information. Whereas reducing reliance on mental state information may or may not be a good thing for fair responsibility judgments, at present it is something the doctrine demands.

Overall, these results suggest that jurors consider defendant's subjective mental state information when judging negligence cases *even when they are explicitly instructed not to do so*. They find mental state information useful when assessing foreseeability and negligence, although this tendency can be partially reduced by making them aware of cognitive biases that may influence this evaluation. There are a few possible explanations. First, jurors might rely on mental state information because it seems fairer to incorporate this into their moral and legal judgments. Relatedly, when they hear that the defendant thought the risk of harm was high and acted anyway, they might infer a negative character trait that motivates them to find blame. Third, jurors might be unsure of how to interpret the seemingly contradictory instructions and assume that "taking the perspective of the defendant" means to "consider what he knew or thought." That is, jurors might take the request to evaluate whether a reasonably careful person "in the

defendant's situation" would have foreseen the risk of harm not as a request to evaluate whether the defendant's outward conduct deviated from a standard of reasonable care, but as an encouragement to engage in mental state reasoning. Finally, it might not be that jurors are motivated to take mental state information into account, but rather that they may simply be incapable of ignoring it. Future research could probe which of these explanations is more likely.

4.2. Much rides on the distinction between foreseeable and unforeseeable harms

Our findings have immediate and obvious implications for negligence cases, which make up a large portion of state and federal court dockets. Our results suggest mock jurors are not complying with doctrinal requirements, though we cannot say why. But this is a problem no matter why it is occurring. If we tell jurors they must use the foreseeability test and jurors interpret this in a way that naturally (and perhaps automatically) engages mentalizing, then we cannot continue to say that there is no mentalizing in negligence. At least some of the time, there is.

Every year billions of dollars in negligence damages hinge on the ability of jurors to distinguish between foreseeable and unforeseeable harm (United States Chamber of Commerce, 2018). If jurors cannot do this in any principled way, it undermines the legitimacy and fairness of negligence trials. What is more, if negligence doctrine routinely holds defendants liable for harms that they *could not have possibly foreseen*, this calls into question whether negligence can continue to be described as a fault-based method of liability. Without a notion of fault, or breach, negligence may just be another type of no-fault compensation system, like strict liability, where defendants are liable merely for causing harm. To distinguish strict liability from negligence – not in outlier cases, but in every case – we must invigorate, rather than ignore, the concept of foreseeability.

Whereas we noted that legal scholars have argued that foresight is a poorly defined legal test that leads to unpredictable outcomes (VerSteeg, 2011), our mediation analysis also showed that foreseeability appears to provide an intuitive basis for separating negligence from non-negligence. Thus, we might not want to jettison foreseeability just yet. Even so, it is clear from the scholarship that jurors and judges need more guidance on how to operationalize this test.

While this is the first study of its kind to demonstrate the gap between the "law on the books" and the "law in practice," regarding mentalizing in negligence, we do not want to exaggerate the novelty of these claims. For years judges have implicitly rejected the doctrinal orthodoxy. While at odds with the textbook "black letter law," at least in some cases judges have acknowledged that assessing foreseeability requires knowledge of the defendant's mental states (see e.g., Godar v. Edwards, 1999; Johnson v. States, 1999; Leposki v. Ry. Exp. Agency Inc, 1962).

4.3. Unresolved questions and future research

The present studies set the stage to ask even more nuanced questions regarding legal foreseeability. For example, recall that jurors are supposed to take the perspective of the defendant, before the accident occurred. This is not controversial and is indeed well-settled law. However, there is no authoritative guidance on how jurors should comply with this. And once jurors incorporate some relevant facts into their assessment of foreseeability (e.g., whether the driver of a truck was put on notice that his brakes were faulty, or whether a landlord knew of an unsound staircase), can this still be considered a purely objective inquiry?

There is also no guidance on which facts jurors should consider. Are jurors only to consider the defendant's physical location in space, or should they also consider what he could have perceived and realized, given where he was? To keep with the objective standard for breach,

most cases suggest that jurors put themselves in the defendant's shoes, but then say what someone else, with an "objectively reasonable" set of knowledge, would have done. This seems an impossible task when applied to a particular case – how can we know what a hypothetical reasonable person would have done, in a highly subjective situation? It is questionable whether jurors can be expected to reliably assess what counts as *objectively reasonable perception, memory, or cognition* under the circumstances. And supposing they can, it would need to be keyed to a standard of poor performance, given that on average we are all pretty lousy at foreseeing events (Bulley, Henry, & Suddendorf, 2016).

A related question is whether the "ought implies can" or whether one's descriptive capacity for foresight matters to the normative question of breach. Most commentators answer a resounding "no", unless the defendant is a child or someone with a physical disability (Goldberg et al., 2021). And yet, the Restatement also declares that the reasonable person standard must make allowances "for some of the differences between individuals, the risk apparent to the actor, his capacity to meet it, and the circumstances under which he must act" (Restatement (Second) of Torts § 285, 1965). What seems like a throw-away, barely cited section of the Restatement gives voice to a subjective view of breach that we see in the case law, but that is not recognized in any major treatise or textbook. This striking allowance for individual differences is inconsistent with treatises and even other sections of the Restatement, which state that the objective standard is the same for all adult defendants who do not have physical disabilities. Such double-speak has the potential to leave judges and jurors rudderless.

Is this sort of leeway that is recognized by judges meant to capture external physical facts (the sun was in my eyes) or personal traits (I have poor visual discrimination) or situation-specific cognitive limitations (there were too many competing demands on my brain to process everything)? Here the treatises and case law appear to be in agreement that allowances should *not* be made for the perpetually clumsy or careless. However, it is not at all clear whether physical facts and situation-specific cognitive limitations should be taken into account. While jurors could make allowances for any of these inputs to foresight (situation, perception, cognition) without abandoning an objective standard of care, "taking the perspective of the defendant" does clash with a purely objective standard.

Courts have sought to reconcile the apparent conflict between "taking the defendant's perspective" while still applying an objective standard of care by making allowances for the defendant's capacity to foresee. That is, they ask whether the defendant's conduct was objectively reasonable, but in light of his subjective knowledge and capacity to have done otherwise (Foley v. Bos. Hous. Auth, 1990; Price v. Canadian Airlines, 2006; A.H. V. Rockingham Pub. Co, 1998). For example, judges have reversed findings of breach where the record is "barren of any proof to indicate that prior to the occurrence the defendant *could have foreseen the event* and *could have taken precautionary measures*" (Jacobs v. Alrae Hotel Corp, 1958). Indeed, at least one court has recognized that for actions to sound in negligence rather than no-fault strict liability, jurors must not presume the defendant had knowledge that he did not have (Rose v. Louisiana Power and Light Co, 1985).

As scholar Victoria Nourse has recognized, it is not uncommon for academic legal doctrines to presume the application of a purely objective standard, when in practice most jurors and judges adopt a standard that is a *hybrid* of both (Nourse, 2008). Scholars have the luxury of engaging with topics in abstract or philosophical ways, while trial judges do not. With actual cases and controversies before them, judges must weave together the evidence that is presented by the parties. Because jurors and laypeople find testimony regarding actors' knowledge or lack of knowledge of risk valuable when assessing blame, they might also find this information intuitively useful for breach.

As is hopefully clear by now, the law of breach is a mess. Treatises make bold pronouncements about negligence being objective and not requiring any evidence of the defendant's mental states. But the reality in practice is more complex, given the need for jurors to assess

foreseeability by asking what a reasonable person in the defendant's shoes would have done. Judges and jurors are left to reconcile the potentially dueling notions. We hypothesize that some of the puzzling questions we have raised may be better answered if negligence doctrine explicitly recognizes that legal foreseeability has subjective, psychological components. This may be one way to inject the "conceptual integrity" into negligence doctrine, that it has been found to be lacking (Zipursky, 2009).

To leverage the intuitive power of foreseeability for negligence assessments, researchers should study how it is used in legal contexts. Instructing jurors to focus on objective behavior and to ignore the defendant's mental states seems at odds with jurors' psychology and their spontaneous tendency to rely on them. It also leaves jurors free to infer mental states however they see fit, which might exacerbate known cognitive biases such as the curse of knowledge.

Indeed, the idea that foreseeability can be objectively assessed based on what a "reasonable person would have foreseen" invites jurors to superimpose what is known at trial with what they think the defendant *should* have known at the time of the injury. After the fact, with superior information, we can often find negligence if we do not inquire specifically into what the particular defendant thought, knew, realized, or perceived at the time. To be sure, evidence of hindsight bias is well-documented in legal decision-making (Bright & Goodman-Delahunty, 2011; Neal, Lienert, Denne, & Singh, 2022) and likely leads to defendants being found liable for harms that they could not have prevented and did nothing careless to cause (on mens rea and negligence, see Ginther et al., 2014; Malle & Nelson, 2003). However, hindsight and other cognitive biases cannot be corrected if the mentalizing processes that trigger them are presumed not to occur. By this we mean that if one assumes that jurors do not mentalize when evaluating negligence cases, then one would not be motivated to explicitly reduce any bias (such as curse of knowledge) that affects the mentalizing process. That is, judges will not issue limiting instructions to jurors to mitigate the curse of knowledge, because the bias itself and its mitigation strategies require mentalizing processes that the law presumes (at least officially) do not occur.

Civil negligence doctrine has been woefully underexplored. Indeed, most of the research on negligence has been done in the criminal context, where negligence is considered a more culpable mental state. We are perhaps more sanguine than others about incorporating the psychology of foresight into negligence without turning the inquiry into a subjective free-for-all. Just as in the criminal law, jurors could be instructed on which mental states are necessary for foresight, and attorneys could then provide circumstantial evidence of the defendant's subjective knowledge, perception, and awareness. There will always be the question of whether this evidence is believable, but this is hardly an issue that is unique to foreseeability assessments. Indeed, assessing the credibility of testimony is the core function of the jury. If the circumstantial evidence of mental states is credible, this evidence would then bear on whether it was reasonable to expect the defendant to foresee the harm. While this may not make breach decisions more predictable than they are now, it certainly gives jurors a better guide for what they ought to be doing. It also would not engage in the confusing double-speak that tells jurors to assess foreseeability according to an objective standard, while also making some ill-defined allowances for the defendant's subjective circumstances.

5. Limitations and conclusion

Unveiling the mental processes underlying foreseeability and negligence ascriptions would also improve jurors' awareness of how biased their inferences can be. The intervention we devised is just a preliminary attempt toward this aim, and we must acknowledge limitations in the studies we conducted. First, we studied mock jurors with instructions similar to the ones that real jurors would be presented with in real trials. However, because due process prohibits testing experimental conditions

on actual jurors, we could not investigate evaluative processes in the context of an actual trial. It will thus always remain unclear to what extent the conclusions of our studies will be predictive of real jurors' decisions that might be sensitive to deliberation. Second, the intervention we tested to reduce mental state reasoning in jurors was only partially successful, leaving much open to future research the task of addressing why this might have been so and what factors other than the "curse of knowledge" bias might be responsible for jurors' spontaneous reliance on mental state in negligence cases. That is, in order to develop a fully reliable and effective set of instructions to guide jurors in their evaluations, more research on the cognitive biases affecting foreseeability and negligence attributions must be conducted (e.g., Kneer & Skoczen, 2023; Sanna et al., 2002; Smith & Greene, 2005; see also Prochownik, 2021; Sommers, 2021).

By showing that jurors rely on mental state information in their negligence assessments, the present research can be conceived as a necessary first step toward the ambitious and important goal of imbuing legal foreseeability with more validity.

CRediT authorship contribution statement

Francesco Margoni: Conceptualization, Methodology, Investigation, Writing – original draft, Writing – review & editing. **Teneille R. Brown:** Conceptualization, Methodology, Investigation, Writing – original draft, Writing – review & editing.

Declaration of Competing Interest

We have no known conflict of interest to disclose.

Data availability

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