

Pricing Insurance, Fairly

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CONSUMER RELEVANCE AND CONTRIBUTION STATEMENT

Virtually all consumers will purchase insurance at some point in their lives, but in recent years, insurance premiums have been rapidly increasing — resulting in heightened perceptions of *unfairness*. Policymakers and regulators from across the political spectrum have thus established and exercised powers to limit insurers' ability to raise premiums, but these and other responses to perceived unfairness have yielded a host of market distortions, and in some instances, they have forced insurers out of higher risk, higher cost markets entirely. Ultimately, this suggests that if firms are not able to price insurance in a way that consumers perceive to be *fair*, they may not be able to offer insurance at all. Accordingly, we explore lay intuitions about insurance pricing, and specifically, when consumers judge premium increases to be fair. We find that these beliefs depend on whether premium increases are justified by increased risk levels (e.g., higher car accident rates, more frequent natural disasters) versus increased coverage needs (e.g., higher repair costs, more damaging natural disasters). This distinction, in turn, influences purchase intentions (i.e., “keep versus cancel” decisions), the acceptability of charging different prices to different segments (i.e., price discrimination), and support for regulation (i.e., insurance mandates). Additionally, our underlying theory and results suggest that causal attributions (and particularly, beliefs about personal agency) serve as a unique, novel, and heretofore unexplored driver of perceptions of price fairness. We thus offer the first empirical investigation of how consumers evaluate fairness in insurance pricing — not only advancing the psychology of insurance but also offering practical insights for consumers, policymakers, and insurers.

Moreover, we expect that our account may generalize beyond insurance, with potential relevance to other financial products and services that are similarly forward-looking and probabilistic.

ABSTRACT

Insurance is one of the oldest and most ubiquitous financial products, and numerous industries rely on healthy insurance markets to function. Actuarially, insurance premiums largely depend on the likelihood of making claims (“risk levels”) and the size of potential claims (“coverage needs”). Consequently, when risk levels and coverage needs increase — e.g., when the frequency and severity of natural disasters increase due to climate change — so too should premiums. Yet consumers typically believe it is *unfair* for insurers to increase premiums, triggering a host of market distortions (and even market failure). How, then, do consumers believe insurance should be priced? Across 10 preregistered experiments ($N = 6,379$), we show that consumers view it as less fair for insurers to increase premiums when *risk levels* increase than when *coverage needs* increase, holding expected value constant. Additionally, we explore the implications of this distinction for purchase intentions, the acceptability of price discrimination, and support for insurance mandates. Finally, we propose a novel mechanism to explain these beliefs: risk levels may feel less personally controllable than coverage needs. As such, our work not only sheds new light on the psychology of insurance but also offers new insights into the antecedents of price fairness.

Keywords: Insurance, Price Fairness, Risk and Uncertainty, Causal Attributions, Public Policy

Insurance is one of the oldest and most ubiquitous financial products in the world, constituting a \$7.19 trillion global market (Insurance Information Institute 2025a). Virtually all consumers will purchase insurance at some point in their lives, and numerous critical industries rely on robust insurance markets to function: homeowners insurance is a prerequisite for most mortgage applications, liability insurance is a requirement for most drivers, and health insurance is central to the political economies of most industrialized nations.

At the same time, insurance premiums have rapidly increased in recent years, due in large part to the rising costs of claims. In the U.S., for instance, more frequent and severe natural disasters have increased homeowners insurance premiums by upwards of 50%, and higher accident rates and repair costs have increased car insurance premiums by upwards of 40% (Eaglesham 2025). Similar trends have emerged around the world (OECD 2024; Smith 2023, 2024).

When insurers respond to the rising costs of claims by raising premiums, however, consumers often believe that doing so is *unfair*. Consequently, policymakers and regulators from across the political spectrum have established and exercised powers to limit insurers' ability to raise premiums (e.g., Darmiento 2025; Fechter 2024; Lieber 2025; Stevenson 1988).

Unfortunately, these actions can trigger a host of deleterious market distortions. For example, insurers often overcharge consumers in lower risk, lower cost (and thus less regulated) markets to offset the cost of insuring consumers in higher risk, higher cost (and thus more regulated) markets (Oh, Sen, and Tenekedjieva 2022). More concerning, onerous rate-setting regulations have forced insurers out of some higher risk, higher cost markets entirely (e.g., numerous firms have stopped offering homeowners insurance in parts of California, Florida, and Louisiana; Flavelle, Cowan, and Penn 2023). When private insurance markets fail, taxpayer-

funded programs sometimes emerge as an “insurer of last resort,” but these programs are typically more expensive, offer less protection, and struggle to remain solvent (Pating and Moore 2025).

Ultimately, then, responses to perceptions of *un*fairness in insurance pricing can undermine the very availability of the protection that consumers, policymakers, and insurers hope to preserve in the first place. Put differently, if firms are not able to price insurance in a way that consumers perceive to be *fair*, they may not be able to offer insurance at all. This raises a natural question: when do consumers feel it is fair to pay more for insurance?

In this research, we answer this question by exploring whether and how consumers distinguish between two key drivers of higher insurance premiums: increases in risk levels (e.g., more frequent natural disasters, higher car accident rates) and increases in coverage needs (e.g., more damaging natural disasters, higher car repair costs). We find that consumers believe it is less fair for insurers to raise premiums when risk levels increase than when coverage needs increase — all else equal, and when both have identical effects on expected value.

Our theory and findings not only answer recent calls for further investigation of insurance in marketing research (Sussman, Hershfield, and Netzer 2023), but they also contribute to several other distinct literatures, and yield important implications for firms and policymakers alike. First, our conceptualization bridges research on price fairness (Xia, Monroe, and Cox 2004) and the psychology of insurance (Kunreuther, Pauly, and McMorro 2013) to offer the first empirical account of how consumers evaluate fairness in insurance pricing. Second, to explain our results, we propose that causal attributions (Weiner 1979) — and in particular, beliefs about personal agency — act as a unique, novel, and heretofore unexplored driver of perceptions of price fairness. Third, we highlight critical managerial implications — demonstrating how beliefs about

the fairness of increasing premiums based on risk levels versus coverage needs correlate with purchase intentions (e.g., “keep or cancel” decisions), attitudes toward key pricing tactics used by firms (e.g., price discrimination), and support for regulation (e.g., insurance mandates). Finally, we discuss how our results may be broadly relevant to understanding price fairness for other products and services that are similarly forward-looking and probabilistic.

THEORETICAL AND CONCEPTUAL BACKGROUND

Insurance functions today in essentially the same way that it has for centuries: a group of consumers with exposure to some adverse event pay into a fund, and that fund is then used to offset the losses incurred by the few who actually experience it. The amount each consumer must pay into the fund (i.e., their “premium”) depends on their likelihood of experiencing a loss (i.e., their “risk level”), as well as the expected magnitude of that loss (i.e., their “coverage needs”; Kunreuther et al. 2013).¹

From an *actuarial* standpoint, equivalent changes to risk levels and coverage needs have identical implications for expected value (i.e., a key driver of premium calculations). For instance, consider an insurer that protects homes in a hurricane-prone region. If climate change causes hurricanes to occur twice as often (i.e., risk levels double), the insurer will need to double premiums to remain solvent; similarly, if climate change causes hurricanes to become twice as damaging (i.e., coverage needs double), the insurer will once again need to double premiums. Normatively, the source of the change does not matter: if the insurer is unable to double

¹ Of course, insurance premiums also typically include a “loading factor” to cover insurers’ administrative costs and to ensure that they earn some profit, but we hold this variable constant in our studies — manipulating only risk levels and coverage needs to isolate the key factors shaping consumers’ intuitions about how to fairly price insurance.

premiums in response to the doubling of either risk levels or coverage needs, it will not be able to cover the expected cost of its claims. Yet it is unclear whether — *psychologically* — consumers might react differently to each type of justification.

Despite the enormous scale of insurance markets, and the fact that virtually all consumers will purchase insurance at some point in their lives, little prior work has explored fairness perceptions in insurance pricing. Relevant research in marketing has tended to focus more narrowly on extended warranties, finding that loss aversion, perceived quality, and a desire for “peace of mind” drive demand (Chen, Kalra, and Sun 2009; Jindal 2015; Reiner et al. 2025). Meanwhile, research in judgment and decision making and behavioral economics has explored, for example, whether consumers are willing to pay more for insurance when negative events are framed more vividly (Johnson et al. 1993), and whether they are more likely to purchase insurance immediately after disasters occur (Michel-Kerjan, Lemoyne De Forges, and Kunreuther 2012). These findings help describe demand for insurance, in general, but they leave open a more fundamental question, in particular: how do consumers believe insurance should be priced, and when do they think it is fair for insurers to raise prices?

While prior work has yet to address this topic, two distinct literatures are worth noting and may be instructive: research on price fairness and the dual entitlement principle (Kahneman, Knetsch, and Thaler 1986), which provides a general framework for understanding when price increases are viewed as fair, and research on risky choice, which examines how consumers reason about probabilities (e.g., risk levels) and payoffs (e.g., coverage needs).

Price Fairness and the Dual Entitlement Principle

Broadly, price fairness refers to “a consumer’s assessment...of whether [changes to] a seller’s price...[are] reasonable, acceptable, or justifiable” (Xia et al. 2004, 3). It is often understood through the lens of the dual entitlement principle (Kahneman et al. 1986), which holds that consumers judge the fairness of price increases by comparing them to a reference transaction — typically their most recent purchase from a firm or the going market rate. This reference transaction establishes two implicit reference points: consumers’ reference price (i.e., the amount paid in that transaction) and firms’ reference profit (i.e., the profit earned from that transaction). An implication is that it is fair for firms to deviate from the reference price when their reference profits are threatened (e.g., when their costs increase); it is not fair, however, to raise prices simply to maximize profit (e.g., in response to an increase in demand).

Notably, past work has found that not all threats to firms’ reference profits are viewed as equally legitimate justifications for price increases. Cost increases that are under a firm’s control (e.g., an automobile repair shop switches to a more expensive parts supplier) are viewed as less legitimate justifications for price increases than those outside of a firm’s control (e.g., supply chain bottlenecks cause vehicle parts to become more expensive; Vaidyanathan and Aggarwal 2003). Additionally, consumers expect price increases to align with the source of a firm’s higher costs (e.g., to cover an increase in employee wages, it is fairer to raise service fees than to raise the price of vehicle parts; Bolton and Alba 2006). Overall, this literature suggests price increases are viewed as fairer when consumers can trace their source to concrete, external cost pressures originating with *firms*.

For insurance, however, cost pressures not only depend on factors that are less concrete, like risk levels and coverage needs, but are also more aligned with *consumers*, themselves. For instance, while consumers might intuitively understand why automobile repairs will cost more when the prices of steel or electronic components increase, insurance premiums often largely depend on individuals' characteristics, such as an increase in a consumer's estimated likelihood of filing a claim, or an increase in the expected cost of that consumer's claim.

Moreover, insurance is unique in that consumers effectively acquire a “promise” from the insurer to incur costs on their behalf — as opposed to something that has already been produced or paid for by the firm. Ultimately, most consumers should hope to receive nothing in return from the insurer (i.e., to never actually experience the adverse event, and require payment). In this way, insurance is generally more probabilistic and forward-looking, and it may be more difficult for consumers to identify the relevant reference transaction or reference price, limiting the potential applicability of the dual entitlement principle to fairness perceptions in insurance pricing.

Risky Choice and Consideration of Probabilities versus Payoffs

Relative to research on price fairness and the dual entitlement principle, research on risky choice maps on to insurance more cleanly, as it has directly compared how consumers weigh probabilities (an analog to risk levels) and payoffs (an analog to coverage needs). Yet this work is silent with respect to perceptions of price fairness — which, as noted, matter a great deal for a highly regulated industry like insurance. Moreover, upon closer inspection, these findings

potentially offer competing predictions for whether consumers might think insurance prices should be tied more to risk levels or coverage needs.

On one hand, a classic finding from this literature is that people tend to overweight small probabilities (Kahneman and Tversky 1979; Tversky and Kahneman 1992). For example, when the probability of contracting a disease increases from 1% to 2%, decision-makers view the change as much more dramatic than when the same probability increases from 32% to 33% (Gonzalez and Wu 1999). Additionally, when evaluating gambles with unknown probabilities and unknown payoffs, people prefer learning about probabilities before learning about payoffs (Karmarkar, Clithero, and Raffaelli 2025). Since insurance, by definition, provides protection against events with small probabilities, their heightened salience could imply that it is fairer to charge more for insurance when the likelihood of an adverse event is greater (i.e., risk levels increase).

On the other hand, when faced with more naturalistic risky choices (e.g., deciding which projects to pursue or investments to make), people tend to focus more on outcomes or payoffs, and rarely seek out information about probabilities spontaneously (Huber, Wider, and Huber 1997). Further, in the context of more extreme and affectively rich negative events, people are often insensitive to probabilities, instead relying on their feelings or emotions (Sunstein 2002; Sunstein and Zeckhauser 2011). For example, people's willingness to pay to avoid electric shocks is much less sensitive to probabilities than their willingness to pay to avoid a \$20 cash penalty (Rottenstreich and Hsee 2001). Since insurance often provides protection against events that may be more affect-rich, an alternative possibility is that it is fairer to charge more for insurance when the severity of an adverse event is greater (i.e., coverage needs increase).

These competing predictions aside, a more fundamental question is whether preferences elicited from risky choice paradigms (e.g., gambles) are relevant to fairness perceptions concerning insurance in the first place — especially since merely labeling gambles as “insurance” has been shown to systematically increase people’s willingness to accept sure losses (Hershey, Kunreuther, and Schoemaker 1982; Hershey and Schoemaker 1980). This suggests a fundamentally distinct psychology underlying insurance pricing, which cannot be parsimoniously explained by research on price fairness and the dual entitlement principle nor research on risky choice and attentiveness to probabilities versus payoffs.

Causal Attributions and Personal Agency

We bridge the aforementioned gaps in the literature by invoking theories of causal attributions (e.g., Weiner 1979) to propose a novel account of how consumers evaluate the fairness of insurance premiums. Specifically, we theorize that beliefs about *personal agency* over changes in risk levels versus coverage needs systematically differ, and that this difference is central to shaping fairness perceptions.

This insight is broadly consistent with recent research linking personal agency to fairness, writ large. For example, people view various marketing strategies (e.g., segmentation and targeting) as fairer when based on variables that people control themselves (e.g., behavior) as opposed to those they do not (e.g., race or gender; Shaddy, Friedman, and Toubia 2025). Similarly, hiring and promotion decisions seem fairer when based on personal characteristics that feel more controllable (e.g., education and experience; Tomova Shakur and Phillips 2022).

That said, beliefs about personal agency have not previously been explored as an antecedent of *price* fairness. Importantly, in the context of insurance, we propose that risk levels and coverage needs differ with respect to the extent consumers perceive each as more or less “controllable” (i.e., linked to their own personal actions or decisions). For example, consider the causes of increased risk levels: storms becoming more frequent due to climate change, car accidents becoming more common due to other drivers’ behavior, and so on. These are largely events that happen *to* consumers. As such, they may feel relatively external and beyond consumers’ individual control — less personal or less specific to any given consumer. Now consider the causes of increased coverage needs: homes experiencing more damage because of failures to retrofit them, car repairs costing more due to the expenses associated with replacing parts for a particular vehicle, and so on. Even when coverage needs increase due to factors that are not “controllable” in a literal sense (e.g., home values rising due to market forces), they may nevertheless feel more proximally connected to consumers’ own decisions (e.g., choosing which home to purchase in the first place) — more personal or more specific to a particular consumer. As a result, consumers might view changes to risk levels as less controllable than changes to coverage needs, and fairness perceptions may suffer accordingly.

OVERVIEW OF THE CURRENT RESEARCH

Altogether, we propose that consumers believe it is less fair for insurers to base premium increases on risk levels versus coverage needs, all else equal. Specifically:

H1: Consumers will perceive insurance premium increases as less fair when justified by increased risk levels than when justified by increased coverage needs (holding changes to expected value constant).

Further, we predict that if premium increases justified by increased risk levels are less fair than those justified by increased coverage needs, these perceptions should have implications for various behavioral intentions and policy attitudes. For example, prior research has established that fairness perceptions shape purchase intentions (Campbell 1999), the acceptance of various types of firm pricing practices (Maxwell 2002), and support for regulatory interventions (Campbell, Pomerance, and Percival Carter 2025). Accordingly — underscoring the managerial consequences of our account — we predict:

H2: Compared to increased coverage needs, increased risk levels will reduce (a) intentions to retain insurance policies in the face of premium increases, (b) the perceived acceptability of price discrimination, and (c) support for policies that mandate the purchase of insurance.

We selected these managerial consequences, in particular, because they represent critical real-world reactions to higher insurance premiums: (a) consumers often allow their policies to lapse when they become unaffordable (Domonoske 2025; Insurance Information Institute 2023), (b) insurers often charge different segments different prices (Boomhower et al. 2024; Insurance Information Institute 2025b), and (c) governments often compel the purchase of insurance to

avoid adverse selection (Rothschild and Stiglitz 1976) and to expand the size of the risk pool (e.g., Chandra, Gruber, and McKnight 2011; Michel-Kerjan 2010).

As noted, we hypothesize that the distinction between risk levels and coverage needs shapes fairness perceptions and can be explained — in part — by differences in causal attributions. Specifically, we expect consumers to perceive changes to risk levels as less within their personal control than changes to coverage needs, and thus hypothesize that:

H3a: Differences in the perceived fairness of increasing insurance premiums due to increased risk levels versus increased coverage needs will be mediated by differences in the perceived controllability of each cause.

H3b: Differences in the perceived fairness of increasing insurance premiums due to increased risk levels versus increased coverage needs will be moderated by the extent to which each cause is viewed as more clearly within (or outside) of one's personal control.

We test these predictions across 10 preregistered studies (see Table 1). Study 1 establishes the basic effect (H1), while Studies 2A–C replicate this effect across a host of naturalistic scenarios. Studies 3A–C examine downstream consequences (H2). Study 4 provides evidence for our proposed process by way of mediation (H3a), while Studies 5A–B provide evidence for our proposed process by way of moderation (H3b). All materials, preregistrations, data, and code are available via ResearchBox.²

² https://researchbox.org/4663?PEER_REVIEW_passcode=DLMMLH

TABLE 1
OVERVIEW OF STUDIES

Study	N	Purpose	Main Finding	Mean Fairness [95% CI]		Sig.	Effect Size
				Risk Levels	Coverage Needs		
1	601	Basic Effect (Generic)	Participants viewed premium increases as less fair when justified by increased risk levels (versus increased coverage needs)	2.85 [2.61, 3.08]	3.26 [3.00, 3.51]	*	$d = 0.23$
2A	443	Basic Effect (Real-World)	Participants viewed premium increases as less fair when justified by increased risk levels (versus increased coverage needs) in the context of laptop insurance	3.18 [2.94, 3.42]	3.85 [3.61, 4.09]	***	$d = 0.37$
2B	499	Basic Effect (Real-World)	Participants viewed premium increases as less fair when justified by increased risk levels (versus increased coverage needs) in the context of car insurance	3.07 [2.87, 3.28]	3.92 [3.68, 4.15]	***	$d = 0.49$
2C	491	Basic Effect (Real-World)	Participants viewed premium increases as less fair when justified by increased risk levels (versus increased coverage needs) in the context of homeowners insurance	2.79 [2.58, 2.99]	4.10 [3.87, 4.33]	***	$d = 0.75$
3A	338	Managerial Implications	Participants indicated they would be more likely to cancel (versus keep) a cell phone insurance policy when premiums increased because of increased risk levels (versus increased coverage needs)	-1.08 [-1.39, -0.78]	-0.60 [-0.89, -0.31]	*	$d = 0.25$

3B	399	Managerial Implications	Participants indicated that it would be less acceptable to engage in price discrimination based on differences in consumers' risk levels (versus coverage needs)	4.95 [4.70, 5.21]	5.38 [5.11, 5.64]	*	$d = 0.23$
3C	681	Managerial Implications	Participants indicated they would be less supportive of insurance mandates in the face of increased risk levels (versus increased coverage needs)	3.98 [3.76, 4.21]	4.31 [4.10, 4.52]	*	$d = 0.16$
4	746	Mediation	Price fairness was mediated by differences in beliefs about how much personal agency consumers had over risk levels (versus coverage needs)	3.56 [3.37, 3.74]	3.98 [3.79, 4.17]	**	$d = 0.23$
5A	1,120	Moderation	Differences in perceived price fairness attenuated when changes to risk levels and coverage needs clearly stemmed from factors within consumers' control	3.79 [3.59, 3.99]	4.62 [4.43, 4.81]	***	$d = 0.52$
5B	1,061	Moderation	Differences in perceived price fairness attenuated when changes to risk levels and coverage needs clearly stemmed from factors beyond consumers' control	3.60 [3.40, 3.80]	4.22 [4.02, 4.42]	***	$d = 0.38$

NOTE. — * $p < .05$, ** $p < .01$, *** $p < .001$. For Study 1, means and 95% CIs exclude the “No Explanation” condition. For Studies 3A–C, means and 95% CIs relate to the downstream consequences of interest in each study (as opposed to price fairness). For Study 4, we only report means and 95% CIs for our dependent variable (i.e., we omit our mediator). Finally, for Studies 5A–B, we only report means and 95% CIs for the “baseline” conditions.

We note a few relevant points before delving into the empirical studies. First, following research on the dual entitlement principle, our studies examine how consumers react to *changes* in insurance premiums as a means of studying price fairness perceptions. We do so because changes in insurance premiums make the inputs to insurance prices — risk levels and coverage needs — more salient. Second, we use the terms “personal agency” and “personal control” interchangeably throughout our work to refer to the same key construct outlined above. Third, we acknowledge that in real-world insurance markets, risk levels and coverage needs often change in tandem — for instance, climate change may simultaneously make hurricanes more frequent, increasing risk levels, and more damaging, increasing coverage needs. However, our studies deliberately isolate these factors to identify their independent effects on fairness perceptions. Fourth, our goal in this work is to describe and explain consumers’ lay beliefs about price fairness in the context of insurance — to that end, we are careful to avoid making normative claims about what is *actually* fairer from an ethical or actuarial standpoint.

Finally, while this research offers a novel theoretical lens for understanding price fairness in *insurance* — itself a ubiquitous financial instrument that serves as critical infrastructure for the broader economy — we believe our account may yield similar implications for any other probabilistic, forward-looking financial product offered in the marketplace. For example, while consumers might not naturally think of annuity contracts, vehicle service agreements, or retirement plans as “insurance,” per se, these are products that are similarly priced according to probability distributions over uncertain outcomes of various magnitudes. We thus expect our theory and findings to generalize to other critical financial decision making contexts, where beliefs about personal agency may similarly matter for explaining perceptions of price fairness in the face of uncertainty (see General Discussion).

STUDY 1

Study 1 (<https://aspredicted.org/6837-3spx.pdf>) tested whether consumers perceive premium increases as less fair when they are justified by increased risk levels than by increased coverage needs. Specifically, participants evaluated the fairness of doubling insurance premiums in response to either a doubling of risk levels or a doubling of coverage needs. We “doubled” risk levels and coverage needs to hold the magnitude of the change constant. We also intentionally omitted specific numeric values so that any differences in fairness judgments could not be attributed to participants’ numeracy or comprehension of risk.

Methods

We recruited 601 ($M_{Age} = 37.58$, $SD_{Age} = 12.06$, 54.58% female, 44.09% male, 1.33% other) CloudResearch Connect participants for Study 1, which employed a three-condition (Risk vs. Coverage vs. No Explanation) between-subjects design.

All participants first read: “You have an insurance policy that protects you against losses stemming from a negative event.” In the “Risk” condition, they then read: “The amount of coverage (i.e., the size of the loss that your policy will reimburse) has not changed, but the likelihood that you will experience the negative event (i.e., the likelihood that you will incur a loss) has doubled.” In the “Coverage” condition, they instead read: “The likelihood that you will experience the negative event (i.e., the likelihood that you will incur a loss) has not changed, but the amount of coverage (i.e., the size of the loss that your policy will reimburse) has doubled.” In the “No Explanation” condition, participants did not read anything else. All participants then

answered: “How fair would it be for the insurance company to double the amount that they charge you for this policy?” (1 = “Not at all fair”; 7 = “Completely fair”).

Results and Discussion

We constructed a contrast-coded independent variable to compare the Risk and Coverage conditions (-1 = Risk, $+1$ = Coverage, 0 = No Explanation). An ordinary least squares (OLS) regression revealed that participants viewed it as less fair to double premiums when risk doubled ($M = 2.85$, 95% CI = $[2.61, 3.08]$) than when coverage doubled ($M = 3.26$, 95% CI = $[3.00, 3.51]$; $b = 0.21$, 95% CI = $[0.04, 0.37]$, $t(598) = 2.50$, $p = .013$; partial- $\eta^2 = 0.01$), even though both changes were actuarially equivalent.³

Study 1 thus provided initial support for the basic effect: premium increases are viewed as less fair when they are justified by increased risk levels than when they are justified by increased coverage needs (H1). We deliberately presented a generic scenario to ensure that extraneous associations could not explain our results, but this approach leaves open questions about generalizability. We therefore designed our next studies to mirror more common real-world insurance policies.

³ Unsurprisingly, doubling premiums without any explanation was viewed as less fair than doubling premiums because risk had doubled or because coverage had doubled ($M = 1.91$, 95% CI = $[1.71, 2.10]$; $b = 0.38$, 95% CI = $[0.29, 0.48]$, $t(598) = 8.06$, $p < .001$; partial- $\eta^2 = 0.10$).

STUDIES 2A–C

Studies 2A–C (<https://aspredicted.org/tt4fh9.pdf>, <https://aspredicted.org/gg9cc2.pdf>, and <https://aspredicted.org/gn6fj2.pdf>) adopted the same basic design as Study 1, but introduced more naturalistic insurance policies and described specific risk levels and coverage needs.

Methods

We recruited 443 participants for Study 2A ($M_{Age} = 41.31$, $SD_{Age} = 12.55$, 50.56% female, 47.40% male, 1.58% other, 0.45% prefer not to say), 499 participants for Study 2B ($M_{Age} = 41.75$, $SD_{Age} = 13.35$, 59.12% female, 39.48% male, 1.00% other, 0.40% prefer not to say), and 491 participants for Study 2C ($M_{Age} = 41.93$, $SD_{Age} = 13.96$, 56.82% female, 39.71% male, 2.44% other, 1.02% prefer not to say). All participants were recruited via CloudResearch Connect, and all studies employed a two-condition (Risk vs. Coverage) between-subjects design.

Across studies, all participants first reviewed basic information about a hypothetical insurance policy — including the risk level, coverage needs, and premium (see Table 2). Studies 2A–C considered laptop insurance, car insurance, and homeowners insurance, respectively. Next, on a subsequent screen, participants learned that either the risk level associated with their policy had increased by half or that the coverage needs associated with their policy had increased by half. All participants then answered: “How fair would it be for your [laptop/car/homeowners] insurance company to increase the amount they charge you from \$[5/25/50]/month to \$[7.50/37.50/75]/month?” (1 = “Not at all fair”; 7 = “Completely fair”).⁴

⁴ Critically, for Studies 2A–C, the premiums (and premium increases) were chosen such that the policy was always priced according to expected value — i.e., risk levels multiplied by coverage needs.

TABLE 2

STIMULI FROM STUDIES 2A–C

Study/Scenario	Risk Condition	Coverage Condition
<u>Study 2A:</u> Laptop Insurance	You own a laptop, and you have a laptop insurance policy in case you need to have it repaired.	You own a laptop, and you have a laptop insurance policy in case you need to have it repaired.
	You have a 10% chance of needing a repair each year, and a repair would typically cost you \$600.	A repair would typically cost you \$600, and you have a 10% chance of needing a repair each year.
	This policy costs you \$5/month.	This policy costs you \$5/month.
	--- PAGE BREAK ---	--- PAGE BREAK ---
	Some time has passed. Your chance of needing a repair is now 15% each year (up from 10%).	Some time has passed. A repair would now typically cost you \$900 (up from \$600).
<u>Study 2B:</u> Car Insurance	You own a car, and you have a car insurance policy in case you need to have it repaired.	You own a car, and you have a car insurance policy in case you need to have it repaired.
	You have a 5% chance of needing a repair each year, and a repair would typically cost you \$6,000.	A repair would typically cost you \$6,000, and you have a 5% chance of needing a repair each year.
	This policy costs you \$25/month.	This policy costs you \$25/month.
	--- PAGE BREAK ---	--- PAGE BREAK ---
	Some time has passed. Your chance of needing a repair is now 7.5% each year (up from 5%).	Some time has passed. A repair would now typically cost you \$9,000 (up from \$6,000).
	A repair would still typically cost you \$6,000, and your car insurance	You still have a 5% chance of needing a repair each year, and your

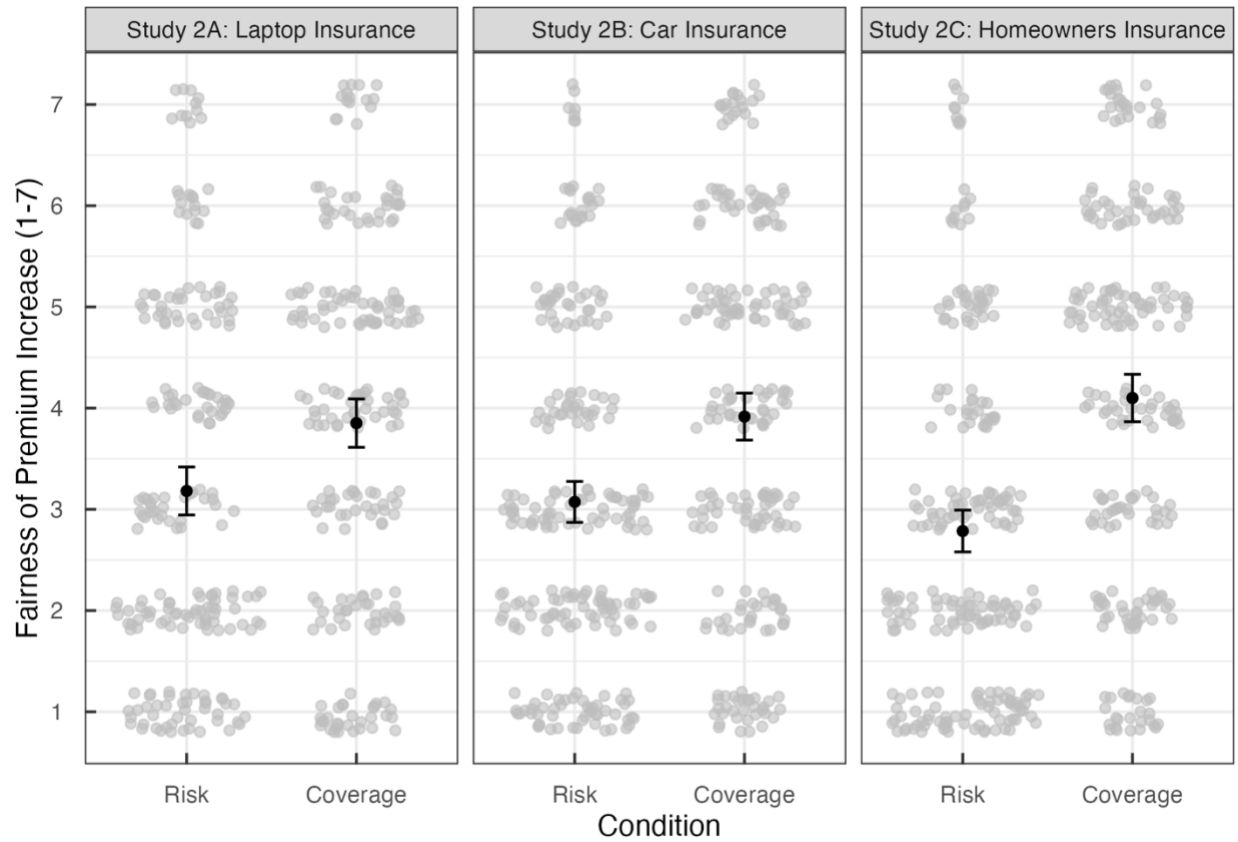
	company is still charging you \$25/month.	car insurance company is still charging you \$25/month.
<u>Study 2C:</u> Homeowners Insurance	You own a home, and you have a homeowners insurance policy in case your home is damaged.	You own a home, and you have a homeowners insurance policy in case your home is damaged.
	You have a 1% chance of experiencing damages to your home each year, and damages would typically cost you \$60,000.	Damages would typically cost you \$60,000, and you have a 1% chance of experiencing damages to your home each year.
	This policy costs you \$50/month.	This policy costs you \$50/month.
	--- PAGE BREAK ---	--- PAGE BREAK ---
	Some time has passed. Your chance of experiencing damages to your home is now 1.5% each year (up from 1%).	Some time has passed. Damages would now typically cost you \$90,000 (up from \$60,000).
	Damages would still typically cost you \$60,000, and your homeowners insurance company is still charging you \$50/month.	You still have a 1% chance of experiencing damages to your home each year, and your homeowners insurance company is still charging you \$50/month.

Results and Discussion

For each study, we constructed a contrast-coded independent variable comparing the Risk and Coverage conditions ($-0.5 = \text{Risk}$, $+0.5 = \text{Coverage}$). A series of OLS regressions revealed that premium increases were again viewed as less fair when risk increased versus when coverage increased in the context of laptop insurance (Study 2A; $b = 0.67$, 95% CI = $[0.34, 1.01]$, $t(441) = 3.92$, $p < .001$; $d = 0.37$), car insurance (Study 2B; $b = 0.84$, 95% CI = $[0.54, 1.15]$, $t(497) = 5.41$, $p < .001$; $d = 0.49$), and homeowners insurance (Study 2C; $b = 1.32$, 95% CI = $[1.00, 1.63]$, $t(489) = 8.31$, $p < .001$; $d = 0.75$; see Figure 1).

FIGURE 1

RESULTS FROM STUDIES 2A–C



NOTE. — Error bars represent 95% confidence intervals.

Studies 2A–C replicate the basic effect from Study 1 — i.e., consumers view premium increases justified by increased risk levels as less fair than those justified by increased coverage needs (H1) — across a wide range of naturalistic contexts, risk levels, and coverage needs. We next turn to downstream managerial consequences.

STUDIES 3A–C

Past work has linked fairness perceptions to various consumer behaviors and attitudes (e.g., Campbell 1999; Campbell et al. 2025; Maxwell 2002). Thus, if premium increases are viewed as less fair when justified by increased risk levels than when justified by increased coverage needs, then these beliefs may correlate with various consumer-relevant outcomes (H2). Therefore, Studies 3A (<https://aspredicted.org/7hft-dj69.pdf>), 3B (<https://aspredicted.org/gncp-drvn.pdf>), and 3C (<https://aspredicted.org/qy28-xjcf.pdf>) examined “keep or cancel” decisions, the acceptability of price discrimination, and support for insurance mandates, respectively (across scenarios that broadly mirrored those tested in Studies 2A–C).

Study 3A

Methods. We recruited 338 ($M_{Age} = 42.07$, $SD_{Age} = 12.73$, 52.07% female, 47.34% male, 0.59% other) CloudResearch Connect participants for Study 3A, which employed a two-condition (Risk vs. Coverage) between-subjects design.

Participants considered insurance for electronic devices (as in Study 2A). Specifically, we told participants that they had a cell phone insurance policy, and that their premium would be doubling to reflect a doubling of *either* their risk levels or coverage needs (see Table 3). Participants then answered: “How likely are you to keep versus cancel your cell phone protection plan?” (−3 = “Definitely cancel”; +3 = “Definitely keep”).

TABLE 3

STIMULI FROM STUDY 3A

Risk Condition	Coverage Condition
Imagine that you own a cell phone that has a 10% annual chance of needing to be replaced , that it costs \$600, and that you have a cell phone protection plan through your phone company for the full value of your device . This cell phone protection plan costs you \$10/month.	Imagine that you own a cell phone that costs \$600 , that the annual chance that it will need to be replaced is 10%, and that you have a cell phone protection plan through your phone company for the full value of your device . This cell phone protection plan costs you \$10/month.
--- PAGE BREAK ---	--- PAGE BREAK ---
A few years have passed, and while you still have a phone that costs \$600, you've gotten a new phone for which the annual chance that it will need to be replaced is double what it was for your old phone – that is, the annual chance that your phone will need to be replaced is now 20% . Accordingly, your cell phone company recently sent you a notice that they will soon raise the price of your cell phone protection plan to \$20/month .	A few years have passed, and while the annual chance that your phone will need to be replaced is still 10%, you've gotten a new phone that costs double what your old phone cost – that is, your phone now costs \$1,200 . Accordingly, your cell phone company recently sent you a notice that they will soon raise the price of your cell phone protection plan to \$20/month .

Results. We constructed a contrast-coded independent variable comparing the Risk and Coverage conditions ($-0.5 = \text{Risk}$, $+0.5 = \text{Coverage}$). An OLS regression revealed that participants were more likely to cancel their cell phone insurance policies when premium increases were justified by increased risk levels ($M = -1.08$, 95% CI = $[-1.39, -0.78]$) versus increased coverage needs ($M = -0.60$, 95% CI = $[-0.89, -0.31]$; $b = 0.48$, 95% CI = $[0.06, 0.90]$, $t(336) = 2.26$, $p = .025$; $d = 0.25$).

Study 3B

Methods. We recruited 399 ($M_{Age} = 42.74$, $SD_{Age} = 12.55$, 53.38% female, 45.61% male, 1.00% other) CloudResearch Connect participants for Study 3B, which employed a two-condition (Risk vs. Coverage) between-subjects design.

Participants considered car insurance pricing (as in Study 2B). Specifically, we told participants that a car insurance company was offering policies for two types of vehicles that differed in *either* their risk levels or coverage needs (see Table 4). Participants then answered: “How fair would it be for the insurance company to charge more to insure Type A vehicles than to insure Type B vehicles?” (1 = “Not at all fair”; 7 = “Completely fair”).

TABLE 4
STIMULI FROM STUDY 3B

Risk Condition	Coverage Condition
An insurance company is offering insurance coverage for two types of vehicles: • Type A vehicles have a 20% annual chance of “total loss” (that is, they have a 20% chance of needing to be completely replaced) • Type B vehicles have a 10% annual chance of “total loss” (that is, they have a 10% chance of needing to be completely replaced)	An insurance company is offering insurance coverage for two types of vehicles: • Type A vehicles are worth \$40,000 • Type B vehicles are worth \$20,000 Both types of vehicles have a 15% annual chance of “total loss” (that is, they have a 15% annual chance of needing to be completely replaced).
Both types of vehicles are worth \$30,000.	

NOTE. — We selected risk levels (i.e., chance of total loss) and coverage needs (i.e., vehicle worth) such that the expected values of loss were equivalent across conditions. Additionally, we counterbalanced whether Type A or Type B vehicles corresponded to vehicles with higher risk levels or higher coverage needs at the participant level. Finally, we adjusted the exact text of our dependent variable to reflect whether participants reviewed stimuli where “Type

A” or “Type B” vehicles corresponded to the higher risk levels/higher coverage needs vehicles based on counterbalancing implemented in the survey.

Results. We constructed a contrast-coded independent variable comparing the Risk and Coverage conditions ($-0.5 = \text{Risk}$, $+0.5 = \text{Coverage}$). An OLS regression revealed greater support for price discrimination when vehicles differed in their coverage needs ($M = 5.38$, 95% CI = $[5.11, 5.64]$) than when they differed in their levels of risk ($M = 4.95$, 95% CI = $[4.70, 5.21]$; $b = 0.42$, 95% CI = $[0.06, 0.78]$, $t(397) = 2.27$, $p = .024$; $d = 0.23$).

Study 3C

Methods. We recruited 681 ($M_{\text{Age}} = 42.15$, $SD_{\text{Age}} = 13.48$, 50.95% female, 48.31% male, 0.73% other) Prolific Academic participants for Study 3C, which employed a two-condition (Risk vs. Coverage) between-subjects design.

Participants considered a variant of homeowners insurance (as in Study 2C): flood insurance. Specifically, participants imagined that they were homeowners in a hurricane-prone region and learned that the risk levels or coverage needs in their region had recently doubled (see Table 5). Participants then answered: “Given that [the risk of experiencing water damage from a hurricane has doubled from 1% each year to 2% each year/the expected water damage from hurricanes has doubled from \$150,000 to \$300,000], should lawmakers implement a policy requiring all homeowners to purchase flood insurance?” (1 = “Definitely no”; 7 = “Definitely yes”).

TABLE 5
STIMULI FROM STUDY 3C

Risk Condition	Coverage Condition
Homeowners in hurricane-prone regions sometimes have flood insurance policies that protect their homes from the chance of experiencing water damage when hurricanes strike. There is a 1% chance that a given home will experience water damage each year, and when hurricanes strike, homes typically experience \$150,000 in water damage. ----- PAGE BREAK ----- A government report has indicated that hurricanes are now expected to occur twice as frequently. Put differently, while homes affected by hurricanes are still typically expected to experience \$150,000 in water damage, the chance of a given home experiencing water damage from a hurricane has doubled from 1% each year to 2% each year. One way to manage and distribute these risks would be to require all homeowners in hurricane-prone regions to purchase flood insurance.	Homeowners in hurricane-prone regions sometimes have flood insurance policies that cover water damage to their homes when hurricanes strike. When hurricanes strike, homes typically experience \$150,000 in water damage, and there is a 1% chance that a given home will experience water damage each year. ----- PAGE BREAK ----- A government report has indicated that hurricanes are now expected to cause twice as much water damage to homes when they occur. Put differently, while the chance of a given home experiencing water damage from a hurricane is still 1% each year, the water damage such a home might typically experience has doubled from \$150,000 to \$300,000. One way to manage and distribute these costs would be to require all homeowners in hurricane-prone regions to purchase flood insurance.

Results. We constructed a contrast-coded independent variable comparing the Risk and Coverage conditions ($-0.5 = \text{Risk}$, $+0.5 = \text{Coverage}$). An OLS regression revealed less support for insurance mandates in response to increased risk levels ($M = 3.98$, 95% CI = $[3.76, 4.21]$) versus increased coverage needs ($M = 4.31$, 95% CI = $[4.10, 4.52]$; $b = 0.33$, 95% CI = $[0.02, 0.63]$, $t(679) = 2.07$, $p = .038$; $d = 0.16$).

Studies 3A–C Discussion

Studies 3A–C underscore the downstream managerial implications of our account (H2). Highlighting risk levels versus coverage needs reduced intentions to retain insurance policies (Study 3A), the acceptability of price discrimination (Study 3B), and support for insurance mandates (Study 3C). In our final studies, we offer evidence for our proposed mechanism.

STUDY 4

We suggest that consumers perceive changes to risk levels as less within their personal control than changes to coverage needs. These attributions, in turn, may explain the effect of highlighting changes to risk levels versus coverage needs on the perceived fairness of raising insurance premiums. In Study 4 (<https://aspredicted.org/vi64g3.pdf>), therefore, we measure beliefs about the extent to which consumers have personal agency (or personal control) over changes in risk levels versus coverage needs, and test whether they mediate the effect.

Methods

We recruited 746 ($M_{Age} = 40.64$, $SD_{Age} = 12.73$, 50.40% female, 47.72% male, 1.88% other) CloudResearch Connect participants for Study 4, which employed a two-condition (Risk vs. Coverage) between-subjects design.

We adapted the generic scenario from Study 1 but omitted the “No Explanation” condition. Additionally, prior to evaluating fairness, participants responded to an adapted version

of the “personal control” subscale of the Revised Causal Dimension Scale (CDSII; McAuley, Duncan, and Russell 1992; see Table 6). These scale items constituted our mediators and were elicited on a 1–9 scale where higher values indicated that changes in risk levels or coverage needs were perceived to be outside (versus within) one’s personal control. Next, on a separate screen, participants responded to the same fairness measure as in prior studies.

TABLE 6
MEDIATORS MEASURED IN STUDY 4

Item	Lower Bound (1)	Upper Bound (9)
1	Something over which you have power	Something over which you have no power
2	Manageable by you	Not manageable by you
3	Something you can regulate	Something you cannot regulate

NOTE. — Items were presented in a randomized order.

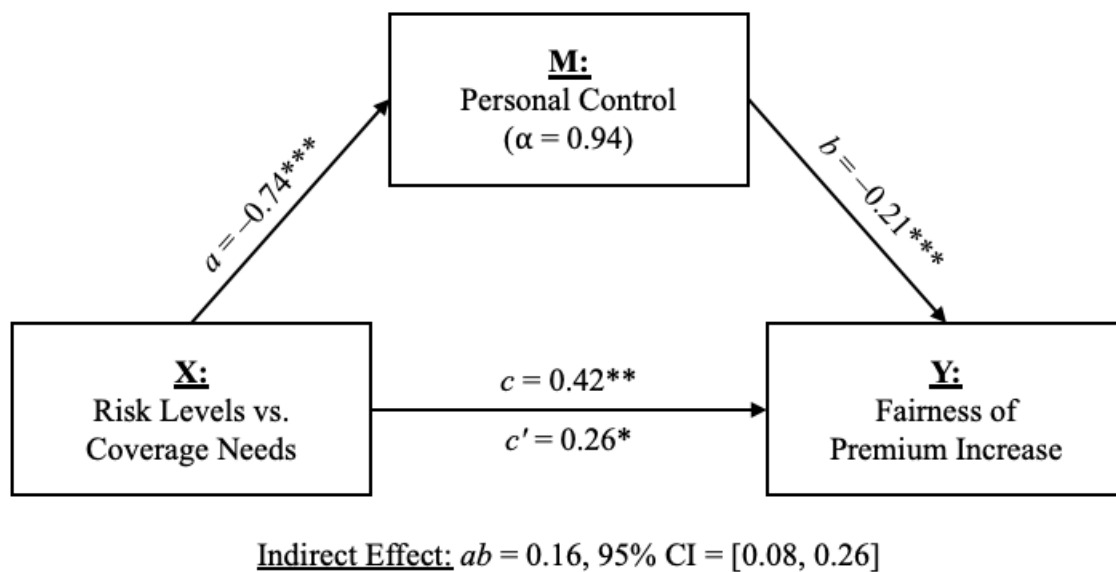
Results and Discussion

We constructed a contrast-coded independent variable to compare the Risk and Coverage conditions ($-0.5 = \text{Risk}$, $+0.5 = \text{Coverage}$). Directly replicating Study 1, an OLS regression revealed that participants viewed premium increases justified by increased risk levels as less fair ($M = 3.56$, 95% CI = [3.37, 3.74]) than those justified by increased coverage needs ($M = 3.98$, 95% CI = [3.79, 4.17]; $b = 0.42$, 95% CI = [0.16, 0.69], $t(744) = 3.14$, $p = .002$; $d = 0.23$). Next, we analyzed perceptions of personal control by averaging responses to our three mediators ($\alpha =$

0.94). An OLS regression revealed that changes in risk levels were likewise viewed as further beyond participants' personal control ($M = 6.64$, 95% CI = [6.44, 6.85]) than changes in coverage needs ($M = 5.90$, 95% CI = [5.63, 6.17]; $b = -0.74$, 95% CI = [-1.08, -0.41], $t(744) = -4.35$, $p < .001$; $d = -0.32$). Finally, a bootstrapped mediation analysis (PROCESS Model 4; Hayes 2022; 10,000 resamples) revealed that perceptions of personal control partially mediated differences in perceived fairness (95% CI = [0.08, 0.26]; see Figure 2).

FIGURE 2

MEDIATION RESULTS FROM STUDY 4



NOTE. — $*p < .05$, $**p < .01$, $***p < .001$.

Study 4 provides mediation evidence for our account, consistent with H3a: differences in beliefs about personal control explained, in part, differences in fairness perceptions, depending on the source of the change (e.g., risk levels vs. coverage needs). Notably, the effect was not fully mediated by these beliefs, suggesting that it may be multiply determined (see General

Discussion for additional commentary). To further corroborate the role of personal control as a key underlying mechanism, we next test our proposed process by way of moderation (Spencer, Zanna, and Fong 2005).

STUDIES 5A–B

If fairness perceptions in insurance pricing are shaped by beliefs about consumers' personal agency over changes to risk levels versus coverage needs, an implication is that orthogonally manipulating whether these factors are clearly within (or clearly beyond) their control should moderate the effect. Therefore, in Studies 5A (<https://aspredicted.org/z3id53.pdf>) and 5B (<https://aspredicted.org/45qt99.pdf>), we varied the extent to which changes to risk levels or coverage needs clearly stemmed (or clearly did not stem) from consumers' *own* actions or decisions (H3b).

Study 5A

Methods. We recruited 1,120 ($M_{Age} = 40.23$, $SD_{Age} = 12.62$, 54.37% female, 44.55% male, 1.07% other) CloudResearch Connect participants for Study 5A, which employed a 2×2 between-subjects design. Mirroring prior studies, we included both “Risk” and “Coverage” conditions. However, we also crossed this with a condition comparing fairness perceptions at “Baseline” to a “High Agency” condition.

Specifically, participants imagined that they were homeowners, and they were either simply told that the risk level or coverage needs associated with their homeowners insurance

policy had increased (“Baseline”), or that the risk level or coverage needs associated with their homeowners insurance policy had increased for a reason within their control (“High Agency”) — their decision to build a pool on their property (see Table 7 for stimuli). All participants then answered: “How fair would it be for the insurance company to charge you more for your homeowners insurance policy?” (1 = “Not at all fair”; 7 = “Completely fair”).

TABLE 7
STIMULI FROM STUDY 5A

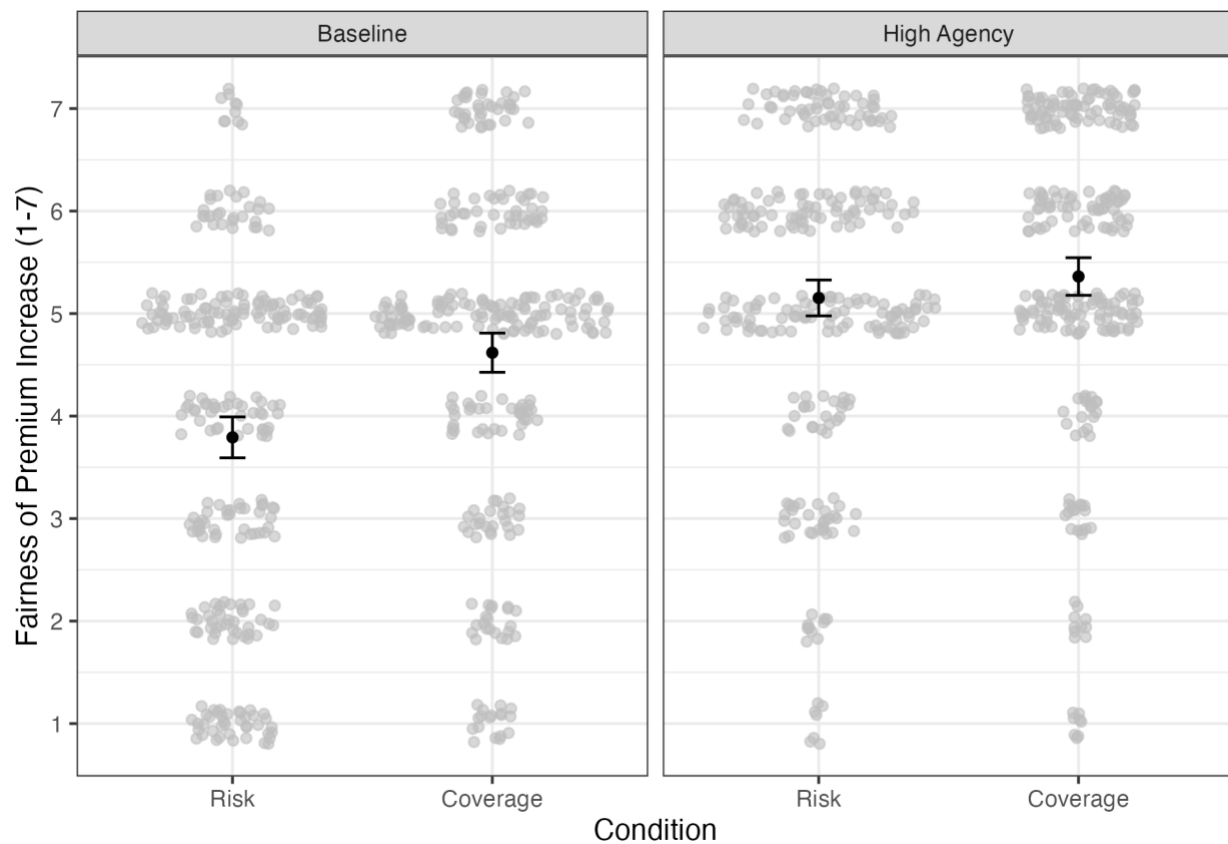
Control	Risk Condition	Coverage Condition
Baseline	You have a homeowners insurance policy. The likelihood that you will experience a negative event (i.e., the likelihood that you will incur a loss) has increased.	You have a homeowners insurance policy. The amount of coverage (i.e., the size of the loss that your policy will reimburse) has increased.
High Agency	You have a homeowners insurance policy. You recently decided to add a pool to your home, so the likelihood that you will experience a negative event (i.e., the likelihood that you will incur a loss) has increased.	You have a homeowners insurance policy. You recently decided to add a pool to your home, so the amount of coverage (i.e., the size of the loss that your policy will reimburse) has increased.

Results. We constructed two contrast-coded independent variables to compare responses at each level of condition (+0.5 = Coverage, −0.5 = Risk) as well as each level of control (+0.5 = Baseline, −0.5 = High Agency). An OLS regression revealed a significant interaction between condition and control ($b = 0.62$, 95% CI = [0.24, 0.99], $t(1,116) = 3.24$, $p = .001$; partial- $\eta^2 = 0.01$; see Figure 3). In other words, at “Baseline,” we observed a simple effect which

conceptually replicated our results from prior studies ($b = -0.83$, 95% CI = $[-1.09, -0.56]$, $t(565) = -6.17$, $p < .001$; $d = 0.52$). However, when we manipulated whether changes to risk levels or coverage needs seemed within one's control, the effect attenuated ($b = -0.21$, 95% CI = $[-0.48, 0.06]$, $t(551) = -1.54$, $p = .124$; $d = 0.13$).

FIGURE 3

RESULTS FROM STUDY 5A



NOTE. — Error bars represent 95% confidence intervals.

Study 5B

Methods. We recruited 1,061 ($M_{Age} = 38.28$, $SD_{Age} = 12.91$, 56.36% female, 42.22% male, 1.41% other) CloudResearch Connect participants for Study 5B, which employed a 2×2 between-subjects design. Again, mirroring prior studies, we included both “Risk” and “Coverage” conditions. However, relative to Study 5A, we crossed this with a condition comparing fairness perceptions at “Baseline” to a “Low Agency” condition.

Specifically, participants imagined that they were homeowners, and they were either simply told that the risk level or coverage needs associated with their homeowners insurance policy had increased (“Baseline”), or that the risk level or coverage needs associated with their homeowners insurance policy had increased for a reason *beyond* their control (“Low Agency”) — their neighbor’s decision to build a pool on their property border (see Table 8 for stimuli). All participants then answered: “How fair would it be for the insurance company to charge you more for your homeowners insurance policy?” (1 = “Not at all fair”; 7 = “Completely fair”).

TABLE 8
STIMULI FROM STUDY 5B

Control	Risk Condition	Coverage Condition
Baseline	You have a homeowners insurance policy. The likelihood that you will experience a negative event (i.e., the likelihood that you will incur a loss) has increased.	You have a homeowners insurance policy. The amount of coverage (i.e., the size of the loss that your policy will reimburse) has increased.
Low Agency	You have a homeowners insurance policy.	You have a homeowners insurance policy.

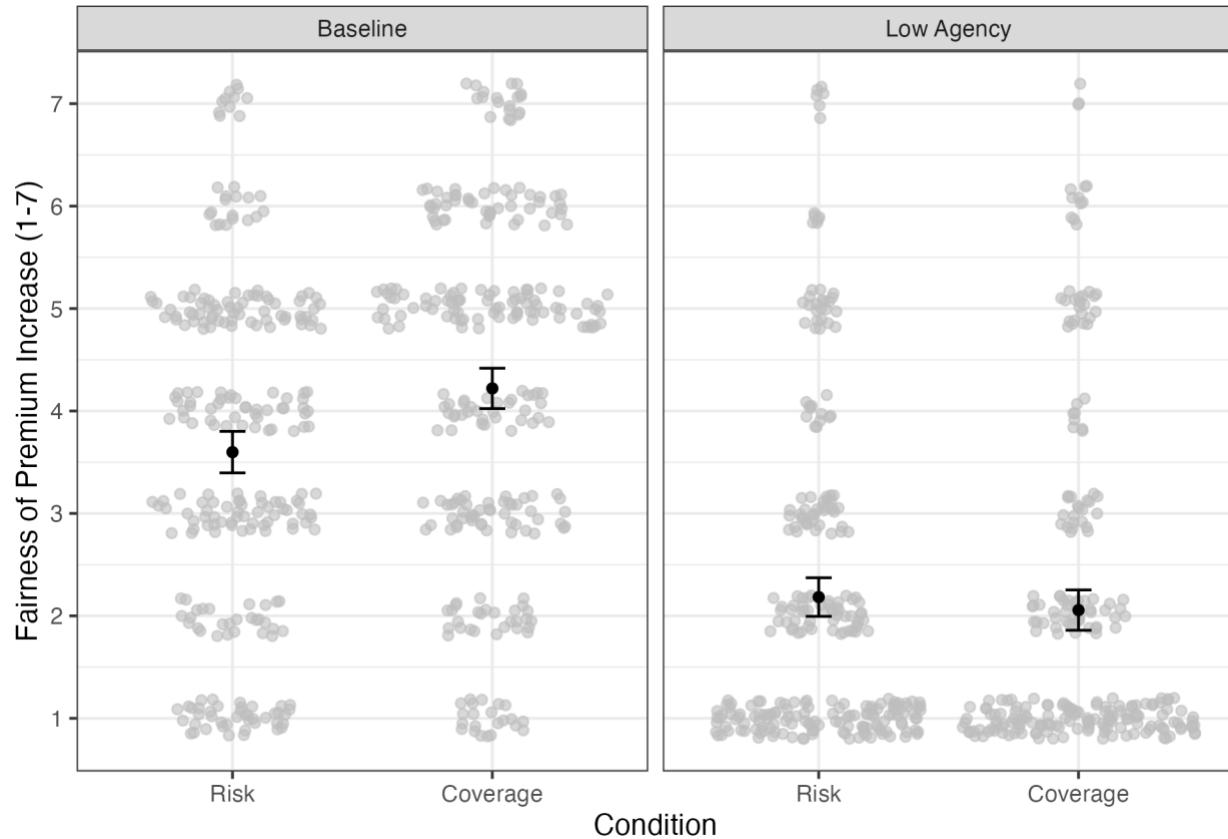
Your neighbor recently decided to add a pool to their home that sits on the border of your two properties, so the likelihood that you will experience a negative event (i.e., the likelihood that you will incur a loss) has increased.

Your neighbor recently decided to add a pool to their home that sits on the border of your two properties, so the amount of coverage (i.e., the size of the loss that your policy will reimburse) has increased.

Results. We again constructed two contrast-coded independent variables to compare responses at each level of condition (+0.5 = Coverage, -0.5 = Risk) as well as each level of control (+0.5 = Baseline, -0.5 = Low Agency). An OLS regression revealed a significant interaction between condition and control ($b = 0.75$, 95% CI = [0.36, 1.14], $t(1,057) = 3.75$, $p < .001$; partial- $\eta^2 = 0.01$; see Figure 4). In other words, at “Baseline,” we again observed a simple effect which conceptually replicated our results from prior studies ($b = -0.62$, 95% CI = [-0.90, -0.35], $t(543) = -4.47$, $p < .001$; $d = 0.38$). However, when we manipulated whether changes to risk levels or coverage needs this time seemed *beyond* one’s control, the effect attenuated ($b = 0.13$, 95% CI = [-0.15, 0.41], $t(514) = 0.89$, $p = .374$; $d = 0.08$).

FIGURE 4

RESULTS FROM STUDY 5B



NOTE. — Error bars represent 95% confidence intervals.

Studies 5A–B Discussion

Studies 5A–B provide further evidence that perceptions of agency or personal control can influence the perceived fairness of increases to insurance premiums. That is, consistent with H3b, we observed that the effect of highlighting risk levels versus coverage needs on fairness

perceptions attenuated when changes to risk levels and coverage needs more clearly stemmed from factors that were fully within or fully beyond consumers' control.

GENERAL DISCUSSION

Insurance is a fundamental part of virtually all consumers' financial lives, and healthy insurance markets undergird numerous sectors of the global economy. However, many critical insurance markets are currently strained, due in part to pressure from consumers and policymakers who view various aspects of insurance pricing as *unfair*. Our research thus offers much-needed theoretical and practical insights concerning perceptions of fairness in insurance pricing, speaking to consumers, policymakers, and insurers alike.

Across 10 preregistered experiments ($N = 6,379$) — which tested a wide range of insurance types, risk levels, and coverage needs — we found that premium increases were viewed as less fair when justified by increased risk levels versus increased coverage needs (Studies 1–2C). These beliefs, in turn, affected purchase intentions (Study 3A), the acceptability of price discrimination (Study 3B), and support for insurance mandates (Study 3C). Finally, consistent with our proposed mechanism, beliefs about personal agency over risk levels versus coverage needs mediated differences in fairness perceptions (Study 4), and differences in fairness perceptions likewise attenuated when changes in risk levels and coverage needs stemmed from factors within or beyond consumers' personal control (Studies 5A–B).

Theoretical Implications, Limitations, and Future Directions

Despite the importance and ubiquity of insurance, the *psychology* of insurance has received relatively little attention in the marketing literature. Our work begins to fill this gap — not only by exploring how consumers evaluate fairness in insurance pricing, but also by shedding new light on the importance of causal attributions for understanding consumers' judgments and decisions in this domain. Our theory and findings thus answer recent calls for “investigations of how consumers make decisions about insurance,” which have been “notably limited within marketing research” and yet may potentially “make a large impact in the field and on consumers' lives” (Sussman et al. 2023, 368). We view these as the core contributions of our work, but believe several additional theoretical implications are worth noting.

First, our results may shed light on a form of lay economic reasoning (Bhattacharjee and Dana 2024) — suggesting that consumers might not just reason about insurance prices in economic or actuarial terms, but in moral terms as well. In this sense, insurance pricing may have more in common with lay reasoning about responsibility and blame than with the risky choice paradigms through which judgments and decisions about insurance have typically been studied. Further, a broader interpretation of our results is not only that consumers believe it is fairer to *raise* insurance premiums when coverage needs increase (as compared to when risk levels increase), but that they believe insurance premiums should be *based* more on coverage needs than on risk levels. As such, willingness to pay and purchase intentions for insurance may depend more on coverage needs than on risk levels, as well. Future work might explore these implications.

Second, our research not only advances a growing body of work highlighting the importance of causal attributions and feelings of control for consumer behavior (e.g., Costello and Malkoc 2022; Garbinsky, Klesse, and Aaker 2014; Weiner 2000) but also adds to recent work showing how the perceived controllability of attributes can shape broader perceptions of fairness across contexts. For example, Furrer, Wilson, and Gilbert (2025) highlight an “illusion of unfairness” where — even for objectively random coin flips — perceived control over a process that yields identical outcomes (i.e., flipping a coin on one’s own versus having someone else flip the coin) distorts fairness perceptions. Our findings reveal a similar pattern: consumers did not view identical premium increases as equally fair when they were determined by factors beyond their control (i.e., risk levels) as compared to factors connected — even tangentially — to prior consumption decisions (i.e., coverage needs). This suggests that consumers might broadly view certain pricing decisions through the lens of procedural fairness (Lind and Tyler 1988; Thibaut and Walker 1978). *How* prices are set, in other words, may matter as much as the prices themselves, meaning that factors influencing perceptions of procedural fairness may warrant greater investigation in the price fairness literature, as well.

Third, we expect that our findings may inform future research in other contexts involving analogs to “risk levels” and “coverage needs,” and where beliefs about personal agency might therefore be relevant. For example, various financial products that consumers might not typically think of as “insurance” — such as annuity contracts, vehicle service agreements, and retirement plans — are also priced based on probability distributions over uncertain outcomes of various magnitudes. Price fairness in these contexts, therefore, may also depend on consumers’ distinction between analogs to “risk levels” (e.g., one’s chance of living to a particular age) and “coverage needs” (e.g., the amount of monthly income one might want or need at that age), and

may likewise be explained by feelings of personal agency. Indeed, perceptions of fairness have been shown to be a critical factor shaping consumers' interest in annuities (Shu, Zeithammer, and Payne 2018). Additionally, many pricing decisions are increasingly personalized or algorithmic (e.g., pricing for ride-sharing services), and perceptions of fairness in these contexts might similarly depend on whether the attributes considered by algorithms are perceived to be controllable.

Nonetheless, we are also careful to acknowledge several key limitations of this work, which we similarly hope will motivate future research.

First, beliefs about personal agency only partially mediated the effect of highlighting risk levels versus coverage needs on fairness perceptions, suggesting that the effect is multiply determined. For example, though some of our studies deliberately omitted specific numbers to describe risk levels and coverage needs to help us rule out numeracy (cf. Peters et al. 2006) and evaluability (cf. Hsee 1996), these factors may nevertheless explain fairness perceptions in the real world. Indeed, prior research has highlighted how consumers' abilities to appropriately estimate the effect of economic factors upon firms' costs can influence perceptions of price fairness (Bolton, Warlop, and Alba 2003), and across financial decision making contexts people also struggle to understand concepts like risk (Reinholtz, Fernbach, and de Langhe 2021).

Consumers' trust in insurers may matter, as well. Only a quarter of Americans report having a favorable view of their insurance company (YouGov 2026), and trust in firms is a critical antecedent of judgments of price fairness (Campbell 1999). If consumers are already skeptical of insurers' motives, then the inherent opacity of insurers' estimates of risk levels may feel like more of a pretext for insurers to extract further surplus from consumers. Although the majority of our studies preempted this concern (i.e., we either explicitly attributed estimates

about risk levels and coverage needs to reputable sources, such as government reports, or we did not directly state that insurers — themselves — were the source of estimates concerning risk levels and coverage needs), future research should likewise explore this possibility.

Second, most of our studies only looked at one type of insurance: policies that provide for the replacement of various assets in the event of their loss. In reality, numerous insurance policies also often provide protection against potential liabilities. For example, it is a legal requirement that most automobile insurance policies provide coverage to pay for *others'* repair costs or medical expenses in the event of an accident, many large employers carry insurance to cover the expenses of any injuries their workers experience on the job, and so on. We expect our account to generalize to insurance intended to cover the cost of some potential liability and conducted an exploratory study to test this implication (see Supplemental Study 1 in the Web Appendix). Differences in fairness perceptions were even *larger* for “liabilities” than for “assets,” and we call on future research to explore other potential dimensions of insurance (e.g., deductibles) as well as other types of insurance (e.g., pet insurance, commercial insurance, etc.) to identify potential moderators of these beliefs.

Managerial Implications

Given the scale and scope of insurance markets, we believe our findings have numerous direct implications for consumers, policymakers, and insurers alike.

When insurers raise premiums for various types of insurance, they are often required to request approval of regulators and to effectively “lobby” for such changes, and in practically all cases, they must provide written notices to their policyholders. Our results suggest that when

crafting public messaging campaigns to communicate price changes to the public, framing premium increases in terms of increased coverage needs (e.g., more expensive repairs, more damaging storms, etc.) as compared to increased risk levels (e.g., higher accident rates, more frequent storms, etc.) might influence the extent to which consumers and regulators are willing to accept them.

More broadly, our proposed mechanism — perceptions of personal agency — also suggests that insurers should consider whether consumers perceive inputs to insurance premiums to be within their control. This not only applies to the rationales for premium *increases* that we explore in this research, but to other factors influencing insurance premiums, writ large. For example, some insurers have begun using credit scores as an input to insurance premiums (Brown and Rojanasakul 2026), a practice that many consumers believe is unfair. Our account suggests one potential reason why — many factors included in credit reports are not within consumers' control (e.g., they can reflect a particular consumer's race, age, or even errors on their credit history). Additionally, without transparency about the processes insurers use to set premiums, consumers may similarly feel powerless and perceive insurance premiums to be less fair. Offering insights into the controllable factors that insurers use to set rates, as well as realistic actions consumers can take to reduce their coverage needs (e.g., purchasing a case for one's computer, taking a safe driving course, installing a sump pump to help with drainage in the event of a flood, etc.) may improve perceptions of price fairness for insurance premiums, and improve attitudes toward insurance firms, as well.

Ultimately, insurance can be viewed as something of a commodity — insurers offer a relatively undifferentiated product, and they largely compete with one another on price. Our results thus suggest that one way insurers might further differentiate themselves from one

another is not only by highlighting the coverage their policies provide (as opposed to the risks they help mitigate), but also by clearly articulating how premiums are set — and ensuring that consumers feel as though they have some degree of control over the rate-setting process.

CONCLUSION

Insurance premiums are fundamentally based on two key inputs: a consumer's likelihood of making a claim, and the potential size of that claim. Although these two inputs are *actuarially* equivalent, the present research suggests that they are not viewed as *psychologically* equivalent. Specifically, when faced with higher insurance premiums, consumers view these changes as less fair when they are justified by changes to one's likelihood of making a claim, as compared to the potential size of that claim, and these results can be explained, in part, by the degree to which consumers feel like they have control over these factors.

As insurance markets face increasing strain, our findings thus suggest that the *basis* that legislators, regulators, and insurers use to justify higher premiums may be just as important as the magnitudes of those increases, themselves. Understanding how to bolster perceptions of fairness is not only important theoretically, but practically, since the regulatory pressure that results from perceptions of *unfairness* can drive insurers out of key markets entirely, leaving consumers without protection for their most valuable assets.

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Web Appendix:

Pricing Insurance, Fairly

SUPPLEMENTAL STUDY 1

Insurance policies can be thought of as providing for the replacement of various assets in the event of their loss, or as providing protection against potential liabilities. An open question is whether the effect of justifying increases to insurance premiums by highlighting increased risk levels versus increased coverage needs differs when the insurance policy is thought of as providing for the replacement of an asset versus protection against a potential liability. We accordingly designed Supplemental Study 1 (<https://aspredicted.org/uu9x36.pdf>) to explore this question.

Methods

We recruited 639 ($M_{Age} = 45.43$, $SD_{Age} = 13.39$, 56.96% female, 42.41% male, 0.63% other) CloudResearch-approved participants from Amazon Mechanical Turk (MTurk) for Supplemental Study 1, which employed a 2×2 between-subjects design. Mirroring the studies in the main text, we included both “Risk” and “Coverage” conditions. However, we also crossed this with a condition comparing fairness perceptions for “Assets” versus “Liabilities.”

Specifically, participants imagined that they had either some asset or some potential liability of \$1,000 that had a 5% chance of needing to be replaced or coming due each year. They were then told that either the value of their asset/the amount of their potential liability had doubled or that the chance of needing to replace their asset/the chance of their potential liability coming due had doubled (see Table S1 for stimuli). All participants then answered: “How fair

would it be for your insurance company to double the amount that they charge you from \$50 per year to \$100 per year?” (1 = “Not at all fair”; 7 = “Completely fair”).

TABLE S1
STIMULI FROM SUPPLEMENTAL STUDY 1

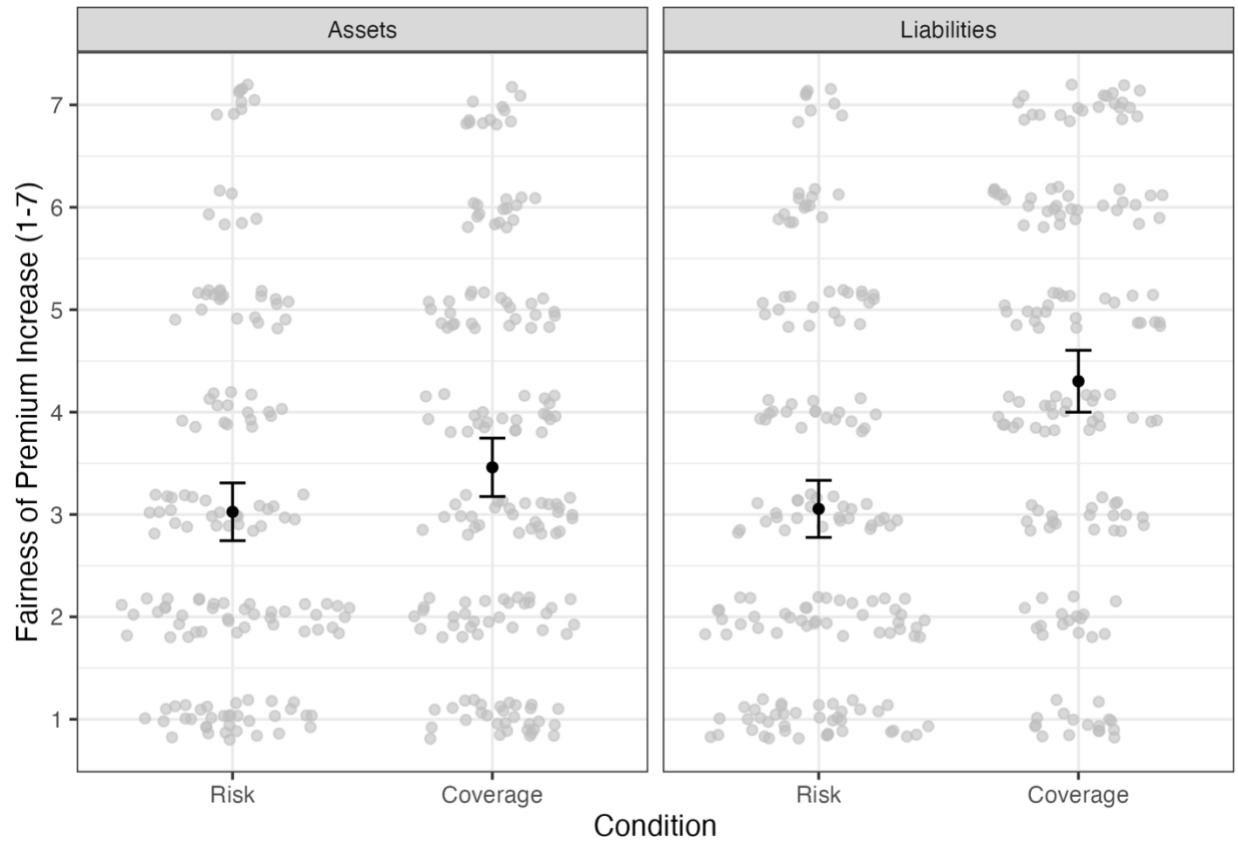
Type	Risk Condition	Coverage Condition
Assets	Imagine that you own an asset that has a 5% annual chance of needing to be replaced. This asset is worth \$1,000. You have an insurance policy that covers the full value of this asset. This insurance policy costs you \$50 per year.	Imagine that you own an asset worth \$1,000. There is a 5% annual chance that this asset will need to be replaced. You have an insurance policy that covers the full value of this asset. This insurance policy costs you \$50 per year.
	--- PAGE BREAK ---	--- PAGE BREAK ---
	A few years have passed, and while this asset is still worth \$1,000, the annual chance that the asset will need to be replaced has doubled from 5% to 10%.	A few years have passed, and while the annual chance that this asset will need to be replaced is still 5%, the asset itself has doubled in value from \$1,000 to \$2,000.
Liabilities	Imagine that you have a potential liability that has a 5% annual chance of coming due. This liability could be \$1,000. You have an insurance policy that covers the full amount of this potential liability. This insurance policy costs you \$50 per year.	Imagine that you have a potential liability of \$1,000. There is a 5% annual chance that this liability will come due. You have an insurance policy that covers the full amount of this potential liability. This insurance policy costs you \$50 per year.
	--- PAGE BREAK ---	--- PAGE BREAK ---
	A few years have passed, and while this potential liability could still be \$1,000, the annual chance that it could come due has doubled from 5% to 10%.	A few years have passed, and while the annual chance that this liability will come due is still 5%, the potential liability itself has doubled in amount from \$1,000 to \$2,000.

Results and Discussion

We constructed two contrast-coded independent variables to compare responses at each level of condition (+0.5 = Coverage, -0.5 = Risk) as well as type (+0.5 = Assets, -0.5 = Liabilities). An OLS regression revealed a significant interaction between condition and type ($b = -0.81$, 95% CI = $[-1.38, -0.24]$, $t(635) = -2.79$, $p = .005$; partial- $\eta^2 = 0.01$; see Figure S1). In other words, for “Assets,” we observed a smaller simple effect of condition ($b = -0.43$, 95% CI = $[-0.84, -0.03]$, $t(315) = -2.11$, $p = .035$; $d = 0.24$) than we did for “Liabilities” ($b = -1.25$, 95% CI = $[-1.65, -0.84]$, $t(318) = -6.08$, $p < .001$; $d = 0.68$).

FIGURE S1

RESULTS FROM SUPPLEMENTAL STUDY 1



NOTE. — Error bars represent 95% confidence intervals.

Supplemental Study 1 replicates the basic effect: across assets and liabilities, consumers viewed it as less fair to increase premiums because of increased risk levels versus increased coverage needs. However, if anything, our results suggest that the effect may be *larger* for liabilities than it is for assets.