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Consumer Fairness and Trust Judgments in Response to 'Bad Behavior' by Firms

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Abstract

Firms are facing reputational crises with increasing regularity. Despite this, relatively little is known about what types of firm actions consumers will judge to be reprehensible, and how firms should respond once a reputational crisis has occurred. In this dissertation I focus on two specific topics related to firm reputational crises: consumer price fairness judgments and consumer trust repair. In Essay 1 I propose that autonomy threat, a previously unexplored construct in the context of pricing, is a critical determinant of the judged fairness of demand-based price increases by firms. I test my proposal in one pilot study, five experimental studies, and one meta-analysis. In Essay 2 I investigate how firms can most effectively repair consumer trust once a reputational crises has occurred. I propose that is most effective for firms to repent following integrity violations, and to seek third-party regulation following competence violations. I test my proposal in four experimental studies, including one field study.

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Dedication

This dissertation is dedicated to Abigail Elizabeth Neuwirth.

“Just flip it over, and close it up. It’s really…easy!”

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1. Introduction

One of the most important issues facing marketers today is the nonstop cavalcade of corporate reputational crises. Reputational crises occur when companies violate consumer expectations of how companies (and their products and services) should behave (Diermeier, 2011). From the Volkswagen emissions scandal ("VW Is Said to Cheat on Diesel Emissions; U.S. to Order Big Recall", 2015) to the recent Facebook data sharing scandal ("Facebook Says Cambridge Analytica Harvested Data of Up to 87 Million Users", 2018), many of the most successful and recognizable brands in the world are now associated with dishonesty, cheating, and a general lack of ethicality. The current glut of corporate reputational crises (referred to going forward just as "reputational crises") has even given rise to a group of globally known super villains, including disgraced investment banker Bernie Madoff and "Pharma bro" Martin Shkreli. Overall, marketers today are being confronted with a new landscape in which the first thought that is likely to come to consumers minds when considering many companies, and even whole industries, is not a particular product or brand benefit, but rather the latest crisis or scandal.

The occurrence of reputational crises is certainly not a new phenomenon. As far back as the 1970's major record companies were being pilloried in the news for bribing radio disc jockeys to get their artists airtime ("Columbia spent over $250k a year on payola to black radio stations to promote black-oriented Columbia products", 1973). In addition, in the 1980's consumers were exposed to perhaps (until recent times) the two

most famous and paradigmatic corporate crises: the Tylenol poisoning crisis and the Exxon Valdez oil spill. Despite these early occurrences, there is a sense in both academia and industry that the pace at which reputational crises occur is accelerating over time (Dawar & Pillutla, 2000; Kaplan, 2010; Mukherjee, 2016). While this is hard to measure empirically, there is some evidence to this effect. In particular, a query of Google Books Ngram Viewer indicates that mentions of corporate crises and scandals have grown 600 fold over the last fifty years (see Figure 1). In contrast, mentions of political crises and scandals have actually slightly decreased over the last fifty years (the data ends in 2008), suggesting that the rise in discussion about corporate crises and scandals in recent years is not just a function of increased discussion about scandals and crises in general.

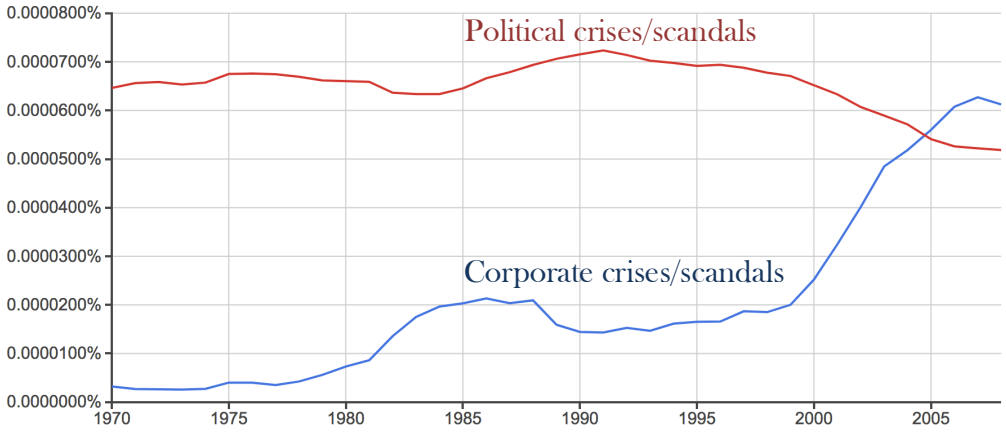

Figure 1. The mentions of corporate crises and corporate scandals in English language publications has grown 600 fold from the 1970's to the 2000's (data availability ends in 2008). By comparison, the mentions of political crises and scandals have decreased slightly over time. The data was compiled using Google Books Ngram Viewer, and the mentions of corporate crises and scandals are multiplied by 25 so that they can be viewed on the same scale as political crises

and scandals (there is a main effect such that political crises and scandals are discussed more than corporate crises and scandals).

The rise in reputational crises over time is likely attributable to multiple factors. One major contributing factor may be the rise of digital communication and social media. For example, United Airlines likely would not have had to publicly address its recent "passenger dragging" incident if the incident hadn't been recorded on a passenger's phone and shared with the world via Twitter and Facebook ("United Grapples With PR Crisis Over Videos of Man Being Dragged Off Plane", 2017). The probability of this type of reputational crisis occurring likely would have been much lower fifteen years ago, before almost all consumers had easy access to high-quality digital cameras on their phones. Another factor contributing to the rise in reputational crises over time may be the rising share of executive compensation tied to stock market performance (Kaplan, 2010). In particular, as the share of CEO and CFO compensation tied to the stock market performance of firms has increased, so do the incentives for executives to misstate revenue and earnings, and to turn a blind eye to fraudulent activities occurring within their firms (Erickson, Hanlon, & Maydew, 2006). This issue is exemplified by the recent reputational crisis faced by Wells Fargo, in which the CEO knowingly ignored the fraudulent activity of sales executives at the bank in order to continue reaping large personal profits in the stock market from his ownership of the bank's stock ("At Wells Fargo Crushing Pressure and Lax Oversight Produced a Scandal", 2017).

The increased rate at which reputational crises seem to be occurring matters for marketers (and marketing researchers) because of the significant negative impact that they can have on firm performance. For example, following its highly publicized food poisoning crisis in 2015, Chipotle's revenue and profits steeply declined, and as of mid-2018 the company's stock was continuing to slide to pre-2012 levels (V. Martin, 2018). Similarly, following its data sharing scandal, Facebook lost $50 billion of market capitalization due to concerns that the firm would face more stringent (and profit-reducing) government regulation going forward (Gamm, 2018). In addition to this dramatic (but anecdotal) evidence from the marketplace, researchers have performed carefully controlled analysis of the influence that reputational crises can have on firm performance. This analysis indicates that the public exposure of "bad behavior" by a firm can lead to large losses for the firm, abnormally low stock returns, and can even negatively impact the performance of other firms in the same product category as an offending firm who did nothing wrong (Borah & Tellis, 2016; Janakiraman, Lim, & Rishika, 2018; Jarrell & Peltzman, 1985; Karpoff, Lee, & Martin, 2008; K. D. Martin, Borah, & Palmatier, 2017; Tipton, Bharadwaj, & Robertson, 2009). In addition, one interesting path through which reputational crises lead to losses for firms is a reduction in marketing effectiveness, with a firm's advertising spend having less of an influence on consumer purchasing behavior post- vs. pre-crisis (Y. Liu & Shankar, 2015; Van Heerde, Helsen, & Dekimpe, 2007). Thus, given the increase in the occurrence of reputational crises, and the significant negative impact that reputational crises can have on firm performance, there is a clear need to better understand what types of firm behaviors are

likely to antagonize consumers and lead to crises, and how firms can best respond once a reputational crisis has occurred.

In this dissertation I focus on two specific topics related to reputational crises. In my first chapter, I investigate how consumers form their judgments about whether profitable price increases by firms are fair or unfair. In the last few years profitable price increases by firms have been a constant source of reputational damage for firms, and so there is a need to better understand when price increases are likely to antagonize consumers, and why. In my second chapter, I investigate how firms can repair consumer trust following reputational crises. My approach is unique in that, while the previous marketing literature mainly treats reputational crises as all being of a single type, I argue that reputational crises can differ in type, and that this matters when firms attempt to repair consumer trust. In the sections below I briefly outline the inspiration and launching off point for each chapter.

1.1 Price Fairness

Perhaps one of the most recognizable faces in business over the last few years is that of "Pharma bro" Martin Shkreli. Shkreli, who served as the CEO of Turing Pharmaceutical before going to jail in 2018, became well known in 2015 for raising the price of the live-saving drug Daraprim by 5,600% (Pollak, 2015). Shkreli's actions came against a backdrop of consumer outrage about other steep price increases for drugs, including the highly publicized 550% increase in the price of EpiPens (needed by

children suffering from life-threatening allergies) made by the company Mylan (Rockoff, 2016). What was interesting, however, is that at the same time as consumers were expressing outrage about price increases in some product categories (e.g. pharmaceuticals), the increased use of demand-based price increases (in which prices rise as consumer demand increases) in other product categories did not seem to induce much consumer backlash. For example, Amazon.com routinely increases the prices of products it sells by up to 100% in response to increased consumer demand without attracting much consumer ire (Kristof, 2017), and the use of demand-based price increases by sports teams like the Chicago Cubs has been met with general acceptance by sports fans (Sachdev, 2013).

The classic paper on consumer price fairness judgments is by Kahneman, Knetsch, and Thaler (1986). In this paper, the authors report studies in which profitable, demand-based price increases are described to participants in a series of vignettes, and then the participants are asked to judge whether the price increases are fair or unfair. The majority of participants judge demand-based price increases across a wide range of product categories to be unfair. The authors theorize that this occurs because profitable price violate "dual entitlement," or the right consumers (firms) have to their reference price (reference profit). However, if profitable price increases by firms are truly judged to be uniformly unfair by consumers, then firms like Amazon.com and the Chicago Cubs should not have been able to implement demand-based pricing with little consumer outcry (as they were able to do). Thus, there may be moderators of consumer price fairness judgments that have not been explored previously.

In the first chapter in this dissertation I seek to explain some of the unexplained heterogeneity in consumer price fairness judgments by introducing a new construct to the price fairness literature: autonomy threat. Autonomy is defined as the sense a person has that their actions and behaviors are self-determined, intrinsically motivated, and not the result of external pressure from others (Deci & Ryan, 2000; Ryan & Deci, 2006). As is explained in detail in the chapter, I propose that demand-based price increases can threaten the sense consumers have that their actions and behaviors in the marketplace are autonomous, and that consumer price fairness judgments are influenced by the extent to which consumers feel that their autonomy has been threatened by firms.

There are several methodological choices I made in my work on price fairness that deserve mention here. First, in each study participants judge the fairness or acceptability of hypothetical demand-based price increases presented in vignette form. For example, in Study 1 participants are asked to judge how fair a demand-based price increase of 15% is for orange juice sold at a grocery store. Asking participants to judge hypothetical price increases presented in vignette form is the most widely used methodology in the price fairness literature (Bolton & Alba, 2006; Bolton, Keh, & Alba, 2010; Bolton, Warlop, & Alba, 2003; Campbell, 1999, 2007; H. A. Chen, Bolton, Ng, Lee, & Wang, 2017; Haws & Bearden, 2006; Jin, He, & Zhang, 2014; Kahneman et al., 1986), and I chose to use that methodology in my studies as well. There are some drawbacks to this method, and in the General Discussion of Chapter 1 I review how some of these drawbacks may be addressed in future research.

Second, in Studies 1-4 participant complete 10 price fairness judgments each. I chose to use repeated measures in order to increase measurement accuracy and decrease the likelihood of statistical false positives. Repeated measures increase measurement accuracy in two ways. First, by increasing the overall number of judgments available for analysis, the statistical power available to detect an effect is increased. Second, the availability of multiple judgments for each participant allows for the estimation of participant random effects, or the general propensity of a participant to rate demand-based price increases as fair or unfair. Including these random effects in the model allows for more accurate estimation of the effects of interest (Kreft, 1996). My use of repeated measures is consistent with recent calls for behavioral scientists to use study designs that allow for more accurate measurement and that are more likely to produce replicable effects (Gelman, 2018).

Finally, I chose to recruit participants for my studies using Amazon Mechanical Turk (AMT). Previous research indicates that AMT is a satisfactory participant pool for judgment and decision making research, the domain into which my research falls (Berinsky, Huber, & Lenz, 2012; Paolacci, Chandler, & Ipeirotis, 2010). Consistent with this finding, several recent papers published in *JPSP* and *JCR* examining consumer morality and fairness judgments have used AMT as a participant pool (Bhattacharjee, Jason, & Jonathan, 2017; Shaddy & Shah, 2018). In addition, AMT has the benefit that the average age, income, and political leanings of participants on AMT are often closer to the population averages than those of other convenience samples, such as student participant pools (Buhrmester, Kwang, & Gosling, 2011). For example, as is discussed in

detail in the meta-analysis reported in Study 5 in Chapter 1, the median age of participants in my price fairness studies was 35 (US median: 38), the median income was between $40,000 and $69,000 per year (US median: $58,000), and the median political leaning was "independent," with a roughly equal number of participants identifying as liberal and conservative. The close match between the average participant demographics in my studies and those in the US population increases the external validity of my results.

There are several known issues with using AMT as a participant pool, including the possibility that participants may enroll in studies multiple times (Chandler, Mueller, & Paolacci, 2014), and that attrition can differ across conditions, leading to biased condition effects (Zhou & Fishbach, 2016). I addressed the multiple-enrollment issue by utilizing TurkPrime.com (Litman, Robinson, & Abberbock, 2017), a (for pay) service that provides easy tools to prevent participants from enrolling in the same study twice, or to prevent participants from enrolling in a study if they have already enrolled in a similar study previously. Differential attrition across conditions is mostly a problem if conditions differ dramatically in terms of task negativity, effort, or length (Zhou & Fishbach, 2016). This was not the case in the studies I ran, and an analysis of dropout rates indicated that there was no differential attrition across conditions.

1.2 Repairing Consumer Trust

While the first chapter of my dissertation seeks to increase our understanding of what types of firm actions are likely to cause reputational crises, the second chapter of my dissertation focuses on what firms should do once a reputational crisis has occurred.

In particular, one of the most pernicious features of reputational crises is that they can have long-term negative effects on consumer trust in offending firms (Diermeier, 2011). Given that consumer trust is a critical predictor of important marketing outcomes like customer loyalty (Chaudhuri & Holbrook, 2001) and purchase intentions (Schlosser, White, & Lloyd, 2006), this reduction in consumer trust may be one reason that reputational crises can have such a large negative impact on firm performance (Tipton et al., 2009). Thus, it is in the best interest of firms to attempt to repair consumer trust once a reputational crisis has occurred.

My work on consumer trust repair was inspired by an observation made during the Chipotle Mexican Grill food poisoning crisis ("Chipotle Shuts Restaurants in Northwest After E. Coli Outbreak", 2016). In particular, most of the previous literature in marketing suggests that following a reputational crisis, firms can repair consumer trust by apologizing and offer consumers some form of compensation (Ahluwalia, Burnkrant, & Unnava, 2000; Dawar & Pillutla, 2000; Tybout & Roehm, 2009). And this is exactly what Chipotle did following its food poisoning crisis: the CEO took out full-page advertisements in newspapers across the United States apologizing for the crisis, and Chipotle offered millions of consumers free burritos to entice them back into its restaurants (Olson, 2016). Despite following the standard consumer trust repair playbook, Chipotle was unable to fully repair consumer trust, and (as discussed previously) the firm continued to suffer financially years after the crisis (V. Martin, 2018). Thus, it appeared that apologizing and offering compensation to consumers may not always be an effective strategy for repairing consumer trust following reputational crises.

A hint as to why Chipotle's trust repair strategy may not have worked comes from the organizational behavior literature. In particular, research in this literature has found that the most effective strategy for repairing trust following its violation depends on the type of trust violation that has occurred (Dirks, Kim, Ferrin, & Cooper, 2011; Ferrin, Kim, Cooper, & Dirks, 2007; P. H. Kim, Ferrin, Cooper, & Dirks, 2004). Thus, while apologizing after a trust violation (as the marketing literature would suggest firms do) may work in some contexts, it is unlikely to work in others, and can even backfire in certain cases. In line with this literature, I suspected that the type of trust violation that has occurred may influence the effectiveness of trust repair strategies in the marketing context as well, and that Chipotle's crisis response may not have been well matched to the type of trust violation it had committed.

In order to address the issue that Chipotle and other companies like it face, in the second chapter of my dissertation I examine how firms can most effectively repair consumer trust depending on the type of trust violation that has been committed. Consistent with the organizational behavior literature (Dirks et al., 2011; Ferrin et al., 2007; P. H. Kim et al., 2004), I focus on two types of trust violations: integrity and competence. As is discussed in detail in the chapter, I propose that following an integrity violation firms can most effectively repair consumer trust by repenting, and that following a competence violation firms can most effectively repair consumer trust through third-party regulation.

The methodology I use in three out of the four studies reported in Chapter 2 is similar to that used in Chapter 1. That is, participants recruited from AMT read scenarios

about firms violating consumer and attempting to repair consumer trust, and then provide their judgments of the degree to which they trust the firms. I chose to use the scenario methodology for my work on trust repair because it is the dominant one used in the consumer trust repair and crisis response literatures (Ahluwalia et al., 2000; Claeys, Cauberghe, & Vyncke, 2010; Coombs & Holladay, 1996; Dawar & Pillutla, 2000). In one of the studies reported in Chapter 2, however, I collected data from customers of firms actually undergoing reputational crises (105 Chipotle customers and 87 Volkswagen customers). This "field" study has the benefit of increasing the external validity of my findings, and answers recent calls for consumer researchers to look beyond convenience samples when collecting data (Inman, Campbell, Kirmani, & Price, 2018).

2. Essay 1: Price Increases, Autonomy Threat, and Price Fairness

"There's choices, right? Always. There's never, 'I have to use Uber.'"

- Daniel Graf (2017), Former head of Product at Uber, in response to questions about the company's use of demand-based "surge" pricing.

2.1 Introduction

Demand-based pricing is a strategy used by firms to match the prices of offered products and services to consumer demand in the market. For example, as consumer demand for Uber rides increases on New Years Eve, the price that consumers are charged for the rides "surges" to match demand. Demand-based pricing differs from traditional pricing strategies in which prices are posted and/or advertised and remain stable over time. Importantly, demand-based pricing increases are not "cost justified," meaning that they result in extra profits for firms that implement them (at least in the short term). Due to the positive effects that demand-based pricing can have on firm profitability, and due to advances in the technology needed to implement demand-based pricing, its use by firms has increased markedly over the last 10-15 years (Walker, 2017).

While firms may be excited about the benefits offered by demand-based pricing, consumers are less sure. In particular, numerous firms have introduced demand-based pricing strategies, only to be met with consumer backlash. For example, Uber has frequently faced consumer ire due to its use of surge pricing ("New Delhi bans Uber 'surge pricing'", 2016), and Delta recently prompted consumer outrage due to its use of

demand-based pricing during hurricane Irma ("Airlines Face Criticism Amid Irma Price-Gouging Complaints", 2017). That being said, other firms like Amazon.com ("How Amazon uses "surge pricing" just like Uber", 2017) and the Chicago Cubs ("For Cubs dynamic pricing's a one-way street", 2013) have been able to implement demand-based pricing with relatively little consumer backlash. Substantial heterogeneity in consumer responses to demand-based pricing by firms has also been observed in empirical research. For example, in their classic paper on price fairness, Kahneman et al. (1986) report that although a majority of consumers judge profitable, demand-based price increases to be unfair, almost 40% of consumers approve of them in certain cases. Thus, as its adoption in industry continues to accelerate, there is a need to develop a deeper theoretical understanding of the psychological mechanisms driving differential consumer responses to demand-based pricing by firms.

Building on the work of Kahneman et al. (1986) and others, in this article I investigate what causes consumers to judge demand-based price increase that result in extra profits for firms to be "fair" or "unfair." My investigation is motivated by the fact that, as the Uber and Delta examples cited above suggest, the judged fairness of profitable price increases by firms can have a substantial impact on critical marketing outcomes like consumer purchase likelihood, loyalty, negative word of mouth, and the overall financial performance of firms (E. T. Anderson & Simester, 2008, 2010; Campbell, 1999; Guo & Jiang, 2016; Habel, Schons, Alavi, & Wieseke, 2016; Li & Jain, 2015; Piron & Fernandez, 1995; Thaler, 1985; Xia, Monroe, & Cox, 2004). However, my investigation differs from the previous literature in that while consumer price fairness

judgments have traditionally been conceptualized as being mostly a function of reference point comparison processes (Kahneman et al., 1986; Xia et al., 2004), I conceptualize consumer price fairness judgments as full-fledged moral judgments of the rightness or wrongness of firm actions. My conceptualization is motivated by recent work in the organizational behavior literature, which suggests that fairness judgments are influenced by many of the same factors that more generalized moral judgments are influenced by (Folger & Cropanzano, 2001; Nicklin, Greenbaum, McNall, Folger, & Williams, 2011).

Grounded on in my conceptualization of consumer price fairness judgments as full-fledged moral judgments of firm behavior, I form the hypothesis that autonomy threat, a critical determinant of moral judgments generally (Graham et al., 2011; Shweder, Much, Mahapatra, & Park, 1997), may also be a determinant of consumer price fairness judgments. As I discuss in detail below, autonomy is the sense a person has that their actions and behavior are fully internally motivated and self-determined, and not forced upon them by unwanted impulses or external pressure (Ryan & Deci, 2006). I propose that demand-based based pricing by firms can threaten consumer autonomy because consumers are likely to perceive that firms are pressuring them to pay more than they necessarily want to or expected to, and because price increases can actually constrict the number of items consumers have to choose from.

I test my hypothesis that autonomy threat is a critical predictor of consumer price fairness judgments in a series of six studies (five experimental studies and one meta-analysis). In the first four experimental studies I manipulate the autonomy threat

associated with demand-based price increases, and measure or manipulate consumer need for autonomy. My prediction is that, if autonomy threat does indeed serve as a determinant of consumer price fairness judgments, then consumers who are high (vs. low) in need for autonomy will be more sensitive to manipulations of the autonomy threat associated with demand-based price increases, and thus their price fairness judgments will be more (vs. less) affected by the autonomy-threat manipulations. In addition, because (as I propose) demand-based price increases by firms are by default somewhat threatening to consumer autonomy, this means that in general consumers who are high in need for autonomy will judge demand-based price increases as being less fair than consumers who are low in need for autonomy (this is tested as part of a meta-analysis in Study 5). However, this may not always be the case, and in Study 6 I explore whether there are judgment contexts in which consumers who are high (vs. low) in need for autonomy are *more* accepting of demand-based price increases by firms, rather than less.

While the link I propose between autonomy threat and consumer price fairness judgments is a novel one, it is consistent with recent statements by managers in industry attempting to gains support for demand-based pricing. For example, as the quote at the beginning of this article highlights, Uber executives have repeatedly attempted to convince consumers (and regulators) that the company's use of surge pricing is fair because consumers have autonomy over whether or not to accept the increased prices. Although consumer autonomy in the context of ride sharing is likely not as high as Uber claims (Schneiderman, 2014), the company's statements do suggest a role for autonomy

threat in consumer price fairness judgments, and highlight the need to gain more understanding about the role that autonomy threat plays.

In the sections below I review the literature on consumer price fairness judgments, and then introduce the construct of autonomy and its relevance to moral judgments. Then, I introduce in detail the reasoning for my hypothesis and predictions, and report the results of the studies I ran to test them. Finally, in the General Discussion, I highlight the contributions my results make to the literature, discuss what my results mean for managers, and point to several promising areas for future research.

2.2 Literature Review: Price Fairness

The concept of price fairness was developed to explain an economic anomaly: prices are much "stickier" than economic theory would predict. While prices for products and services should increase as consumer demand increases, economists have observed instead that they remain remarkably stable over time (Carlton, 1986). In an attempt to explain this anomaly, Kahneman et al. (1986) theorized that consumers judge profitable price increases by firms to be unfair, and that firms thus resist increasing prices in response to increased demand in order to avoid antagonizing consumers. Extensive follow-up work by researchers over a period of thirty years has confirmed that consumers judge price increases that result in increased profits for firms to be unfair (Bolton & Alba, 2006; Bolton et al., 2003; Campbell, 1999, 2007; Frey & Pommerehne, 1993; Haws & Bearden, 2006; Tarrahi, Eisend, & Dost, 2016; Xia et al., 2004).

The dominant explanation in the previous literature for consumer distaste for profitable price increases by firms is dual entitlement theory (H. A. Chen et al., 2017; Kahneman et al., 1986; Xia et al., 2004). Dual entitlement theory proposes that consumers consider themselves to have a right to the previous price they paid for a given product or service (the reference price), and that a firm has a right to its status quo profit (the reference profit). If a firm introduces a demand-based price and therefore increases the price (and its profit) relative to the reference price (and to its reference profit), then it has violated the principal of dual entitlement, and consumers judge its actions to be unfair. In addition, dual entitlement theory predicts that, for example, a 20% price increase will be judged to be less fair than a 10% price increase, because the distance between the new price (and new profit) and the reference price (and reference profit) is larger following the 20% increase than following the 10% increase. Recently, researchers have enriched dual entitlement theory by demonstrating that consumer cognitions about the intentions firms have to exploit consumers can mediate consumer responses to profitable price increases (Campbell, 1999, 2007; Maxwell, 1995), and that the severity of consumer responses to price increases is reduced as the psychological distance between a reference price and a raised price increases (Haws & Bearden, 2006).

While dual entitlement certainly plays a role in how fair consumers judge demand-based price increase by firms to be, it may not be the only psychological mechanism operating. In particular, recent research indicates that rather than just being influenced by distributional considerations, fairness judgments are a form of moral judgment, and as such are influenced by constructs that influence moral judgments more

generally, such as perceptions of harm and threat (Folger & Cropanzano, 2001; Nicklin et al., 2011). In order to begin explaining the substantial heterogeneity in consumer responses to profitable price increases by firms observed in the literature (Kahneman et al., 1986), it may be useful to consider whether constructs that influence moral judgments generally also influence consumer price fairness judgments more specifically. In this article I focus on one such construct that the moral psychology literature suggests is a particularly critical determinant of the judged morality of actions: autonomy threat.

2.3 Literature Review: Autonomy And Moral Judgments

Autonomy is defined as the sense a person has that their behavior is self-determined, intrinsically motivated, and free from unwanted external pressure (Ryan & Deci, 2006). Previous research suggests that feeling autonomous is an important determinant of life satisfaction and well-being (Sheldon, Ryan, & Reis, 1996; Tay & Diener, 2011), and that lacking autonomy in one's life can lead to negative health and psychological outcomes (Ryan & Deci, 2001). Autonomy has also been found to be important in the domain of consumption (particularly in Western countries; Markus & Schwartz, 2010; Savani, Markus, & Conner, 2008). For example, in consumption contexts as diverse as retail, tourism, and video games, giving consumers a sense of autonomy leads to higher consumer satisfaction and enjoyment (Botti & McGill, 2006, 2011; Sara Kim, Chen, & Zhang, 2016). Thus, both in people's lives generally and in

consumption contexts more specifically, feeling autonomous is important for well-being and satisfaction.

Given the importance of autonomy to well-being and satisfaction, it could be conjectured that threatening a person's autonomy would be considered wrong in many cases. Indeed, findings in the moral psychology literature suggest that, in many societies and cultures, autonomy is considered a fundamental right, and that the degree to which an action is judged to be immoral and/or unfair is influenced by the degree to which the action threatens personal autonomy (Graham, Haidt, & Nosek, 2009; Graham et al., 2011; Rozin, Lowery, Imada, & Haidt, 1999; Shweder et al., 1997; Van Prooijen, 2009). For example, while in the United States there is substantial disagreement among political liberals and conservatives on many issues of morality, there is broad agreement across the political spectrum on the moral imperative to prevent personal harm and protect people's personal freedom, both autonomy-related issues (Graham et al., 2009). In addition, people's judgments of the fairness of authority figures is influenced by how supportive of personal autonomy the authority figures are perceived to be (Van Prooijen, 2009). In combination, this work suggests that autonomy threat is a critical determinant of the judged morality and fairness of actions. It also suggests that if consumers perceive price increases by firms to be threatening to their autonomy (as I suggest below may be the case), then autonomy threat may have a role to play in determining consumer price fairness judgments.

2.4 Autonomy Threat And Price Fairness

I propose that demand-based price increases by firms can threaten consumer autonomy. Demand-based price increases by firms may threaten consumer autonomy because they can make salient to consumers that their choices in the marketplace are not self-determined, and that firms are placing external pressure on them to pay more than they necessarily want to (both of which are antithetical to maintaining a high sense of autonomy; Ryan & Deci, 2006). The notion that, relative to regular stable prices, price increases may threaten consumer autonomy is somewhat counterintuitive, as the prices consumers pay for products are rarely "self-determined" (aside from auctions on websites like EBay, which make up a very small percentage of total purchases; Stock, 2013). Instead, firms almost always unilaterally set prices, and consumers have to take them or leave them. However, this is the norm, and thus is unlikely to attract much attention from the consumers (Kahneman & Miller, 1986). In contrast, demand-based price increases are still quite abnormal in most product categories, and thus may make salient to consumers that they don't have as much self-determination in market contexts as they ordinarily perceive themselves to have. Of course, demand-based pricing has become the norm in some product categories (e.g. airline tickets), and the autonomy threat experienced in response to price increases in these categories may be reduced. In a similar manner to the previous price fairness literature (Bolton et al., 2003; Campbell, 1999, 2007; H. A. Chen et al., 2017; Haws & Bearden, 2006; Kahneman et al., 1986), in this article I focus on demand-based price increases in "everyday" product categories like groceries, clothing, electronics, etc. The notion that, compared to stable prices, demand-based price increases threaten consumer autonomy is tested in a Pilot Study prior to Study 1.

In addition to demand-based price increases by firms being generally threatening to consumer autonomy, I propose that the level of autonomy threat associated with a price increase is partially a function of attributes associated with the price increase, such as the product the price increase is associated with, the price increase amount, etc. For example, price increases associated with products that consumers feel they have no choice but to buy (such as those associated with life-saving medications produced by only one manufacturer) may be especially threatening to consumer autonomy. Following the statement of my hypothesis below, I discuss more specific ways that the autonomy threat associated with price increases may vary, and in my studies multiple different manipulations of the autonomy threat associated with price increases are utilized to test my hypothesis.

Assuming that demand-based price increases can threaten consumer autonomy, it can then be reasoned that consumer price fairness judgments may be influenced by the extent to which consumers feel their autonomy has been threatened. This is because (as discussed previously) autonomy threat is a major determinant of the judged morality and fairness of actions (Graham et al., 2009; Graham et al., 2011; Rozin et al., 1999; Shweder et al., 1997; Van Prooijen, 2009). Thus, I hypothesize that demand-based price increases by firms can threaten consumer autonomy (with the level of autonomy threat partially determined by attributes associated with the price increase), and that the autonomy threat consumers experience in response to price increases by firms is a critical determinant of how fair they judge the price increases to be (see Figure 2).

Figure 2. A visualization of my hypothesis: Demand-based price increases by firms threaten consumer autonomy, and the extent to which consumers feel that their autonomy has been threatened influences their price fairness judgments.

Although the potential for a link between price increases, autonomy threat, and consumers' price fairness judgments has not been conjectured previously in the literature, there is some suggestive evidence to this effect. In particular, Haws and Bearden (2006) report that consumers judge price increases caused by consumer auctions on websites like eBay to be fairer than price increases initiated solely by firms. Given that deciding whether or not to bid up a price in an auction is self-determined by consumers, and thus may be less threatening to consumer autonomy than a price increase imposed on consumers by a firm, this result could be viewed as supporting a link between autonomy threat and price fairness judgments. However, there is an alternative explanation for this finding: it's not clear in the study run by Haws and Bearden that the increased price resulting from the consumer auction results in increased profits for a firm. Thus, the price increases associated with consumer auctions may not have been perceived to violate dual entitlement to as extreme a degree, and previous research has demonstrated that reducing the perceived violation of dual entitlement leads to improved fairness judgments by consumers (Kahneman et al., 1986). This means that, while suggestive, the results

reported by Haws and Bearden (2006) do not necessarily support the notion that autonomy threat is a determinant of consumer price fairness judgments.

Suggestive evidence for a link between autonomy threat and price fairness judgments is also present in the results reported by Kahneman et al. (1986). In particular, the authors report that consumers judge price increases associated with low substitutability products to be less fair than price increases associated with high substitutability firms. Product substitutability is defined as the availability of attractive alternatives to purchasing a given product, with low (high) product substitutability occurring when there are few (many) attractive alternatives (Besanko, Dranove, Shanley, & Schaefer, 2009). For example, a drug used to treat a particular type of cancer and only produced by one company is low in substitutability, and a particular brand of acetaminophen is high in substitutability (because many companies sell branded and generic versions of the drug). Given that consumers often have no choice but to purchase low substitutability products, price increases associated with those products may be very threatening to consumer autonomy relative to price increases associated with high substitutability products. Thus, per our theorizing, differences in autonomy threat could explain the difference in price fairness judgments for price increases associated with the two types of products. However, there are alternative explanations for this result as well, including that in many of the low product substitutability vignettes Kahneman et al. (1986) test, a firm is clearly attempting to exploit consumers following an emergency (e.g. the price of a snow shovel increases following a major blizzard). Previous research indicates that perceptions that a firm is blatantly attempting to exploit vulnerable

consumers can have a separate negative effect on consumer price fairness judgments (Campbell, 1999; Maxwell, 1995). Thus, before it can be concluded that product substitutability influences the autonomy threat associated with price increases by firms (and subsequent price fairness judgments), more investigation is needed.

2.5 Hypothesis Testing And Predictions

One issue with the suggestive evidence for a link between autonomy threat and consumer price fairness judgments cited above is that it consists of "statistical main effects," and thus is open to multiple theoretical interpretations (Calder, Brendl, Tybout, & Sternthal, 2018). More persuasive evidence that autonomy threat does indeed influence consumer price fairness judgments could be provided by uncovering factors that moderate consumer sensitivity to manipulations expected to increase or decrease the autonomy threat associated with price increases, which then (per our hypothesis) should translate into moderated price fairness judgments. In this article I focus on one such factor: a consumer's need for autonomy.

In the framework of Self-Determination Theory (Deci & Ryan, 2000) autonomy is considered a fundamental human need, meaning that all people likely need to experience some degree of autonomy in their lives to feel satisfied. However, recent research suggests that people can have different motivational orientations toward autonomy, with some people desiring it more than others (Schüler, Sheldon, Prentice, & Halusic, 2016). This finding is consistent with broader theorizing in the needs literature, which argues that there exist individual differences in the desire to achieve "universal" human needs

like competence and social affiliation, and that these individual differences can have important implications for judgments and behavior (Sheldon, 2011; Sheldon & Schüler, 2011).

A fundamental finding in the motivational psychology literature is that as the motivation to achieve a goal increases, sensitivity to cues in the environment that are related to the goal also increases (Aarts, Dijksterhuis, & Vries, 2001). This increased sensitivity can lead not only to increased noticing of goal-related cues, but also to increased discrimination between goal-consistent and goal-inconsistent cues. For example, findings in the social affiliation literature suggest that as momentary or chronic affiliation motivation increases, so does discrimination between affiliation-supportive and affiliation-threatening cues (DeWall, Maner, & Rouby, 2009; Gardner, Pickett, & Brewer, 2000). This has recently been found to be the case for autonomy motivation as well, with people that are high (vs. low) in momentary or chronic autonomy motivation being more likely to discriminate between autonomy-supportive and autonomy-threatening cues (Radel, Pelletier, Sarrazin, & Milyavskaya, 2011; Van Prooijen, 2009).

Combining the fact that people can differ in their "need" for autonomy (referred to in the rest of this article as "NFA"), and that increased NFA may lead to increased discrimination between autonomy-supportive and autonomy-threatening cues, leads me to my main prediction: if (as I hypothesize) autonomy threat influences consumer price fairness judgments, then the price fairness judgments of consumers with high NFA should be more sensitive to manipulations of the autonomy threat associated with demand-based price increases by firms than the price fairness judgments of consumers

with low NFA (see Figure 3). For example, if variation in the substitutability of products associated with price increases does indeed vary the autonomy threat associated with the price increases, then the price fairness judgments of high NFA consumers should be more sensitive to manipulations of product substitutability than the price fairness judgments of low NFA consumers.

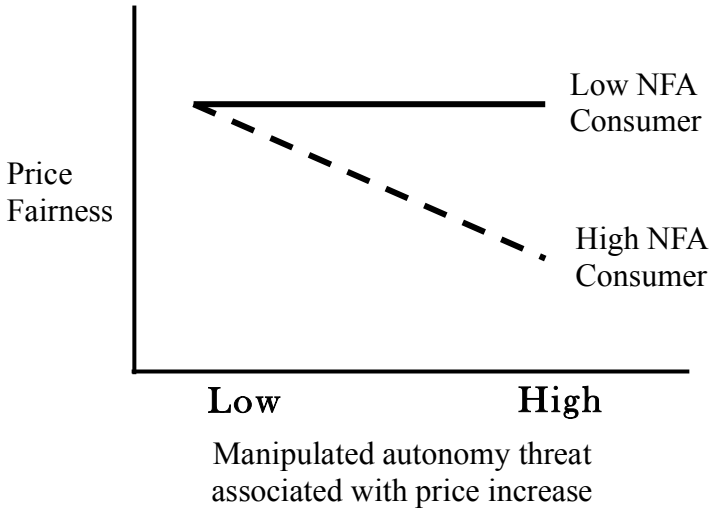

Figure 3. A visualization of my prediction: the price fairness judgments of high NFA consumers are more sensitive to manipulations of the autonomy threat associated with demand-based price increases than are the price fairness judgments of low NFA consumers.

I test my predictions in a pilot study, five experimental studies, and one meta-analysis. In the pilot study I test whether, relative to stable prices set by firms, demand-based price increases by firms do indeed threaten consumer autonomy. In Studies 1 & 2 I measure and manipulate consumer NFA and manipulate the autonomy threat associated

with price increases by firms by varying the price increase amount. My assumption is that large price increases are more threatening to consumer autonomy than small price increases (a pretest of this assumption is reported in Study 1). If this is the case, than (per my theorizing) high NFA consumers should be more sensitive to increases in price increase amount than low NFA consumers. In Study 3 I measure consumer NFA and manipulate the autonomy threat associated with price increases using an established manipulation from the literature: providing (vs. not providing) people an opportunity to voice their opinion about an important decision (in this case, the price increases themselves). In Studies 4 I measure consumer NFA and manipulate the autonomy threat associated with price increases by varying product substitutability. In addition, in Study 4 I demonstrate that the influence of autonomy threat on consumer price fairness judgments can be separated from the influence of consumer perceptions that a firm is intentionally trying to exploit them. In Study 5 I meta-analyze the results of Studies 1-4. The goals of the meta-analysis are fourfold: (1) estimating the negative effect that consumer NFA has on price fairness judgments with greater statistical power, (2) obtaining estimates of between-study and between-participant variance, (3) partially explaining the product category effects observed in Studies 2-4 using moderators, and (4) including participant demographics in the analysis to get a fuller picture of the determinants of consumer price fairness judgments and to inform future theorizing. Finally, in Study 6 I explore whether there are judgment contexts in which high (vs. low) NFA consumers judge price increases by firms as *more* acceptable, not less (as is demonstrated in Studies 1-5).

Before I report the results of my studies, it is important to note that dual entitlement theory, the previously mentioned dominant theoretical paradigm in the price fairness literature (H. A. Chen et al., 2017; Kahneman et al., 1986; Xia et al., 2004), cannot explain the pattern of results I predict. For example, in Studies 1 & 2 dual entitlement theory would predict only a main effect of price increase amount with no moderation by consumer NFA. This is because dual entitlement theory suggests that price fairness judgments are based on the mathematical distance between an increased price (and a firm's increased profit) and a reference price (and a firm's reference profit). Thus, my predicted results are novel relative to dominant theoretical paradigm in the literature. However, this doesn't mean that dual entitlement theory has no role to play in consumer price fairness judgments. Rather, I expect that both dual entitlement theory and autonomy threat play a role. Considering the predicted results of Studies 1 & 2 again, I expect the influence of price increase amount on participant price fairness judgments to be significant. This represents the contribution of dual entitlement theory to price fairness. However, I also expect that participant NFA and the interaction between price increase amount and participant NFA will influence participant price fairness judgments. These latter effects represent the contribution of the autonomy threat construct to price fairness. In Studies 3, 4, & 6 the influence of autonomy threat on price fairness judgments can be further isolated from dual entitlement theory because price increase amount (and firm profit) are held constant between low and high autonomy threat conditions, meaning that dual entitlement theory would make no predictions in these cases.

2.6 Pilot Study

The goal of the Pilot Study was to test whether, relative to regular stable prices set by firms, demand-based price increases by firms threaten consumer autonomy. In order to test this I asked participants to imagine a shopping trip, and I manipulated whether participants were exposed to demand-based price increases or stable prices. I then measured the level of autonomy threat participants experienced during the imagined shopping trip. I expected that participants exposed to demand-based price increases would report a higher degree of autonomy threat than participants exposed to stable prices.

Method

I recruited 390 participants from an online panel and randomly assigned them to imagine a shopping experience that highlighted either stable prices or increased prices. In this and all other studies reported in this article participants were recruited on Amazon Mechanical Turk and managed using TurkPrime (Litman et al., 2017) to prevent participants from enrolling in more than one study. Recent work published in the marketing literature indicates that Amazon Mechanical Turk is an appropriate participant pool for studying effects related to consumer fairness judgments (Shaddy & Shah, 2018).

At the beginning of the study, participants were told to imagine that they were going on a shopping trip for groceries and clothing items they needed. Participants were then exposed to seven product/price combinations that they were purchasing on the shopping trip. In the stable price condition the price of the product was simply stated, and in the increased price condition participants were told that the prices of four of the

products had recently been increased due to high consumer demand. Importantly, the prices of the products were the same in the stable price and increased price conditions. For example, in the stable price condition one of the vignettes read: "You like to eat a certain brand of ice cream for dessert. The grocery store charges $8 for it." In the increased price condition the vignette associated with the same product/price combination read: "You like to eat a certain brand of ice cream for dessert. The ice cream has become more popular with consumers, and the grocery store you go to has raised its price by 15% to $8.00." All of the price increases in the increased price condition were between 15% and 20%. The other product/price combinations included in the study were a winter coat ($100), orange juice ($5.99), a mobile phone ($100 with a new contract), a new pair of shoes for work ($100), a six-pack of beer ($8.99), and a swimsuit ($55). The prices that were subject to demand-based price increases in the increased price condition were those associated with the ice cream, the winter coat, the mobile phone, and the swimsuit.

After viewing the seven product/price combinations, participants were asked to report their experience during the shopping trip by answering fifteen questions. As part of this, autonomy threat was assessed using three items taken from the autonomy subscale of the Balanced Measure of Psychological Needs (Sheldon & Hilpert, 2012), a validated measure of situational autonomy and autonomy threat. The three autonomy threat items were randomly interspersed between the twelve other questions about the shopping trip in order to reduce demand effects. The scale items were: "I had a lot of pressure I could do without," "There were people telling me what I had to do," and "I had to do things

against my will." Participants responded to the items on scales ranging from 1 (*Completely untrue*) to 7 (*Completely true*).

Results and Discussion

The three autonomy threat items were averaged together to form an overall measure of autonomy threat experienced during the shopping trip (ω = .78, 95% CI: [.73, .82]). I regressed autonomy threat against a dummy variable representing the two price conditions (0 = stable prices, 1 = increased prices). There was a significant effect of price condition on autonomy threat, with participants in the increased price condition reporting higher autonomy threat (M = 3.50, SD = 1.57) during the shopping trip than participants in the stable price condition (M = 3.01, SD = 1.47; $\beta = .49, p = .002$, 95% CI: [.19, .80], Cohen's $d = .32$). Thus, the results of the Pilot Study indicate that, relative to stable prices, demand-based price increases can threaten consumer autonomy.

2.7 Study 1

The goal of Study 1 was to perform an initial test of my hypothesis that the level of autonomy threat consumers experience in response to price increases by firms influences their price fairness judgments. In order to test this I measured participants' trait NFA, and had participants judge the fairness of ten demand-based price increases for everyday products (e.g. orange juice). Consistent with previous research on price fairness (Bolton et al., 2003; Campbell, 2007; Haws & Bearden, 2006; Kahneman et al., 1986), I selected products for which demand-based price increases are not necessarily the norm (e.g. I did not include price increases associated with airline tickets). The price increases

ranged in amount from 10% to 30%. This range was selected because a previous meta-analysis indicates that consumers generally judge price increase amounts in this range to be unfair (Tarrahi et al., 2016), and because a price increase above 30% for everyday products like orange juice could be perceived by participants as being unrealistic.

I predicted that participants' trait NFA and the price increase amount would interact such that participants with high NFA would be more sensitive to increases in price increase amount (e.g. 15% vs. 25%) than participants with low NFA. This prediction is based on my assumptions that large price increases are more threatening to consumer autonomy than small price increases, and that consumers with high NFA are especially sensitive to high (vs. low) autonomy threats. My assumption that large price increases are perceived to be more threatening to consumer autonomy than small price increases is based on the reasoning that consumers experience price increases by firms as external pressure on their goals and behavior (e.g. as autonomy threats; Ryan & Deci, 2006), and that because large price increases are more likely to actually impede on a consumer's planned goals and behavior than small price increases, consumers associate more external pressure with them. I report a pretest of this assumption in the methods section below.

Method

I recruited 420 participants from an online panel and randomly assigned them to a 2 (NFA scale placement: first, last) [between] × 10 (Product category) [within] × 5 (Price increase amount) [within] × 5 (Product Category-Price increase amount match) [between]

mixed design. All participants were told that they would be completing two unrelated studies that had been combined for convenience purposes. All of the participants completed a measure of their trait NFA, with half of the participants completing the measure first as "Study 1," and half of the participants completing the measure as "Study 2" after providing their price fairness judgments. This was done in order to be able to measure and account for any possible demand effects that filling out the NFA measure first might have on participants' subsequent price fairness judgments.

Due to a lack of easily administered and domain-agnostic measures of trait NFA in the literature, I developed my own (see Appendix A for scale development details and the full list of scale items). Other research investigating the role of NFA on moral judgments has used measures of the actual amount of autonomy experienced in life (Van Prooijen, 2009), with the assumption that as experienced autonomy decreases, NFA increases. However, measures of the actual amount of autonomy a person experiences in life tend to be highly correlated with daily and life satisfaction (Sheldon, Elliot, Kim, & Kasser, 2001; Sheldon et al., 1996), and life satisfaction can influence judgments of negative events like price increases (Suldo & Huebner, 2004).[1] Participants rated how important six statements related to NFA were to them from 1 (*Unimportant*) to 7 (*One of the most important things in my life*). Example statements included "Being able to determine my own behavior, without the influence of others," and "Being free to choose for myself how to spend my time." The domain-agnostic trait NFA scale I developed has

[1] I thank an anonymous reviewer for pointing this out.

good psychometric properties and is uncorrelated with other constructs that could influence price fairness judgments, such as fair market ideology (Jost, Blount, Pfeffer, & Hunyady, 2003), inequity aversion (Fehr & Schmidt, 1999), and general reactivity to negative stimuli (Carver & White, 1994). The NFA scale I developed was modestly and negatively correlated with income (r = -.11, p = .03) and modestly and positively correlated with life satisfaction (r = .12, p = .03), and so I controlled for participant income and life satisfaction in a portion of my main analyses. As is discussed in detail in Appendix A, the correlation between life satisfaction and the NFA I scale developed is significantly smaller than the correlation between life satisfaction and established measures of the actual amount of autonomy one experiences in life, validating my reasons for developing the scale.

In the price fairness portion of the study, participants rated the fairness of demand-based price increases in ten different "everyday" product categories (e.g. groceries, clothing, electronics, etc.). For example, one scenario read: "You subscribe to a movie streaming service. The streaming service has grown in popularity over the last few years, and it raises its monthly fee by 10%" (see Appendix B for the complete set of scenarios used in the study). The fairness of each price increase was rated on a 5-point scale ranging from 1 (*Very Fair*) to 5 (*Very Unfair*). Each scenario featured one of five possible price increase amounts (10%, 15%, 20%, 25%, or 30%), and each participant judged the fairness of two price increases of each amount (e.g. two price increases of 10%, two price increases of 15%, etc.). Participants were randomly assigned to one of five Product Category-Price increase amount match conditions. In each condition,

product categories were matched with price increase amounts such that across all five conditions every product category was matched with every price increase amount. For example, in condition 1 the previously mentioned movie streaming service increased in price by 10%, in condition 2 it increased in price by 15%, in condition 3 it increased in price by 20%, etc. This was done in order to be able to measure and account for differential sensitivity to price increases in different product categories. Within each of the five product category-price increase amount match conditions, the order in which the price increase amounts were presented to participants was randomized (e.g. some participants saw a 10% price increase first, some saw a 15% price increase first, etc.). After completing the NFA scale and providing their price fairness judgments, participants provided their demographic information and were paid.

Prior to running Study 1 I pretested my assumption that large demand-based price increases are more threatening to consumer autonomy than small ones. Specifically, I recruited 200 participants from an online panel and randomly assigned them to either small or large price increase conditions. At the beginning of the pretest, participants were told to imagine that they were going shopping at their local mall, and that they would view information about the products they were buying. Participants then saw information about six products they were buying at the mall, including shoes, a swimsuit, and a shirt. In the small price increase condition participants were told that the prices associated with three of the items they wanted to buy had increased by 10% due to high consumer demand, and in the large price increase condition participants were told that the prices associated with three of the items they wanted to buy had increased by 30%. Importantly,

the actual resulting price of the products following the price increases were the same in both price increase conditions. After viewing the product information, participants were asked to report how they felt during the imagined shopping experience. Participants then filled out the same validated measure of autonomy threat as was used in the Pilot Study (Sheldon & Hilpert, 2012).

Regressing autonomy threat against price increase amount (10% coded as 0, 30% coded as 1) revealed that participants in the large price increase condition felt a higher sense of autonomy threat (M = 4.18, SD = 1.47) during the shopping experience than did participants in the small price increase condition ($M = 3.28, SD = 1.71;\ \beta = .90, p < .001$, 95% CI: [.45, 1.35], Cohen's d = .56). Thus, the results of the pretest indicates that, consistent with my assumption, large price increases are more threatening to consumer autonomy than small price increases, and that manipulating price increase amount is an effective manipulation of autonomy threat.

Results

Analytical strategy. For all of the analyses reported below I used mixed-effects regression with fairness judgments grouped by participant (ten judgments for each participant). Prior to analysis, price increase amount was centered around 0, and responses on the NFA scale were mean-centered. Fairness judgments were reverse-coded such that a 1 indicates *Very Unfair* and a 5 indicates *Very Fair*.

NFA Measurement Order and Product Category Effects. I first tested whether the order in which the NFA scale was administered (before or after the price fairness judgments) affected the results. Regressing price fairness on order, price increase amount,

and their interaction revealed that the effect of order and the interaction between order and price increase amount on price fairness judgments were both non-significant (*p*s > .40). Thus, administration of the NFA scale prior to participants' price fairness judgments did not appear to cause demand effects.

I next tested whether product category and price increase amount interacted to influence price fairness judgments. Regressing price fairness on product category (dummy-coded), price increase amount, and their interaction revealed the effects of product category and the interaction between product category and price increase amount were non-significant (*p*s > .39).

Main Results. In order to test the influence of the need for autonomy on price fairness judgments I regressed price fairness on participant NFA, price increase amount, and their interaction. NFA had a significant and negative influence on price fairness judgments ($\beta_{NFA} = -.18, p < .001$, 95% CI: [-.29, -.08]); as NFA increased, the judged fairness of demand-based price increases by firms decreased. In addition, price increase amount had a significant and negative influence on price fairness judgments ($\beta_{Amount} = -3.78, p < .001$, 95% CI: [-4.08, -3.48]); as price increase amount increased, the judged fairness of price increases by firms decreased. Most importantly, the predicted interaction between NFA and price increase amount was significant ($\beta_{NFA \times Amount} = -1.11, p < .001$, 95% CI: [-1.43, -.79]). The interaction between NFA and price increase amount was driven by the fact that, as expected, sensitivity to price increase amount increased as NFA increased (see Figure 4). This was examined in closer detail by estimating separate slope coefficients for the relationship between price increase amount and price fairness at

NFA levels 1 SD above and below the mean. Specifically, participants with NFA 1 SD below the mean were relatively insensitive to price increase amount ($\beta_{-1SD} = -2.77, p < .001$, 95% CI: [-3.19, -2.35]), while participants with NFA one SD above the mean were relatively sensitive to price increase amount ($\beta_{+1SD} = -4.81, p < .001$, 95% CI: [-5.24, -4.39]; difference between β_{-1SD} and β_{+1SD} = 2.04, p < .001, 95% CI: [1.45, 2.64]). Finally, the interaction between NFA and price increase amount remained significant after including in the regression participant income life satisfaction ($\beta_{NFA \times Amount} = -1.06, p < .001$, 95% CI: [-1.39, -.74]), indicating that our results are robust to participant income and life satisfaction effects.

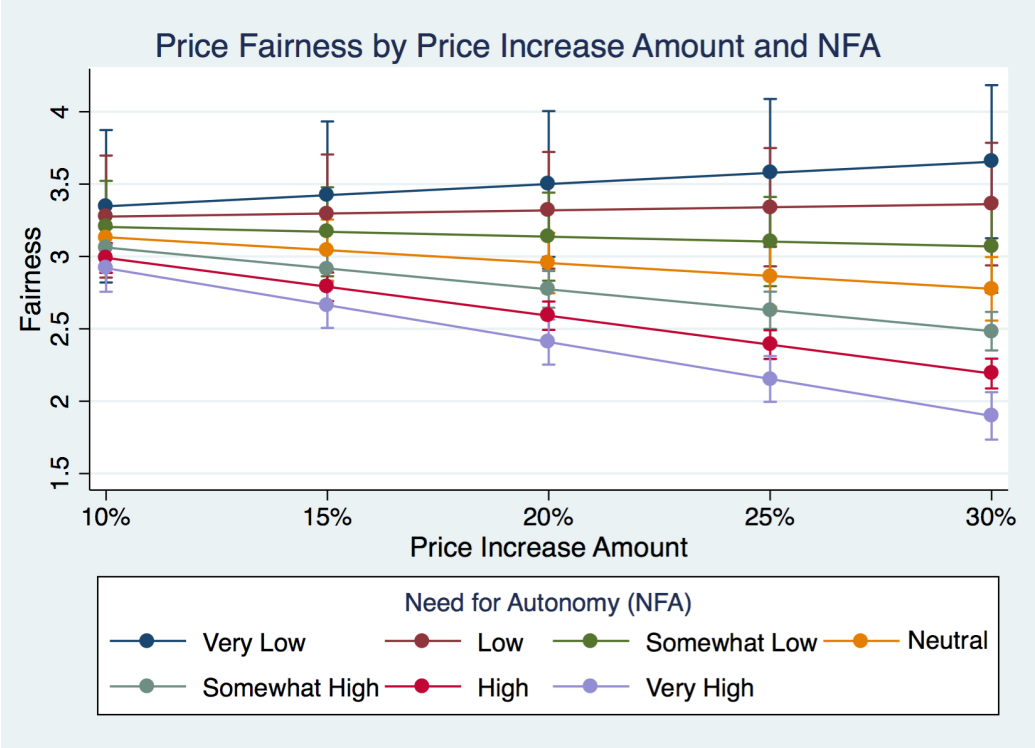

Figure 4. Model predictions from Study 1 of price fairness judgments by participant need for autonomy (NFA) and price increase amount. NFA and price increase amount

interact such that consumers with high NFA are more sensitive to price increase amount than are consumers with low NFA. Error bars are 95% confidence intervals.

Discussion

Study 1 was a first test of my hypothesis that price increases by firms threaten consumer autonomy, and that price fairness judgments are influenced by the degree to which consumers feel that their autonomy is threatened. I tested this hypothesis by measuring participant NFA and manipulating price increase amount. My (pretested) assumption was that large price increases are more threatening to consumer autonomy than small price increases. Given this, then per my predictions, high NFA consumers should be more sensitive to price increase amount than low NFA consumers. This was indeed the case, as (for example) the difference in the judged fairness of 10% vs. 30% demand-based price increases was larger for high NFA participants than for low NFA participants. In addition, the influence of participant NFA on their price fairness judgments was robust to the inclusion of participant income and life satisfaction in the regression model used to analyze the results.

While I demonstrated that my NFA scale has satisfactory convergent and discriminant validity (see Appendix A), there is still the possibility that the scale is correlated with other constructs that also influence consumer price fairness judgments and were not accounted for. Thus, in Study 2 I sought to manipulate participant NFA in addition to manipulating price increase amount, and then measure subsequent price fairness judgments. If my manipulation of participant NFA has a similar effect on price

fairness judgments as measured NFA, than we can be more confident that it is in fact consumer NFA (and autonomy threat) that is influencing price fairness judgments.

2.8 Study 2

The goal of Study 2 was to provide convergent evidence for my hypothesis that price increases threaten consumer autonomy, and that the level of autonomy threat consumers experience influences their price fairness judgments. Participants were first exposed to a manipulation of NFA, and then completed the same price fairness judgment task as was used in Study 1. Consistent with the results of Study 1, I predicted that the NFA manipulation and the price increase amount would interact such that participants in the high NFA condition would be more sensitive to increases in price increase amount (e.g. 10% vs. 30%) than participants in the low NFA condition.

Method

I recruited 385 participants from an online panel and randomly assigned them to a 2 (NFA manipulation: low, high) [between] × 10 (Product category) [within] × 5 (Price increase amount) [within] × 5 (Product Category-Price increase amount match) [between] mixed design. All participants were told that they would be completing two unrelated studies that had been combined for convenience purposes. In the first survey participants were instructed that I was interested in what they thought about a new scientific finding. Participants than read a research report they were told had been published recently. The text of the research report contained the between-subject NFA manipulation. Following the NFA manipulation, participants were told that I wanted their opinions on the actions

of various companies. Participants then completed the same price fairness judgment task as was used in Study 1.

Many of the commonly used manipulations of NFA in the literature are also likely to influence participant affect. For example, NFA is commonly manipulated in the literature by placing participants in a controlling environment and/or reducing their perceptions of choice (Radel et al., 2011; Schüler et al., 2016; Van Prooijen, 2009; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004). However, these manipulations can also influence participant affect (Schüler et al., 2016), and there is a significant body of work indicating that affect can have a strong and separate effect on people's moral judgments (Haidt, 2001; Haidt, Koller, & Dias, 1993; Koenigs et al., 2007). Thus, in order to test the influence that NFA has on participant price fairness judgments separate from any affective influences, I sought to design a manipulation of participant NFA that had little (or no) influence on participant affect.

The NFA manipulation I designed consisted of short "scientific reports" that participants were asked to read and answer a several questions about. In the high NFA condition, participants read that new research had found that one of the keys to satisfaction and happiness in life was feeling free to do and say what one wants, and being free from pressure from other people (e.g. being autonomous). In the low-NFA condition, participants read about new research examining the hunting patterns of lions and cheetahs in the African savannah (for the full text of the NFA manipulations, see Appendix C). The low- and high-NFA manipulations were of equivalent length, and in both cases participants were asked to spend 2-3 minutes reading the information. I

expected that the high-NFA manipulation would increase the accessibility and value of the goal to have a high degree of autonomy in one's life, therefore increasing participant NFA (Förster, Liberman, & Friedman, 2007; Heath, Larrick, & Wu, 1999). In addition, I expected that the low-NFA manipulation would have minimal influence on participant NFA. However, given that most people's NFA is likely already somewhat high (Deci & Ryan, 2000), I expected the effect of the high-NFA manipulation on participant NFA to be relatively moderate relative to the low-NFA manipulation. After reading the reports, respondents were asked several questions about the materials to complete the cover story for the manipulation.

I validated my NFA manipulation in a pretest in order to ensure that it had the intended effect on participant NFA and did not influence participant affect. In particular, I recruited 296 participants from an online panel and randomly assigned them to the low- and high-NFA manipulation conditions.[2] After completing the manipulations, participants were asked to report their need for autonomy on the NFA scale I developed and that was used in Study 1. I predicted that participants in the high-NFA condition would report higher values on the NFA scale than participants in the low-NFA condition. Participant positive and negative affect was measured using PANAS (Watson, Clark, & Tellegen, 1988).

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[2] I sought to recruit 300 people for the pretest based on the assumption that the effect size of the NFA manipulation would be small-to-moderate in size (Cohen's $d \approx .35$), and wanting 80% power to detect an effect. Per G*Power (Faul, Erdfelder, Lang, & Buchner, 2007), the total sample size needed to achieve this is 260 participants, but I chose to recruit 300 given that the effect could be smaller than I expected.

Submitting the pretest data to a regression with responses on the NFA scale as the dependent variable and NFA manipulation condition as the independent variable (dummy-coded as high-NFA = 1, low-NFA = 0) revealed a significant effect of the NFA manipulation condition on reported NFA ($\beta = .28, p = .02$, 95% CI: [.04, .54]). The effect size associated with the NFA manipulation was relatively moderate (d = .26), which is consistent with meta-analytic estimates of the average effect size associated with goal priming in the literature (Weingarten et al., 2016), and with my assumption that participant NFA is likely already relatively high prior to the NFA manipulation. In addition, the effect of the NFA manipulation on positive and negative affect was non-significant (ps > .59). Thus, my pretest indicated that the NFA manipulation worked as expected, and that it didn't influence participant affect.

Results

Analytical strategy. Similar to Study 1, for all of the analyses reported below I use mixed-effects regression with fairness judgments grouped by participant (ten judgments for each participant). Prior to analysis price increase amount was centered around 0. Fairness judgments were reverse-coded such that a 1 indicates *Very Unfair* and a 5 indicates *Very Fair*.

Product Category Effects. I first tested whether product category and price increase amount interacted to influence price fairness judgments. Regressing price fairness on product category (dummy-coded), price increase amount, and their interaction revealed a significant effect of product category on price fairness judgments (χ^2 (9) = 20.04, p = .02), as well as a significant product category by price increase amount

interaction (χ^2 (9) = 17.14, p = .05). Thus, I include product category fixed effects and the interaction between product category and price increase amount in a portion of my main analysis.

Main analysis. In order to test the influence of the need for autonomy on price fairness judgments I regressed price fairness on the NFA manipulation (dummy-coded as high-NFA = 1, low-NFA = 0), price increase amount, and their interaction. There was no main effect of the NFA manipulation on participant fairness judgments ($\beta_{NFA} = -.08, p = .44$, 95% CI: [-.29, .13]). This was expected, as discussed earlier, because participant NFA was likely already relatively high in the low NFA (control) condition (Deci & Ryan, 2000), and thus I expected the influence of the NFA manipulation on participant price fairness judgments to only become pronounced at higher price increase amounts (when the autonomy threat level is relatively high). Price increase amount had a significant and negative influence on price fairness judgments ($\beta_{Amount} = -2.18, p < .001$, 95% CI: [-2.58, -1.79]); as price increase amount increased, the judged fairness of price increases by firms decreased. Most importantly, the predicted interaction between the NFA manipulation and price increase amount was significant ($\beta_{NFA \times Amount} = -.91, p = .001$, 95% CI: [-1.47, -.36]; see Figure 5). Examining the slope coefficients in each NFA condition revealed that, as expected, the interaction between the NFA manipulation and price increase amount was driven by participants being significantly more sensitive to price increase amount in the high-NFA condition ($\beta_{high} = -3.10, p < .001$, 95% CI: [-2.58, -1.79]) relative to the low-NFA condition ($\beta_{low} = -2.18, p < .001$, 95% CI: [-3.49, -2.70]). Finally, the interaction between NFA and price increase

amount remained significant after including in the regression the interaction between product category and price increase amount, participant income, and participant life satisfaction ($\beta_{NFA \times Amount} = -.94, p = .001$, 95% CI: [-1.50, -.38]).

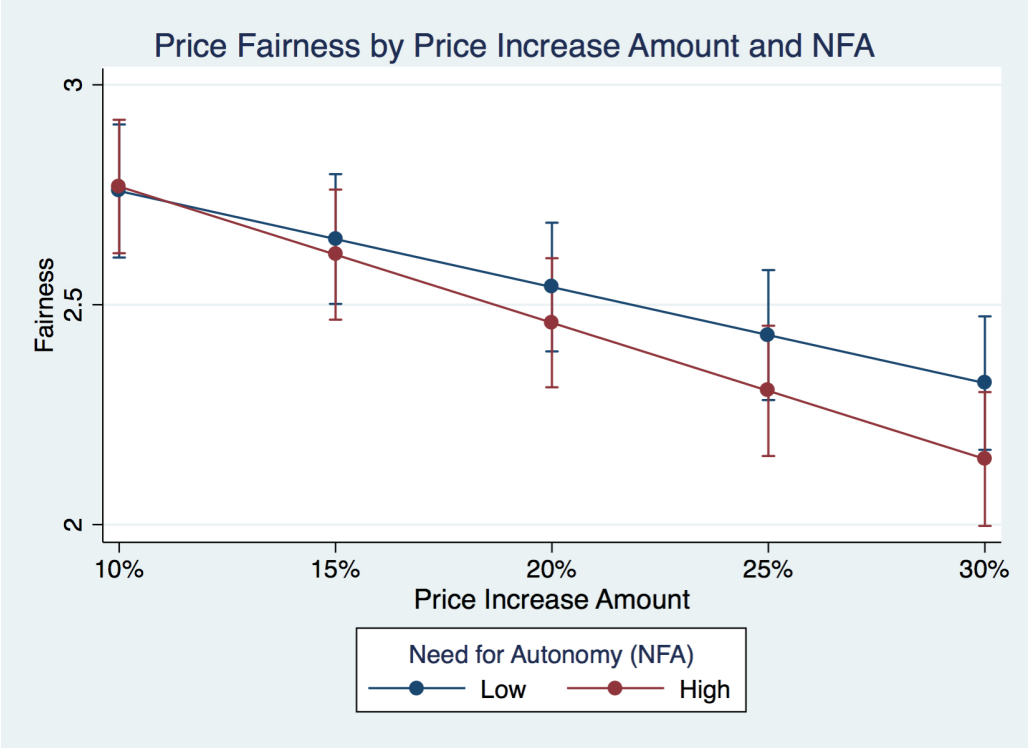


Figure 5. Model predictions from Study 2 of price fairness judgments by manipulated need for autonomy (NFA) and price increase amount. Similar to the results of Study 1, NFA and price increase amount interact such that consumers with high NFA are more sensitive to price increase amount than are consumers with low NFA. Error bars are 95% confidence intervals.

Discussion

Considered together with Study 1, the results of Study 2 provide convergent evidence for my hypothesis that price increases threaten consumer autonomy, and that the

level of autonomy threat consumers experience in response to price increases influence their fairness judgments. In particular, I predicted that participants in the high NFA condition of Study 2 would be more sensitive to increases in price increase amount than participants in the low NFA condition. This is because large price increases are more threatening to consumer autonomy than small price increases, and per my theorizing, high NFA participants should be more sensitive to the difference in the autonomy threat posed by large and small price increases than low NFA participants. My prediction was borne out in the data, providing evidence in support of my hypothesis. In addition, given that the pattern of results obtained in Studies 1 & 2 relating NFA and price increase amount to consumer fairness judgments is similar whether NFA is measured (Study 1) or manipulated (Study 2), we can be more confident that it is indeed autonomy threat that is driving the results, and not alternative constructs.

In Studies 1 & 2 the autonomy threat associated with a price increase is manipulated by varying price increase amount. While the results of Studies 1 & 2 are consistent with my assumption that large price increases are more threatening to consumer autonomy than small price increases, treating price increase amount as a manipulation of autonomy threat is a new concept in the literature. Thus, in order to provide further convergent evidence that autonomy threat is an important determinant of consumer price fairness judgments, in Studies 3 & 4 I sought to manipulate the autonomy threat associated with price increases by firms using two additional methods. In Study 3 I use an autonomy threat manipulation that has been previously validated in the literature: providing (vs. not providing) the opportunity to voice an opinion about an important

decision (Van Prooijen, 2009). In Study 4 I manipulate the substitutability of a product associated with a price increase. If the pattern of results observed in Studies 3 & 4 is similar to the pattern of results observed in Studies 1 & 2 (i.e. that the fairness judgments of high-NFA consumers are more sensitive to the autonomy threat manipulations than are the fairness judgments of low-NFA consumers), then it will help validate my assertion that varying price increase amount manipulates autonomy threat. In addition, we will be able to be more confident that autonomy threat is indeed a critical determinant of consumer price fairness judgments.

2.9 Study 3

The goal of Study 3 was to provide further support for my hypothesis that autonomy threat is an important determinant of consumer price fairness judgments by manipulating the autonomy threat associated with price increases using an established manipulation from the literature. Specifically, previous research indicates that people view being given the opportunity to voice an opinion about an important decision as autonomy-supportive, and that they view being denied such an opportunity as autonomy-threatening (Van Prooijen, 2009). In addition, being given the opportunity to voice an opinion about an important decision can influence justice and fairness perceptions even if the opportunity is provided after the decision occurred, when there is no possibility of influencing the outcome of the decision (Lind, Kanfer, & Earley, 1990). This being the case, in addition to measuring participant NFA, in Study 3 I manipulated whether or not consumers were given the opportunity to voice their opinions to firms about price

increases initiated by the firms, *after the price increases had occurred.* Consistent with the results of Studies 1 & 2, I predicted that participant NFA and the voice manipulation would interact such that the participants with high NFA would be more sensitive to whether or not consumers are given an opportunity to voice their opinions about a price increase than participants with low NFA would be.

Method

I recruited 586 participants from an online panel and randomly assigned them to a 3 (Voice: low, control, high) [between] × 2 (NFA scale placement: first, last) [between] ×10 (Product category) [within] mixed design. All participants were told that they would be completing two unrelated studies that had been combined for convenience purposes. All of the participants completed the same trait NFA measure used in Study 1, with half of the participants completing the measure first as "Study 1," and half of the participants completing the measure as "Study 2" after providing their price fairness judgments. Similar to Study 1, this was done in order to be able to measure and account for any possible demand effects that filling out the NFA measure first might have on participants' subsequent price fairness judgments.

In the price fairness portion of the study, participants completed a price fairness judgment task similar to the one used in Studies 1 & 2. In particular, participants rated the fairness of ten demand-based price increases in different product categories, with the price increase amount constrained between 10% and 20%. Participants in the control condition saw no information about consumer voice, they only received information about the product category and price increase amount (equivalent to the price increase

scenarios used in Studies 1 & 2; see Appendix B). For example, the scenario describing a price increase associated with a movie streaming service in the control condition read: "You subscribe to a movie streaming service. The streaming service has grown in popularity over the last few years, and the company decides to raise its monthly fee by 15%."

In the high-voice condition, each price increase scenario included information highlighting that the firm had been receptive to consumer opinions and outreach about the price increase. For example, following the price increase information associated with the movie streaming service (which was the same as in the control condition), the scenario read: "After the price increase, customers reached out to executives at the streaming service with concerns. The executives set up time to speak with customers, and set up several additional channels of communication (via email and social media) to seek out customer input."

In the low-voice condition, each price increase scenario included information highlighting that consumers had tried to reach out to the firm to discuss the price increase, but the firm had not been receptive to the outreach. For example, following the price increase information associated with the movie streaming service, the scenario read: "After the price increase, customers reached out to executives at the streaming service with concerns. The executives did not take time to answer customer questions, and didn't listen to their concerns." After completing the NFA scale and providing their price fairness judgments, participants provided their demographic information and were paid.

Prior to running Study 3 I pretested the assumption that the voice manipulation influenced the autonomy threat associated with price increases. Specifically, I recruited 272 participants from an online panel and randomly assigned them to the control, low voice, or high voice conditions. At the beginning of the pretest, participants were told to imagine that they would be shopping for various products over the next month, and that they would view information about the products they were buying. Participants then saw information about six products they were buying, such as shoes and a swimsuit. In the control condition, participants saw information about the products and 10-20% price increases associated with the products. In the low voice condition, in addition to the product and price increase information, participants read that consumers had tried to reach out to the companies to discuss the price increases, but that the companies had ignored them. In the high voice condition, in addition to the product and price increase information, participants read that consumers had tried to reach out to the companies to discuss the price increases, and that executives at the companies had engaged with consumers. After viewing the product information, participants were asked to report how they felt about purchasing the products. Participants then filled out the same validated measure of autonomy threat used in the Pilot Study and in the pretest reported in Study 1 (Sheldon & Hilpert, 2012).

Regressing autonomy threat against the voice conditions revealed a significant effect of voice on autonomy threat ($F(2,269) = 23.62$, $p < .001$). Examining the effect of voice more closely using pre-planned contrasts revealed that participants in the low voice condition felt a greater sense of autonomy threat ($M = 5.00$, $SD = 1.37$) than did

participants in the control condition (M = 4.06, SD = 1.40; $F(2,269) = 5.66$, p = .02, Cohen's d = .35), and that participants in the control condition (in which demand-based price increases occurred, but the opportunity for voice was not mentioned) felt a greater sense of autonomy threat than did participants in the high voice condition (M = 3.55, SD = 1.53; $F(2,269) = 18.96$, p < .001, Cohen's d = .68). Thus, these results indicate that manipulating the opportunity consumers have to voice their opinion about a price increase after it has occurred influences autonomy threat.

Results

Analytical strategy. For all of the analyses reported below I use mixed-effects regression with fairness judgments grouped by participant (ten judgments for each participant). Prior to analysis, responses on the NFA scale were mean-centered. Fairness judgments were reverse-coded such that a 1 indicates *Very Unfair* and a 5 indicates *Very Fair*.

NFA Measurement Order and Product Category Effects. I first tested whether the order in which the NFA scale was administered (before or after the price fairness judgments) affected participant price fairness judgments. Regressing price fairness on order, voice, and their interaction revealed that the effect of order and the interaction between order and voice on price fairness judgments were both non-significant (ps > .61). Thus, administration of the NFA scale prior to participants' price fairness judgments did not appear to cause demand effects.

I next tested whether product category and voice interacted to influence price fairness judgments. Regressing price fairness on product category (dummy-coded), voice,

and their interaction revealed a marginally significant effect of product category on price fairness judgments (χ^2 (9) = 15.14, p = .09) and a significant interaction between product category and voice (χ^2 (18) = 40.52, p = .002). The interaction between product category and voice was driven by the fact that participant fairness judgments were more sensitive to voice in some product categories (e.g. dress shoes) than in others (e.g. winter coats). Given the significant interaction effect observed between product category and voice, the interaction between product category and voice was included in a portion of the main analysis.

Main Results. I regressed price fairness on participant NFA, voice, and their interaction. NFA had a significant and negative influence on price fairness judgments ($\beta_{NFA} = -.41, p < .001$, 95% CI: [-.55, -.27]); as NFA increased, the judged fairness of price increases by firms decreased. The influence of voice on price fairness was also significant (χ^2 (2) = 188.06, p <.001). This was driven by the fact that the judged fairness of price increases by firms was higher in the high voice condition (*M* = 3.43, *SD* = 1.21) than in the control condition (*M* = 2.81, *SD* = 1.15; *Diff* = .62, p < .001, 95% CI: [.43, .81]), and higher in the control condition than in the low voice condition (*M* = 2.08, *SD* = 1.05; *Diff* = .73, p < .001, 95% CI: [.51, .88]).

Most importantly, the predicted interaction between NFA and voice was significant (χ^2 (2) = 25.91, p <.001). The interaction between NFA and voice was driven by the fact that, as expected, sensitivity to voice was higher for participants with high NFA than for participants with low NFA (see Figure 6). This was explored further by examining the influence of voice on participant price fairness judgments at NFA values

one SD above and below the mean. Participants with NFA one SD above the mean judged price increases to be fairer when voice was high (M_{high} = 3.54, 95% CI: [3.35, 3.74]) than when voice was low (M_{low} = 1.71, 95% CI: [1.52, 1.89]; $M_{high} - M_{low}$= 1.83, p < .001, 95% CI: [1.56, 2.10]). This was the case for participants with NFA one SD below the mean as well (M_{high} = 3.32, 95% CI: [3.13, 3.51]; M_{low} = 2.52, 95% CI: [2.32, 2.72]; $M_{high} - M_{low}$= .80, p < .001, 95% CI: [.52, 1.08]). However, the difference in price fairness judgments between the high and low consumer voice conditions was larger for participants with NFA one SD above the mean than for participants with NFA one SD below the mean (*Diff* = 1.03, p < .001, 95% CI: [.63, 1.43]). Thus, participants with high NFA were more sensitive to the voice manipulation than were participants with low NFA. Finally, the interaction between NFA and voice remained significant after including in the regression participant income, life satisfaction, and the interaction between the voice manipulation and product category (χ^2 (2) = 25.11, p <.001).

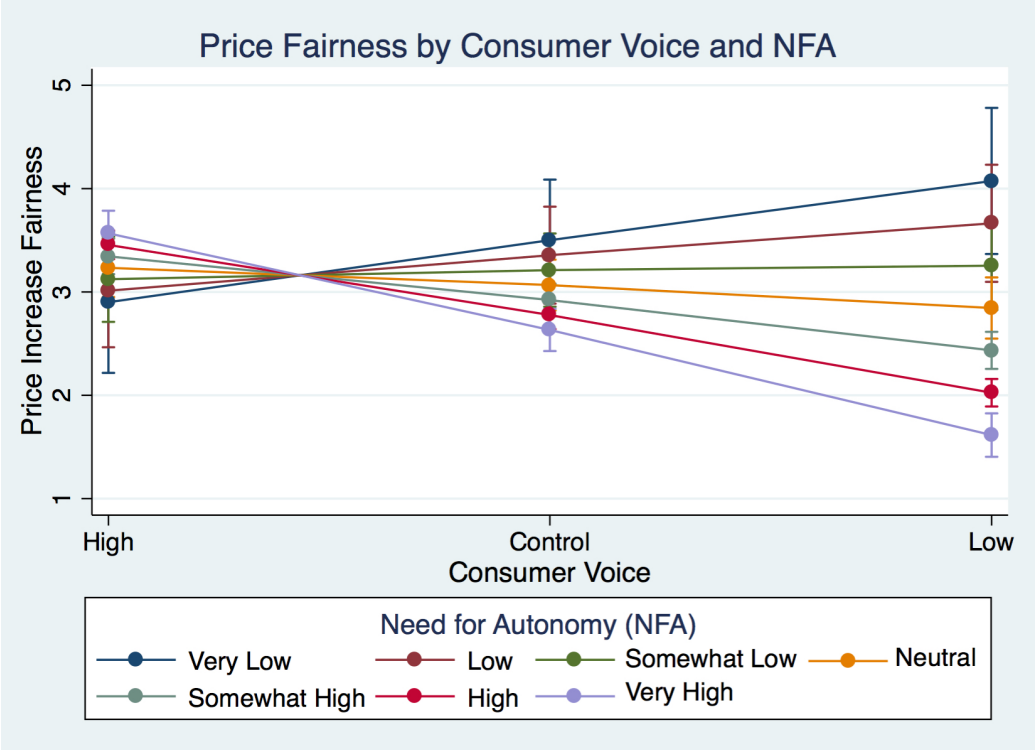


Figure 6. Model predictions from Study 3 of price fairness judgments by consumer voice and participant need for autonomy (NFA). Voice and NFA interact such that consumers with high NFA are more sensitive to the being able (or not able) to express their opinions to firms about price increases than are consumers with low NFA. Error bars are 95% confidence intervals. Although it looks as if the relationship between NFA and voice is significant when NFA is *very low* and *low*, there were not many participants with *very low* and *low* NFA, and the slopes of these lines are not significantly different from 0.

Discussion

The results of Study 3 provide additional evidence for my hypothesis that autonomy threat is an important determinant of consumer price fairness judgments. In

particular, in addition to measuring participant NFA, I manipulated the autonomy threat associated with a price increases using an established autonomy threat manipulation from the literature: providing (vs. not providing) the opportunity to voice an opinion about an important decision (Van Prooijen, 2009). Providing consumers with an opportunity to voice their opinions about price increases increased the judged fairness of price increases (compared to the control and low voice conditions), but participants with high NFA were more sensitive to the voice manipulation than were participants with low NFA. Given the assumption that consumers with high NFA are more sensitive to autonomy threats than consumers with low NFA, the observed interaction between consumer NFA and the voice manipulation provides strong evidence that autonomy threat is an important determinant of consumer price fairness judgments. The results of Study 3 also help validate my assumption in Studies 1 & 2 that large price increases are more threatening to consumer autonomy than small price increases. This is because the interaction between consumer NFA and voice observed in Study 3 mirrors the interaction between consumer NFA and price increase amount observed in Studies 1 & 2, with high NFA participants being more sensitive than low NFA participants to both the voice and price increase amount manipulations.

As mentioned previously, another factor that may influence the autonomy threat posed by a price increase is the substitutability of the product the price increase is associated with. In Study 4 I seek to provide additional convergent evidence for my hypothesis that autonomy threat influences price fairness judgments by measuring participant NFA and manipulating product substitutability. If price increases associated

with low (high) substitutability products are indeed relatively threatening (unthreatening) to consumer autonomy, than we would expect the results of Study 4 to mirror those of Studies 1-3, with high NFA participants being more sensitive to variation in product substitutability than low NFA participants.

In addition to providing convergent evidence consistent with the results of Studies 1-3, in Study 4 I sought to manipulate the autonomy threat associated with demand-based price increases while holding constant the perceived exploitation intentions of firms. In particular, consumers judge demand-based price increases as less fair when they perceive that a firm is seeking to exploit consumers (Campbell, 1999; Maxwell, 1995). It could be the case that the manipulations of autonomy threat used in Studies 1-3 also influenced the perceived exploitation intentions of firms, and that participants with high NFA react more negatively to the sense that others are trying to exploit them than do participants with low NFA. This doesn't necessarily argue against a role for autonomy threat in consumer price fairness judgments, as the reason that high NFA participants might react more negatively to the exploitation intentions of firms is that the intention to exploit someone is a clear autonomy threat, and high NFA participants are more sensitive to autonomy threats. However, given that the influence of perceived exploitation intentions on consumer price fairness judgments previously been identified in the literature, it is important to demonstrate that autonomy threat can makes a unique contribution to consumer price fairness judgments separate from perceived exploitation intentions. Thus, I sought to design a product substitutability manipulation that had no influence on the perceived exploitation intentions of firms. A pretest I ran examining the influence of the product

substitutability manipulation on the perceived exploitation intentions of firms is reported in the Methods section of Study 4.

2.10 Study 4

The main goal of Study 4 was to provide additional convergent evidence that autonomy threat is an important determinant of consumer price fairness judgments. In addition, I sought to demonstrate the unique contribution that autonomy threat makes to price fairness judgments, separate from the perceived exploitation intentions of firms. Similar to Studies 1 & 3, participants filled out our NFA scale, and then judged the fairness of ten price increase scenarios. I manipulated the substitutability of the products associated with the price increase between participants. Given my assumption that price increases associated with low (high) substitutability products are relatively threatening (unthreatening) to consumer autonomy, I predicted that (consistent with the results of Studies 1-3) high NFA participants would be more sensitive to variation in product substitutability than low NFA participants.

Method

I recruited 385 participants from an online panel and randomly assigned them to a 2 (Product Substitutability: low, high) [between] × 2 (NFA scale placement: first, last) [between] ×10 (Product category) [within] mixed design. All participants were told that they would be completing two unrelated studies that had been combined for convenience purposes. All of the participants completed the same trait NFA measure used in Studies 1 & 3, with half of the participants completing the measure first as "Study 1," and half of

the participants completing the measure as "Study 2" after providing their price fairness judgments. Similar to Studies 1 & 3, this was done in order to be able to measure and account for any possible demand effects that filling out the NFA measure first might have on participants' subsequent price fairness judgments.

In the price fairness portion of the study, participants completed a price fairness judgment task similar to the one used in Studies 1-3. In particular, participants rated the fairness of ten demand-based price increases in different product categories, with the price increase amount constrained between 15% and 20%. Participants in the high product substitutability condition only received information about the product category and price increase amount (similar to the price increase scenarios used in Studies 1 & 2; see Appendix B). For example, the scenario describing a price increase associated with a cable and internet provider in the high product substitutability condition read: "You get your cable and internet from a certain provider. The company has seen consumer demand for its services increase, and it increases the price of cable and internet by 15%."

In the low product substitutability condition, each of the price increase scenarios included information highlighting that there were few attractive alternatives to purchasing the target product. For example, the scenario describing the price increase associated with the cable and internet provider in the low product substitutability condition read: "You get your cable and internet from a certain provider. The company has seen consumer demand for its services increase, and it increases the price of cable and internet by 15%. It is the only cable and internet provider in your town." After completing the NFA scale and providing their price fairness judgments, participants provided their demographic

information and were paid.

Prior to running Study 4 I pretested my assumption that the product substitutability manipulation influenced the autonomy threat associated with price increases. Specifically, I recruited 196 participants from an online panel and randomly assigned them to either the low or high substitutability conditions. At the beginning of the pretest, participants were told to imagine that they had been shopping for various products over the last month, and that they would view information about the products they were buying. Participants then saw information about six products they were buying, such as shoes and a swimsuit. In the high substitutability condition, participants saw information about the products and price increases associated with the products. In the low substitutability condition, in addition to the product and price increase information, participants read information highlighting that there were few alternatives available to purchasing the target product. After viewing the product information, participants were asked to report how they felt about purchasing the products. Participants then filled out the same validated measure of autonomy threat as was used in Studies 1, 3, and in the Pilot Study (Sheldon & Hilpert, 2012).

Regressing autonomy threat against product substitutability (high substitutability coded as 0, low substitutability coded as 1) indicated that participants in the low substitutability condition felt a greater degree of autonomy threat ($M = 4.83$, $SD = 1.54$) than did participants in the high substitutability condition ($M = 3.46, SD = 1.64;\ \beta = 1.37\ p < .001$, 95% CI: [.92, 1.82], Cohen's $d = .86$). Thus, consistent with my assumption, price increases associated with low substitutability products are more

threatening to consumer autonomy than price increases associated with high substitutability products.

In order to test whether the product substitutability manipulation influenced the perceived exploitation intentionality of firms, and whether this influence differed by consumer NFA, I recruited 297 participants from a large online panel and randomly assigned them to the same experimental design used for the main study. However, instead of judging the fairness of the demand-based price increases by each of the firms, the participants judged the exploitation intentions of each of the firms that raised prices. Perceived exploitations intentions were measured using the same scale used by Campbell (1999, 2007). Specifically, participants rated whether each firm's intentions were bad or good (1: Bad – 7: Good), whether each firm intended to take advantage of customers (1: Very much – 7: Not at all), and whether the goal of each firm was to protect profits regardless of the impact on consumers (1: Agree – 7: Disagree). The scales were coded such that higher values indicated higher perceived exploitation intentions. The three scales were averaged together to form a measure of the perceived exploitation intentions of firms (**ω**= .84, 95% CI: [.83, .85]).

I tested the influence of the product substitutability manipulation and participant NFA on the perceived exploitation intentions of firms by regressing participant exploitation perceptions on product substitutability, participant NFA, and their interaction, with the judgments grouped by participant. Participant NFA had a significant influence on the perceived exploitation intentions of firms ($\beta_{NFA} = .44, p < .01$, 95% CI: [.25, .64]); as NFA increased, the perceived exploitation intentions of firms also

increased. However, the main effect of product substitutability on the perceived exploitation intentions of firms was non-significant ($\beta_{ProdSub} = .14, p = .34$, 95% CI: [-.15, .42]), as was the interaction between NFA and product substitutability ($\beta_{NFA \times ProdSub} = .03, p = .85$, 95% CI: [-.26, .32]). This means that the product substitutability manipulation had no influence on the perceived exploitation intentions of firms, and that perceptions of the exploitation intentions of firms selling low (vs. high) substitutability products and services didn't differ for participants that were high (vs. low) in NFA. Thus, if in the main experimental results reported below the product substitutability manipulation and participant NFA significantly interact to predict price fairness judgments, it is unlikely that this can be explained by increased sensitivity among high (vs. low) NFA participants to differences in the perceived exploitation intentions of firms, as the pretest indicates that the perceived exploitation intentions of firms in the low and high product substitutability conditions are perceived to be equivalent, regardless of participant NFA.

Results

Analytical strategy. For all of the analyses reported below I use mixed-effects regression with fairness judgments grouped by participant (ten judgments for each participant). Prior to analysis, responses on the NFA scale were mean-centered. Fairness judgments were reverse-coded such that a 1 indicates *Very Unfair* and a 5 indicates *Very Fair*.

NFA Measurement Order and Product Category Effects. I first tested whether the order in which the NFA scale was administered (before or after the price fairness

judgments) affected participant price fairness judgments. Regressing price fairness on order, product substitutability, and their interaction revealed that the effect of order and the interaction between order and product substitutability on price fairness judgments were both non-significant (*p*s > .88). Thus, administration of the NFA scale prior to participants' price fairness judgments did not appear to cause demand effects.

I next tested whether product category and product substitutability interacted to influence price fairness judgments. Regressing price fairness on product category (dummy-coded), product substitutability, and their interaction revealed a significant effect of product category on price fairness judgments (χ^2 (9) = 153.70, p < .001), and a significant interaction between product category and product substitutability (χ^2 (9) = 63.96, p < .001). The interaction between product category and voice was driven by the fact that participant fairness judgments were more sensitive to the product substitutability manipulation in some product categories (e.g. winter coats) than in others (e.g. books). Given the significant product category and product category × product substitutability effects, product category fixed effects and the interaction between product category and product substitutability were included in a portion of the main analysis.

Main Results. I regressed price fairness on participant NFA, product substitutability, and their interaction. NFA had a significant and negative influence on price fairness judgments ($\beta_{NFA} = -.16, p = .03$, 95% CI: [-.30, -.02]); as NFA increased, the judged fairness of price increases by firms decreased. The main effect of product substitutability on price fairness was non-significant ($\beta_{ProdSub} = -.15, p = .12$, 95% CI: [-.34, .04]). Most importantly, the predicted interaction between NFA and product

substitutability was significant ($\beta_{NFA \times ProdSub} = -.26, p = .01$, 95% CI: [-.46, -.06]; see Figure 7). The interaction between NFA and product substitutability was driven by the fact that, as expected, sensitivity to product substitutability was higher for participants with high NFA than for participants with low NFA. This was explored further by examining the influence of product substitutability on participant price fairness judgments at NFA values one SD above and below the mean. Participants with NFA one SD above the mean judged price increases to be fairer when product substitutability was high (M_{high} = 2.44, 95% CI: [2.25, 2.63]) rather than low (M_{low} = 2.04, 95% CI: [1.85, 2.23]; $M_{high} - M_{low}$= .40, p = .003, 95% CI: [.13, .67]). Thus, participants with high NFA were sensitive to the product substitutability manipulation. In contrast, for participants with NFA one SD below the mean, the judged fairness of price increases did not significantly differ whether product substitutability was high (M_{high}= 2.75, 95% CI: [2.65, 3.04]) or low (M_{low}= 2.84, 95% CI: [2.56, 2.94]; $M_{high} - M_{low}$= -.09, p = .49, 95% CI: [-.37, .17]). Thus, participants with low NFA were relatively insensitive to the product substitutability manipulation. Finally, the interaction between NFA and product substitutability remained significant after including in the regression participant income, life satisfaction, and the interaction between product category and product substitutability ($\beta_{NFA \times ProdSub} = -.27, p = .008$, 95% CI: [-.46, -.07]).

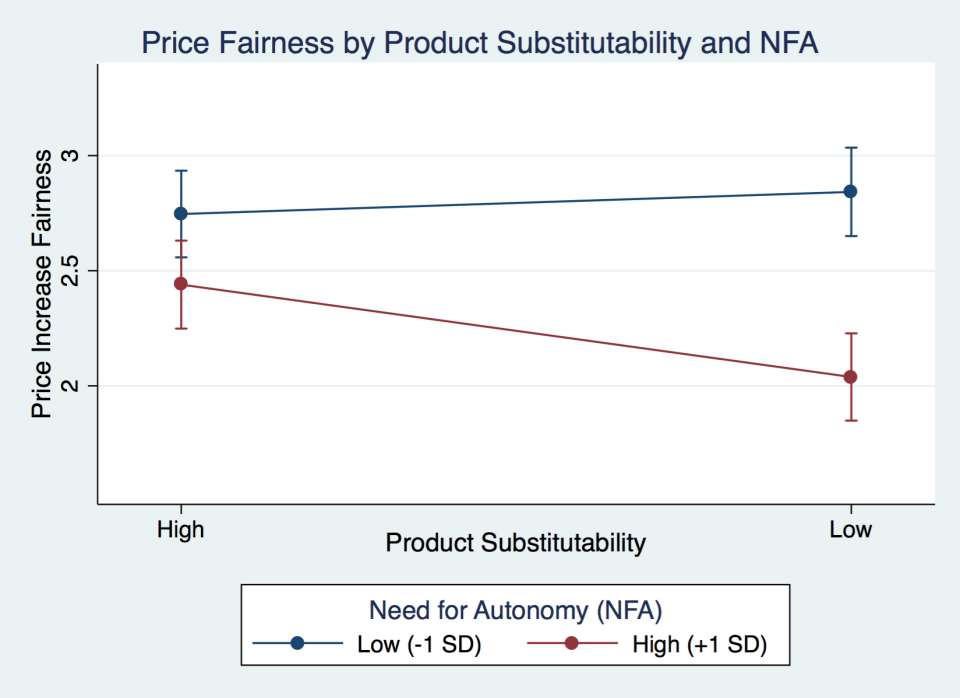


Figure 7. Model predictions from Study 4 of price fairness judgments by product substitutability and participant need for autonomy (NFA) for NFA values +/-1 standard deviation (SD) from the mean. Consumers with high NFA are more sensitive to product substitutability than are consumers with low NFA. Error bars are 95% confidence intervals.

Discussion

In Study 4, in addition to measuring participant NFA, I manipulated the substitutability of products associated with price increases. Pretests indicated that participants experienced higher autonomy threat when product substitutability was low (vs. high), but that the product substitutability manipulation had no influence on the perceived exploitation intentions of firms. Consistent with the results of Studies 1-3, participant NFA and the product substitutability manipulation interacted such that

product substitutability had a larger influence on price fairness judgments when participant NFA was high (vs. low). Given that the product substitutability manipulation had no influence on the perceived exploitations intentions of firms, it is unlikely that this result can be explained by increased sensitivity among high (vs. low) NFA participants to differences in the perceived exploitation intentions of firms. Thus, considered together with Studies 1-3, Study 4 provides further convergent evidence that autonomy threat makes an important and unique contribution to consumer price fairness judgments.

2.11 Study 5: Meta-Analysis of Studies 1-4

I had four goals in meta-analyzing the results reported in Studies 1-4. First, the main effect of consumer NFA on price fairness judgments varied substantially between studies, from between -.08 in Study 2 to -.41 in Study 3. This level of between-study variability in an effect of interest is common in experimental studies (even those with identical stimuli and procedures; Klein et al., 2014), and by combining all of the results into a single meta-analysis it is possible to obtain a more precise estimate of the influence of consumer NFA on price fairness judgments. Second, by utilizing a multi-level model in the meta-analysis, it is possible to get estimates of the variance observed in participant price fairness judgments in Studies 1-4 accounted for by method effects (i.e. between-study heterogeneity), product category effects, and heterogeneity between participants. These estimates can inform future theorizing and study design (McShane & Böckenholt, 2017). Third, given the significant influence of product category on price fairness judgments observed in Studies 2-4, I expected the variance in participant price fairness

judgments explained by product category effects to be significant in the meta-analysis. Given this, I sought to (partially) explain the influence of product category on participant price fairness judgments by including covariates in the meta-analysis that accounted for the product category effects (the covariates are detailed in the methods section below). If these covariates are significant, then they can inform future theorizing about how consumer price fairness judgments may vary by product category. Finally, in each study I collected demographic information from participants. In addition to income and life satisfaction, I collected information about participant age, gender, education, and political leaning. There is little current theorizing in the literature about how these demographic variables might influence consumer price fairness judgments. Thus, similar to the product category covariates, the observed effect of participant demographics on price fairness judgments in the meta-analysis can inform future theorizing.

Method

The results from Studies 1-4 were combined into a single data file. Price increases in the combined data file ranged between 10% and 30% and took place in 19 different product categories ranging from orange juice to internet movie streaming. When price increase amount wasn't explicitly manipulated (as in Studies 1 & 2), the price increase amount associated with each judgment was added to the data file so that it could be controlled for in the meta-analysis, and so that the interaction between participant NFA and price increase amount could be estimated across all studies. A density plot of the price increase amounts judged by participants in Studies 1-4 can be seen in Figure 8. Dummy variables indicating the voice and product substitutability manipulations in

Studies 3 & 4 were included as well. For example, the low product substitutability manipulation dummy variable was set to 0 for all participant fairness judgments, except for the judgments in the low product substitutability manipulation condition in Study 4 (where the dummy variable was set to 1). Because the voice and product substitutability manipulations did not occur in all studies, and thus their effects can't be estimated across all fairness judgments, they are controlled for in the meta-analysis but are not reported as part of the meta-analytic results.

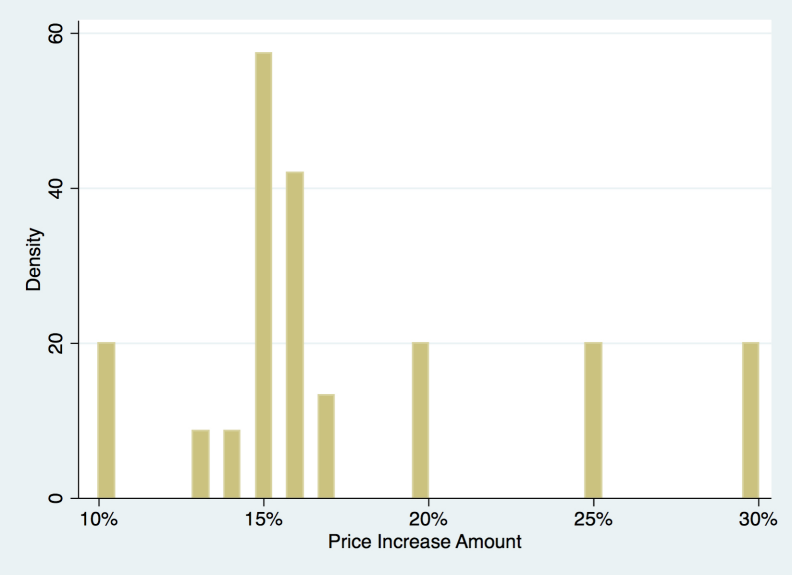


Figure 8. Density plot of the price increase amounts judged by participants in Studies 1-4.

A unique feature of this meta-analysis is that while participant NFA is measured as a continuous variable in Studies 1, 3, & 4, it is manipulated in Study 2 and represented as either 0 (low NFA) or 1 (high NFA). In order to estimate the effect of participant NFA on price fairness judgments across all the studies, however, NFA needs to be represented

in a similar manner across all studies. There are two ways to solve this issue: transpose the NFA manipulation in Study 2 into a continuous variable, or dichotomize the continuous measure of participant NFA in Studies 1, 3, & 4 as either 0 (low NFA) or 1 (high NFA). In order to avoid biasing the results by choosing one analysis method over the other (Steegen, Tuerlinckx, Gelman, & Vanpaemel, 2016), I pursued both strategies. The analysis with participant NFA treated as a continuous variable is reported in this section, and the analysis with participant NFA treated as a dichotomous variable is reported in Appendix D. For the continuous NFA strategy, participant NFA in the low NFA condition in Study 2 was set to the mean participant NFA from Studies 1, 3, & 4, and participant NFA in the high NFA condition in Study 2 is set to .5 SD above the mean. For the dichotomization strategy, the continuous measure of participant NFA in Studies 1, 3, & 4 was median-split, and participant NFA was set to 0 (1) if their measured NFA was below (above) the median. As can be seen in Appendix D, the two analysis strategies produced largely similar results.

As discussed above, one goal of the meta-analysis was to explain the significant influence that product category had on participant price fairness judgments in Studies 2-4. There is some work examining how the attributes consumers associated with different product categories influences their price fairness judgments, but it is limited to differentiating between goods as being physical products or services (Bolton & Alba, 2006), and between high and low substitutability goods (Kahneman et al., 1986; Study 4 in this article). I included these attributes in the meta-analysis, and theorized that several other attributes may explain the observed product category effects as well.

As described in the Introduction, much of the recent increase in the use of demand-based pricing by firms is associated with technologically advanced products and services. For example, two of the largest users of demand-based pricing currently are Uber and Amazon.com. Because of the relative normality of demand-based pricing being associated with technologically advanced products, it may be less surprising to consumers (Kahneman & Miller, 1986), and thus may cause less of a negative reaction. Therefore, I predicted that participants would judge demand-based price increases associated with technologically advanced products (e.g. a movie streaming service or computer) to be fairer than demand-based price increases associated with goods and services predominantly sold via traditional retail (e.g. orange juice or beer).

Products and services can be broadly categorized as serving either hedonic or utilitarian goals (Dhar & Wertenbroch, 2000). Previous research had identified a difference in consumer price elasticity when purchasing hedonic (vs. utilitarian) products. In particular, in retail settings, consumers are less sensitive to price increases for hedonic goods than for utilitarian goods (Wakefield & Inman, 2003). This decrease in sensitivity could be a function of multiple factors, but one may be that consumers consider price increases associated with hedonic goods to be fairer than price increases associated with utilitarian goods. Thus, I predicted that participants would judge price increases associated with hedonic goods and services (e.g. beer) to be fairer than price increases associated with utilitarian goods and services (e.g. gas for a car).

Finally, recent research suggests that when judging the acceptability of firm marketing activities, consumers consider the extent to which the marketing activities

support or threaten community values (McGraw, Schwartz, & Tetlock, 2011). One of the most important community values is protecting the disadvantaged (Graham et al., 2011), and price increases can disproportionally harm the disadvantaged by causing even common, everyday products and services to be unaffordable (Maxwell, 1995). Thus, I predicted that participants would judge price increases associated with products whose lack of affordability could have a disproportionately negative impact on disadvantaged members of the community (e.g. winter coats, gas for a car) to be relatively unfair.

Product category coding proceeded as follows. A "technology" variable was created in the dataset, and product categories were coded as 1 (0) if the product or service was technological (traditional) in nature (e.g. movie streaming, a computer, etc.). In addition, a "service" variable was created in the dataset, and categories were coded as 1 (0) if the category was associated with a service (product). In order to code product categories on substitutability, utilitarianism, and the potential for disadvantaged members of the community to be harmed, I recruited 100 participants from a large online panel and asked them to rate the products categories on each factor. Substitutability was assessed with the question: "How hard or easy would it be for you to just buy a different brand of this product if its price increased?" Participants rated each product's substitutability from 1 (*Very hard*) to 7 (*Very easy*). The extent to which a product was perceived to be hedonic or utilitarian was assessed with the question: "To what extent do you purchase this product purely for enjoyment vs. purely for practical reasons?" Participants rated the extent to which each product was hedonic or utilitarian from 1 (*Purely for enjoyment*) to 7 (*Purely for practical reasons*). The extent to which a price increase associated with a

product had the potential to harm disadvantaged members of the community was assessed with the question: "To what extent could a price increase associated with this product hurt disadvantaged members of the community?" Participants rated the extent to which a price increase associated with each product could harm disadvantaged members of the community 1 (*Not at all*) to 7 (*Very much*). The order in which the product categories were rated was randomized. Correlations between each of the five factors I expected to help explain the product category effects in the meta-analysis can be see in Table 1.

	1	**2**	**3**	**4**	**5**
1. Substitutability					
2. Service (vs. Product)	-0.50				
3. Utilitarian (vs. Hedonic)	-0.11	-0.12			
4. Technology	-0.23	0.13	-0.04		
5. Communal harm	0.21	-0.16	0.73	-0.03	

Table 1. Correlations between the product category covariates included in the meta-analysis.

In addition to the product category covariates, I also included participant demographic covariates in a portion of the meta-analysis. In particular, in Studies 1-4 I collected information about participant gender, age, income, education, political leaning, and life satisfaction. Participant gender was roughly evenly split between men and women. Participant age ranged from 19-82, with a mean of 38 and a median of 35. Participants earned on average between $40,000 and $69,000 per year in income. The median level of education attained was a 4-year college degree. Political leaning was assessed with a five-point scale ranging from 1 (Very liberal) to 5 (Very conservative).

Participant political leanings were roughly normally distributed with the mean and median political leaning centered around the middle scale point (Neither liberal nor conservative). Finally, as described earlier, participant life satisfaction was assessed with using the Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985).

Given a lack of theorizing in the literature, I did not have *a priori* predictions for how age would influence their price fairness judgments. However, recent research indicates that women tend to form harsher judgments of morally questionable behavior than men (Friesdorf, Conway, & Gawronski, 2015; Gawronski, Armstrong, Conway, Friesdorf, & Hütter, 2017), and so I predicted that, compared to women, men would judge profitable price increases by firms to be relatively fair. Given that price increases by firms likely have more of a negative effect on consumers with low (vs. high) incomes, I expected a positive relationship between participant income and the judged fairness of price increases by firms. In addition, as a person's education increases so does their support for market-based, "efficient" outcomes (as opposed to equality-focused outcomes; Fisman, Jakiela, Kariv, & Markovits, 2015). Thus, I expected to find a positive relationship between the level of education a person has achieved and the degree to which they judge demand-based price increases by firms to be fair. Previous research indicates that there is a positive relationship between political conservatism and support for market-driven firm behavior (Jost et al., 2003). Thus, I expected that political conservatism and the judged fairness of demand-based price increases by firms would be positively correlated. Finally, as discussed previously, previous research suggests that high life satisfaction can buffer against the stress caused by negative events (Suldo &

Huebner, 2004). Thus, I expected that participants with high life satisfaction would also be more likely to judge price increases by firms as being relatively fair. Correlations between demographic factors included in the meta-analysis can be seen in Table 2.

	1	2	3	4	5	6	7
1. Need for Autonomy (NFA)							
2. Male (vs. Female)	-0.09						
3. Age	0.13	-0.10					
4. Income	-0.08	0.00	-0.04				
5. Education	-0.02	0.04	0.02	0.29			
6. Conservative (vs. Liberal)	-0.08	0.03	0.10	0.10	-0.02		
7. Life Satisfaction	0.04	-0.06	-0.03	0.25	0.18	0.12	

Table 2. Correlations between the demographic covariates included in the meta-analysis.

The meta-analysis was estimated using maximum likelihood with random intercepts estimated for each study and participant, and random slopes for each product category estimated within each study and for each participant. I first ran the model without the product category covariates in order to estimate the influence of participant NFA, price increase amount, and their interaction across all studies, and to estimate the cross-study, cross-participant, and cross-product category heterogeneity (Model 1). I then re-ran the same model with the addition of the product category covariates (Model 2) and the participant demographic covariates (Model 3) in order to test the extent to which they explained variance in participant price fairness judgments.

Results

All meta-analytic results can be seen in Table 3. As can be seen in Model 1, participant NFA has the expected effect on price fairness judgments: the judged fairness of price increases by firms decreases as participant NFA increases. In addition, the

interaction between participant NFA and price increase amount is negative, indicating that participant sensitivity to price increase amount increases as participant NFA increases (consistent with the results of Studies 1 & 2). The variance between studies (i.e. between-study heterogeneity) is relatively low, which is probably reflective of the fact that similar methods and participants pools were used in all of the studies. The variance between participants is relatively high, which could be attributed to either there being large (and unmeasured) individual differences besides NFA that influence participant fairness judgments, or the fact that each participant provided lots of fairness judgments, and so the estimated variance between participants may be artificially inflated because of the small confidence interval around the random intercept estimated for each participant. Finally, the variance between product categories is significant at both the study and participant levels, indicating that there is significant heterogeneity between product categories that can potentially be explained using the product category covariates.

The influence of the product category covariates on participant price fairness judgments can be seen in Model 2. As expected (and consistent with the prior literature; Kahneman et al., 1986), the judged fairness of price increases decreased as the perceived non-substitutability of a product category increased. Unexpectedly, whether a good was a product or a service had no influence on participant price fairness judgments. This is inconsistent with what has been suggested by previous research (Bolton & Alba, 2006), but could potentially be attributable to the fact that the types of price increases examined in this article (demand-based) are different than the type examined by Bolton and Alba

(2006), who investigated cost-justified price increases. This suggests that price increase type may be a moderator of the influence of product/service differences on price fairness judgments, something that could be followed-up on in future research.

The influence of the perceived utilitarianism of product categories on price fairness judgments is significant, but in the opposite direction of what previous research would suggest. In particular, previous research suggests that consumer are more sensitive to price increases in utilitarian (vs. hedonic) product categories (suggesting that they will also find price increases in utilitarian product categories to be less fair; Wakefield & Inman, 2003). However, my results indicate that the judged fairness of price increases rises as the perceived utilitarianism of product categories increases. The difference between my results and the results reported by Wakefield and Inman (2003) could have occurred for several reasons, including that the results reported by Wakefield and Inman may have been influenced by selection effects (e.g. consumers with different inherent price sensitivities may select into purchasing differing amounts of hedonic and utilitarian products). In addition, in the data collected for this article the degree to which a product was utilitarian was highly correlated with the perception that a price increase associated with the product could harm disadvantaged members of the community, which could have caused collinearity issues in the analysis. Finally, while price sensitivity and price fairness judgments are likely correlated in many contexts, they are not the same construct, and the divergence in our results could have been caused by unknown moderators. Given the issues described, future research should continue to explore the

extent to which the hedonic or utilitarian nature of product categories influences consumer price sensitivity and price fairness judgments.

The final two product category covariates were technological (vs. traditional) product categories, and the extent to which it was perceived that a price increase in a given product category could harm disadvantaged members of the community. In both cases, the effects were significant and in the predicted direction: participants judged price increases associated with technological product categories as fairer than price increases associated with traditional product categories, and as the perceived extent to which a price increase in a given product category could harm disadvantaged members of the community increased, the judged fairness of price increases in that product category decreased. This latter effect is interesting, as it was the largest product category covariate effect in an absolute sense, and was similar in magnitude to the participant NFA effect. In addition, while perceptions of harm at the community level has been integrated into broader theories of moral judgment (Graham et al., 2011), they have not been explored in the context of consumer price fairness judgments. Thus, there may be an opportunity to increase our understanding of consumer price fairness judgments by integrating perceptions of community harm into our theorizing.

The influence of the participant demographic covariates on price fairness judgments can be seen in Model 3. Participant age, income, and life satisfaction did not influence price fairness judgments. The income result is somewhat surprising, but may have occurred because, consistent with the previous literature (H. A. Chen et al., 2017; Kahneman et al., 1986), the price fairness judgments in Studies 1-4 were focused on

hypothetical price increase vignettes. Future research should explore whether price fairness judgments related to price increases associated with products and services consumers are actually considering purchasing are influenced by income effects. In addition, the life satisfaction results are inconsistent with my predictions. However, the buffering effect that life satisfaction can have on aversive reactions to negative events has been studied in the context of extreme life events (e.g. the death of a close friend; Suldo & Huebner, 2004), and it may have been the case that the negative events studied in this article (relatively moderate price increases) were not extreme enough to reveal the effect.

Participant gender, political conservatism, and education had a significant influence on participant price fairness judgments. The effects of political conservatism and education on the judged fairness of price increases by firms were, as predicted, positive. In addition, consistent with recent findings in the moral psychology literature (Friesdorf et al., 2015; Gawronski et al., 2017), women judged profitable price increases by firms as being less fair than men did. However, the magnitude of the gender effect was unexpected: it was larger than the effects of both participant NFA and the extent to which a price increase in a product category is perceived to cause harm to disadvantaged members of the community. While surprising, this result is consistent with recent findings that the influence of gender on moral judgments is large and roughly equivalent in magnitude to the influence of psychopathology on moral judgments (Gawronski et al., 2017). It may be beneficial for future research to examine the influence of gender on price fairness judgments more closely, as gender is one of the most common

demographics used by marketers for customer segmentation, and my results suggest that it is an important predictor of responses to demand-based price increases by firms.

Meta-Analysis Factors	**Model 1**	**Model 2**	**Model 3**
Participant NFA	-0.16	-0.16	-0.13
	(0.06)	(0.06)	(0.06)
Price Increase Amount	-3.10	-3.10	-3.10
	(0.10)	(0.10)	(0.10)
NFA × Price Increase Amount	-0.85	-0.85	-0.85
	(0.14)	(0.14)	(0.14)
Product Category Covariates			
High Product Substitutability (vs. Low)		0.08	0.08
		(0.02)	(0.02)
Service (vs. Product)		0.01	0.01
		(0.02)	(0.02)
Technological		0.05	0.05
		(0.01)	(0.01)
Utilitarian (vs. Hedonic)		0.04	0.04
		(0.01)	(0.01)
Communal Harm		-0.18	-0.18
		(0.02)	(0.02)
Participant Covariates			
Age			0.00
			(0.00)
Male (vs. Female)			0.22
			(0.05)
Income			0.00
			(0.00)
Education			0.06
			(0.02)
Politically Conservative (vs. Liberal)			0.09
			(0.02)
Life Satisfaction			0.01
			(0.02)
Study Random Effects			
Between-Study Variance	0.07	0.06	0.06
	(0.06)	(0.05)	(0.05)
Product Category Variance	0.0001	0.00006	0.00006
	(0.00008)	(0.00005)	(0.00005)
Participant Random Effects			
Between-Participant Variance	0.92	0.92	0.89
	(0.03)	(0.03)	(0.03)
Product Category Variance	.0003	.0003	.0002
	(.00008)	(.00008)	(.00008)
Model Log Likelihood	-21,232.15	-21,193.07	-21,089.84

Table 3. Meta-analysis results. Factors that had a significant ($p < .05$) influence on participant price fairness judgments are bolded. Overall model fit is provided by log likelihood values.

Discussion

The goals of the meta-analysis reported in Study 5 were to use the combined data from Studies 1-4 to estimate the influence of participant NFA on price fairness judgments with greater precision, to explore between-study, between-participant, and between-product category heterogeneity, and to explain the influence that product category effects and participant demographics had on price fairness judgments. As expected, the influence of participant NFA on the judged fairness of price increases by firms was significant and negative, and the observed between-study, between-participant, and between-product category heterogeneity was acceptable. Lastly, the product category and participant demographic covariates were successful in explaining a significant amount of the variance in participant price fairness judgments, and they point the way to several potentially fruitful areas for future research.

The results of Studies 1-5 paint a clear picture of the influence that consumer NFA has on consumer price fairness judgments: as consumer NFA increases, the judged fairness of demand-based price increases decreases. This result is consistent with my proposal (tested in the Pilot Study) that demand-based price increases are inherently threatening to consumer autonomy, and that high NFA consumers are more sensitive to this threat than low NFA consumers. However, it is important to consider whether high NFA consumers will *always* be less accepting of demand-based price increases than low

NFA consumers. In particular, there may be situations in which price increases by firms are consistent with the goals of high NFA consumers, as opposed to threatening. I propose that this occurs when firms raise their prices in response to increased demand, but the price increases don't pose a direct threat to high NFA consumers.

While by definition high NFA consumers place importance on having autonomy in their own lives, they may also place importance on other people and organizations having a high degree of autonomy as well. This is because autonomy is a *moral value* (Graham et al., 2011), and as such people who value autonomy to a high degree in their own lives may extend this value to others as well. Previous research into the moral judgments of political libertarians supports this logic. Libertarians subscribe to the belief that individual autonomy/self-determination is the most important moral virtue (Boaz, 2018). Importantly, this belief colors how libertarians value events both in their own lives and in the lives of others. For example, compared to political conservatives and liberals, libertarians are more likely to place importance on having a high degree of self-determination in their own lives, and to believe that others should be allowed to live in a self-determined manner (Iyer, Koleva, Graham, Ditto, & Haidt, 2012). Thus, consistent with this finding, high NFA consumers may believe that others (in addition to themselves) should be allowed to have a high degree of autonomy in their actions and behaviors.

Of course, the notion that high NFA consumers may value allowing others (including firms) to be autonomous in their actions presents a paradox: if high NFA consumers believe that others should be able to act autonomously, why in Studies 1-5 in

this article are they (relative to low NFA consumers) more likely to reject demand-based price increases by firms as being unfair? After all, demand-based price increases are self-determined by firms, and as such consumers that place a high degree of importance on autonomy should believe that it is the prerogative of firms to raise prices as they see fit. I propose that this paradox can be resolved by differentiating between contexts in which the autonomy threat that price increases pose to consumers is made salient vs. contexts in which it is not. In particular, I predict that high NFA consumers will be more accepting than low NFA consumers of the general concept of firms increasing their prices and profits. This is because high (vs. low) NFA consumers are more likely to value the right that firms have to act autonomously. However, I also predict that when it is made salient that because of a firm increasing its prices and profits they will have to pay higher prices (as is the case in price increase scenarios used in Studies 1-5), high NFA consumers will be less accepting of the firm's actions than low NFA consumers. This is because, consistent with the results of Studies 1-5, having to pay a higher price is threatening to consumer autonomy, and high NFA consumers should be more sensitive to this threat than low NFA consumers. I test these predictions in Study 6.

2.12 Study 6

The goal of Study 6 was to test whether high (vs. low) NFA consumers would be more accepting of demand-based price increases by firms when autonomy threat salience was low, and less accepting when autonomy threat salience was high. Similar to Studies 1, 3, & 4, participants reported their NFA, and then judged the acceptability of a demand-

based price increase by a firm. Moral acceptability was assessed rather than fairness to demonstrate convergence across multiple measures of the morality of firm actions (recall that I conceptualize fairness judgments as a specific type of moral judgment). The salience of the autonomy threat posed by the demand-based price increases was manipulated between participants. Given my assumption that high (vs. low) NFA consumers will value others having autonomy more than low NFA consumers, I predicted that when autonomy threat salience was low, the relationship between participant NFA and the judged moral acceptability of demand-based price increases would be positive. However, given my prior theorizing and the results of Studies 1-5, I also predicted that when autonomy threat salience was high, the relationship between participant NFA and the judged moral acceptability of demand-based price increases would be negative.

Method

I recruited 398 participants from an online panel and randomly assigned them to either low or high autonomy threat salience conditions. All participants were told that they would be completing two unrelated studies that had been combined for convenience purposes. All of the participants first completed the same trait NFA measure used in Studies 1, 2, & 3. After completing the trait NFA measure, participants filled out several filler scales. Then, in "Study 2," participants were asked to provide their judgments of several firm actions. All participants then stated their agreement with the acceptability of a firm's actions on a scale ranging from 1 (Completely disagree) to 7 (Completely agree). In the low autonomy threat salience condition the statements read: "A firm should be

allowed to increase its prices in response to increased consumer demand." In the high autonomy threat salience condition the statements read: "If I am planning to buy a product and consumer demand for the product increases, the firm that makes the product should be allowed to increase its prices, meaning I will have to pay more for the product." Finally, participants entered their demographic information and were paid.

Results

Prior to analysis, participant NFA was mean-centered. The moral acceptability of the firm's actions was regressed against participant NFA, autonomy threat salience, and the interaction between the two factors. The main effect of participant NFA was significant: as participant NFA increased, so did the moral acceptability of demand-based price increases ($\beta_{NFA} = .31, p = .02$, 95% CI: [.06, .56]). In addition, the main effect of autonomy threat salience condition was significant: demand-based price increases were judged to be less morally acceptable when autonomy threat salience was high vs. low ($\beta_{ThreatSalience} = -1.38, p < .001$, 95% CI: [-1.68, -1.08]). Most importantly, the interaction between participant NFA and autonomy threat salience was significant ($\beta_{NFA \times ThreatSalience} = -.66, p < .001$, 95% CI: [-1.01, -.31]; see Figure 9). Examining the influence of participant NFA within each threat salience condition revealed that in the high threat salience condition the judged moral acceptability of demand-based price increases decreased as participant NFA increased ($\beta = -.35, p = .005$, 95% CI: [-.60, -.11]). This result is consistent with the negative influence that consumer NFA had on the judged fairness of demand-based price increases in Studies 1-5, in which the salience of the autonomy threat associated with demand-based price increases by firms was also

high. However, in the low autonomy threat salience condition, there was a positive relationship between participant NFA and the judged moral acceptability of demand-based price increases ($\beta = .31, p = .015$, 95% CI: [.06, .56]). Thus, as predicted, when the direct threat posed by a price increase was low, high (vs. low) NFA consumers were actually *more* accepting of demand-based price increases by firms, instead of less. The interaction between participant NFA and autonomy threat salience remained significant after including participant income and political leaning in the regression ($\beta_{NFA \times ThreatSalience} = -.81\ p < .001$, 95% CI: [-1.17, -.45]).

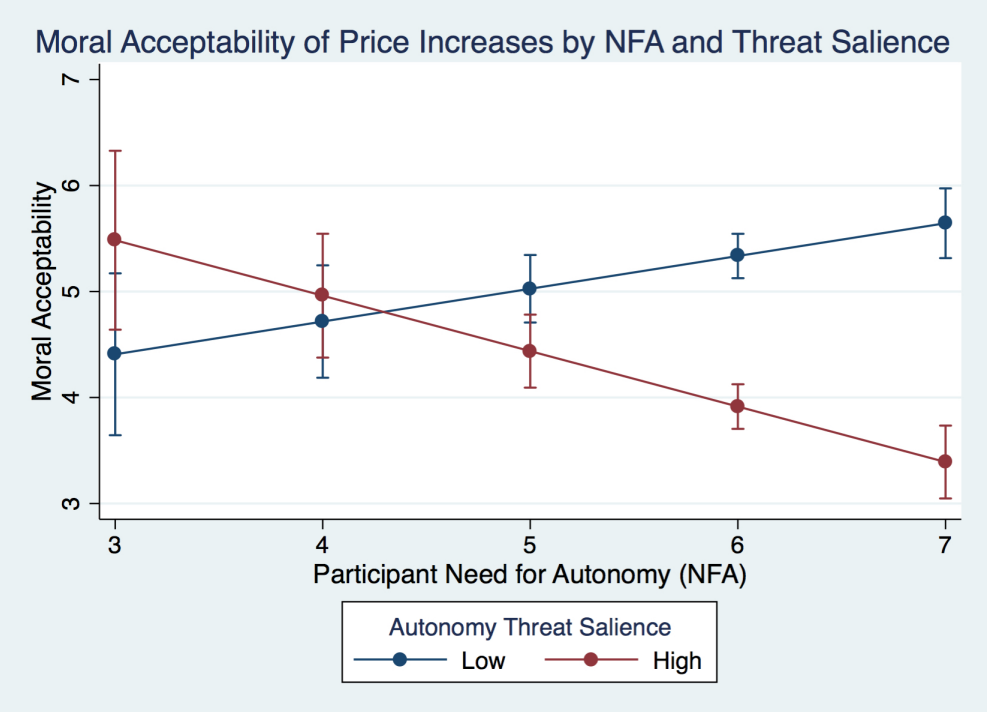


Figure 9. Model predictions from Study 6 of the moral acceptability of demand-based price increases by participant NFA and autonomy threat salience. When autonomy threat salience is low (high), there is a positive (negative) relationship between participant NFA and the moral acceptability of demand-based price

increases. Error bars are 95% confidence intervals. Only two participants reported NFA < 3, so NFA values less < 3 are not shown in the graph (although they were included in the analysis).

Discussion

The goal of Study 6 was to explore whether there are situations in which high NFA consumers are *more* accepting of demand-based price increases by firms than low NFA consumers. I predicted that because high NFA participants are likely to place value on others (in addition to themselves) having autonomy in their actions and behaviors, they would be more likely than low NFA participants to judge demand-based price increases as being acceptable when autonomy threat salience was low. However, I also predicted that when autonomy threat salience was high, high NFA consumers would be less likely than low NFA consumers to judge demand-based price increases as being acceptable (consistent with the results of Studies 1-5). The results were consistent with my predictions, providing further convergent evidence that autonomy concerns are an important determinant of the judged fairness and acceptability of demand-based price increases by firms.

2.13 General Discussion

In one pilot study, five experimental studies, and one meta-analysis I tested the hypothesis that autonomy threat is a critical determinant of consumer price fairness judgments. In the Pilot Study I demonstrated that, relative to stable prices, demand-based

price increases cause consumers to feel that their autonomy has been threatened. In Studies 1-4 I measured or manipulated consumer NFA, and I also manipulated the autonomy threat associated with price increases. Given my assumption that consumers with high NFA are more sensitive to variations in autonomy threat than are consumers with low NFA, I predicted that if autonomy threat is indeed a determinant of consumer price fairness judgments, then the autonomy threat manipulations should have a larger influence on the price fairness judgments of consumers with high NFA than on the price fairness judgments of consumers with low NFA. In Studies 1 & 2 I manipulated the autonomy threat associated with price increases by varying price increase amount (a pretest indicated the high price increases are indeed more threatening to consumer autonomy than low price increases). In Study 3 I manipulated the autonomy threat associated with price increases using an established manipulation from the literature: voice. In Study 4 I manipulated the autonomy threat associated with price increases by varying product substitutability. In all four studies I observed that, as predicted, the price fairness judgments of consumers with high NFA were more sensitive to the autonomy threat manipulations than the price fairness judgments of consumers with low NFA. In addition, the main effect of consumer NFA on price fairness judgments was significant in the meta-analysis conducted n Study 5. Finally, in Study 6 I demonstrated that while high (vs. low) NFA consumers are less accepting of demand-based price increases when the autonomy threat associated with the price increases is made salient (consistent with Studies 1-5), they are actually *more* accepting of demand-based price increases when the autonomy threat associated with the price increases is not salient. Thus, I found strong

support for my proposal that autonomy threat concerns are an important determinant of consumer price fairness judgments.

Theoretical Contributions

The findings reported in this article make several important theoretical contributions to the literature. First, as discussed in the Introduction, the dominant theoretical explanation of consumer price fairness judgments in the existing literature is dual entitlement theory (H. A. Chen et al., 2017; Kahneman et al., 1986; Xia et al., 2004). In this article I focus on a novel psychological construct that contributes to consumer price fairness judgments: autonomy threat. While previous research has suggested that psychological constructs related to autonomy may influence price fairness judgments (Haws & Bearden, 2006), alternative mechanisms may have been at play in the studies reported in this research (as was also discussed in the Introduction). Thus, the results reported in this article are the first to convincingly demonstrate that autonomy threat is a critical determinant of consumer price fairness judgments. In addition, in demonstrating the connection between autonomy threat and price fairness, this work contributes to a growing literature highlighting the important role that autonomy and autonomy threat play in the lives of consumers (Botti & McGill, 2011; Botti, Orfali, & Iyengar, 2009; F. Chen & Sengupta, 2014; Sara Kim et al., 2016). Future work should continue exploring how the need for autonomy and autonomy threat shape the lives of consumers.

In addition to its contribution to the price fairness literature, this article also contributes to the literature linking autonomy threat and autonomy regulation to fairness judgments more generally. In particular, while previous work has linked autonomy threat

to fairness judgments, this was strictly in the context of procedural justice, i.e. the sense that people are able to voice their opinions to authority figures while important decisions are being made (Van Prooijen, 2009). My results demonstrate that autonomy threat can influence fairness judgments outside of the procedural justice and organizational contexts. For example, in Studies 1 & 2 high NFA consumers are more sensitive to price increase amount than low NFA consumers, even though no information is provided about the procedures firms used to make their price increase decisions. Thus, my results suggest that the influence of autonomy threat on fairness judgments is not limited to procedural justice contexts, and that instead autonomy threat influences fairness considerations more broadly.

My results also help shed light on a puzzle that has persisted in the autonomy literature for some time: relative to people with low NFA, are people with high NFA more sensitive to cues that are autonomy supportive, autonomy threatening, or are they more sensitive to both equally? Theory suggests that stimuli that threaten the fulfillment of autonomy needs may be more impactful than stimuli that are supportive of autonomy need fulfillment (Sheldon, 2011; Sheldon & Schüler, 2011), but the empirical evidence in support of this proposition is mixed. For example, Van Prooijen (2009) reports that people with high NFA are more sensitive to the provisioning of voice in procedural justice contexts than are people with low NFA, but this overall increased sensitivity is driven by higher sensitivity to autonomy-supportive authority figures in some studies, and by higher sensitivity to autonomy-threatening authority figures in other studies. In their Study 2, Radel et al. (2011) report higher overall sensitivity to autonomy-related

cues for people with high (vs. low) NFA, but don't differentiate between autonomy-supportive and autonomy-threatening cues (although both are included in the study). Across Studies 1-4, the pattern in my results is clear: the increased sensitivity displayed by high NFA consumers to autonomy-related cues is driven by increased sensitivity to autonomy-threatening cues specifically. For example, in Study 3 all participants judged the fairness of price increases associated with high voice (i.e. autonomy-supportive cues) relatively equally, while high NFA participants judged the fairness of price increases associated with low voice (i.e. autonomy-threatening cues) to be much less fair than participants with low NFA. Relative to the rest of the literature, my results can be interpreted in two possible ways: (1) high NFA leads to high sensitivity to autonomy-threatening (vs. autonomy-supportive) cues in general, or (2) that the relationship between high NFA and sensitivity to autonomy-threatening vs. autonomy-supportive cues is context specific. For example, I may have observed high sensitivity to autonomy-threatening cues among high NFA participants in my studies because they are consumption specific and were conducted in the United States, where experiencing high autonomy in consumption contexts is quite common (Markus & Schwartz, 2010), and thus autonomy-threatening cues may stand out more than autonomy-supportive cues. Future research should continue to explore this question, and seek to identify potential constructs that moderate differential sensitivity to autonomy-supportive vs. autonomy-threatening cues among people with high NFA.

The findings reported in this article, and in particular in Study 3, also contribute to our understanding of how inviting consumers to voice their opinions about firm actions

influences consumer judgments and behavior. In particular, previous research suggests that soliciting non-compensated opinions and advice from consumers has a uniformly positive impact on marketing outcomes (Bone et al., 2017; W. Liu & Gal, 2011). My results qualify these previous results, as I find that in the domain of price fairness, soliciting consumer opinions does influence the judgments of consumers with high NFA, but has less of an influence on the judgments of consumers with low NFA. Thus, my results demonstrate an important moderator of the previously identified "asking for advice" effect. Future research should continue to explore other constructs that moderate the "asking for advice" effect, as the opportunities for firms to solicit opinions and advice from consumers is likely to continue to increase as the volume of online communications taking place between consumers and firms increases.

The findings reported in this article, and in particular the results of Study 4, also bring new understanding to the role that product substitutability plays in consumer price fairness judgments. In particular, previous research has demonstrated that price increases associated with low substitutability products are judged to be less fair than price increases associated with high substitutability products (Kahneman et al., 1986), but the psychological mechanism underlying this effect was unclear. The results of Study 4 provide strong evidence in support of the argument that one reason price increases associated with low (vs. high) substitutability products are judged to be especially unfair is that they are highly threatening to consumer autonomy. In addition, while Kahneman et al. (1986) report that low (vs. high) product substitutability has a uniformly negative effect on price fairness judgments, my results qualify this result, as I find that consumers

with high NFA are more sensitive to variation in product substitutability than are consumers with low NFA. Given the important role that product substitutability plays in firm pricing decisions (Weiss, 1990), these finding have important implications for managers making pricing decisions.

My findings also shed light on one of the most important topics in marketing and economics: consumer price sensitivity. In particular, previous research has identified individual-level characteristics that cause variation in consumer sensitivity to price increases, such as a consumer's income (Hoch, Kim, Montgomery, & Rossi, 1995; Wakefield & Inman, 2003). In Studies 1 & 2 in this article, I demonstrate for the first time that individual differences in consumer NFA influence price sensitivity, such that consumers with high NFA are much more sensitive to price increase amount than are consumers with low NFA. This finding is important not only because it identifies a new individual-level characteristic that influences price sensitivity, but also because the characteristic I identify is an abstract psychological construct with high explanatory power (Calder et al., 2018). Future research should continue to explore additional psychological constructs that influence consumer sensitivity to price increases. In addition, a useful extension of my results would be to test the influence of consumer NFA on actual purchase behavior in retail settings (e.g. in grocery stores, where much of the previous price sensitivity work has taken place). While previous research suggests that there is a strong link between price fairness judgments and real purchase behavior (E. T. Anderson & Simester, 2008, 2010; Campbell, 1999), a field study in which consumer NFA is measured or manipulated and real purchase behavior is measured could increase

our understanding of how the specific theoretical findings reported in this article apply in a real-world setting.

Finally, the meta-analysis reported in this article identified several factors that influence consumer price fairness judgments that have not been discussed in the previous literature (in addition to consumer NFA). Of particular note are the large effects that perceived communal harm, participant political leaning, and participant gender had on the judged fairness of demand-based pricing. No previous work has investigated the influence that these factors could have consumer price fairness judgments, and so future work could continue to explore how these (and other) factors influence consumer responses to the use of different types of pricing strategies by firms.

Managerial Implications

The findings reported in this article have important implications for managers. At a broad level (as is discussed in the Introduction), the use of demand-based pricing by firms is increasing dramatically (Walker, 2017), and there is a need to better understand the psychological mechanisms that influence consumer responses to this pricing practice. This need is reflected by the continuous public relations scandals that seem to plague firms trying to implement demand-based pricing in their businesses. For example, the findings reported in this article could potentially have helped managers at Mylan (maker of the EpiPen) better understand how consumers would respond to price increases, and thus avoid the highly publicized scandal the faced by the company ("The EpiPen Outrage Continues", 2016). The EpiPen is a low substitutability product, and thus per our results, high NFA consumers are likely to respond very negatively to price increases associated

with the product, while low NFA consumers may be more open to price increases. Thus, along with other recent work (Campbell, 1999, 2007; Haws & Bearden, 2006), the research reported in this article begins to offer managers a playbook for understanding how consumers will respond to the implementation of demand-based price increases.

My findings also suggest that, in order to gain consumer acceptance of demand-based pricing, firms should focus on reducing the autonomy threat associated with them. This could be done in several ways, including by manipulating the contexts in which price increases occur, and by targeting demand-based pricing at consumers who are relatively insensitive to autonomy threats. In terms of the price increase context, firms could decrease the autonomy threat associated with demand-based pricing by offering an increased number of options to consumers (and therefore increasing the perception of choice), or by giving consumers the opportunity to voice their opinions about price increases. Increasing the number of alternatives available to consumers as a way of gaining acceptance for demand-based pricing is a strategy recently pursued by Uber. In particular, Uber added the option in its app to take a low-cost Uber Pool when the prices of regular Uber services were surging due to high demand (see Figure 10). Doing so may have increased consumer acceptance of Uber surge pricing by decreasing the pressure consumers felt to pay increased prices, therefore decreasing the autonomy threat associated with surge pricing. Firms should continue to explore ways in which the contexts in which price increases occur can be changed to decrease the autonomy threat felt by consumers.

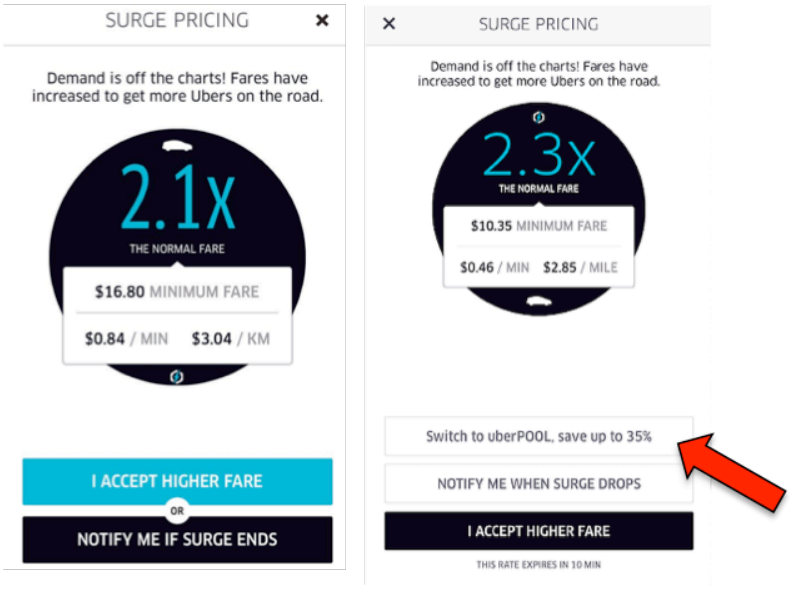


Figure 10. The screen(s) consumers see when attempting to order an Uber when prices are "surging" due to increased demand. The screen on the left was the original surge pricing experience, and the screen on the right is the updated surge pricing experience with an added option (see the red arrow) to take a low-cost Uber pool instead of paying an increased fare for a regular Uber.

My results also point to the existence of a unique and consequential consumer psychographic that has not been previously identified in the marketing literature: consumer NFA. Firms could gather information on consumer NFA (either through direct measures or by inferring it from other attributes) and use it to segment their customer bases. Different pricing strategies could then be targeted at low (vs. high) NFA customers. Segmenting consumers by NFA could also be a useful strategy when deciding how much choice (Botti & McGill, 2011) or in-experience assistance (Sara Kim et al.,

2016) to offer customers. Overall, the results reported in this article suggest that NFA is an important determinant of subjective experiences in consumption contexts, and thus it would serve managers well to understand the level of NFA that their customers possess.

Additional Future Work

Lastly, my theorizing and results suggest several additional avenues for future research. In particular, the importance of autonomy in consumption contexts may be higher in Western cultures like the United States than in other cultures (Markus & Schwartz, 2010; Savani et al., 2008). Recent work suggests that people in more collectivist cultures (where maintaining a high sense of personal autonomy may be less important) react less strongly to threats to their individual freedom than people in more individualistic cultures (Jonas et al., 2009). Thus, it may be worthwhile to explore how consumer NFA and price fairness relate in other cultures. It could be the case that if overall NFA is lower in another culture, than acceptance of demand-based price increases by firms may be higher (controlling for differences in income and market norms).

Two recent meta-analyses of the price fairness literature speak to the issue of how acceptance of different types of firm pricing strategies may differ by culture. In particular, Tarrahi et al. (2016) investigated whether consumers outside of the US judged price increases in general to be fairer than consumers inside the US, and found no difference. H. A. Chen et al. (2017) investigated whether compared to consumers in individualistic cultures, consumers in more collectivist cultures judge asymmetric pricing by firms (keeping prices the same even though production costs have decreased) as less

fair, which they found to be the case. The differences between these two results, and between these two results and my proposal that consumers in more collectivist cultures may be *more* accepting of demand-based pricing by firms, points to the need for continued investigation of how consumer judgments of different pricing strategies may differ by culture.

Finally, as mentioned in the Introduction and in Study 1, in this article I focus on price increases in product categories in which demand-based pricing is not necessarily yet the norm (consistent with previous research; Bolton et al., 2003; Campbell, 2007; Haws & Bearden, 2006; Kahneman et al., 1986). It could be the case that in product categories in which demand-based pricing is the norm, the relationship between consumer NFA and price fairness judgments is reduced. This is because the strength of the reactions people have to stimuli are reduced in general as the stimuli become more normalized in the environment (Kahneman & Miller, 1986). This could by why, for example, demand-based pricing seems to be relatively acceptable to consumers in certain product categories where it has existed for a long time, such as the airline industry, and why in the meta-analysis reported in this article demand-based pricing was judged to be fairer when it was associated with technology products. Of course, even if demand-based pricing has been normalized in a product category, consumers may become antagonized if the autonomy threat becomes large enough, as may have happened when Delta raised ticket prices to and from Florida during Hurricane Irma ("Airlines Face Criticism Amid Irma Price-Gouging Complaints", 2017). Future work should explore if and how price increase normality and autonomy threat interact to influence consumer price fairness judgments.

3. Essay 2: Repairing Consumer Trust Following Reputational Crises

3.1 Introduction

In the new age of social media and open information, firms face reputational crises with increasing regularity. Reputational crises occur when companies violate consumer trust by failing to live up to consumer expectations of how companies (and their products and services) should behave. Recent examples of reputational crises faced by firms include the Volkswagen emissions scandal (Ewing & Davenport, 2015), the Chipotle Mexican Grill food poisoning crisis (Hauser, 2015), and the exploding battery crisis faced by Samsung (CBS News, 2017). Research indicates that unless dealt with appropriately, a reputational crisis can cause long-term damage to a firm's financial performance (Y. Chen, Ganesan, & Liu, 2009; Van Heerde et al., 2007). Thus, it is in the best interest of firms to be able to quickly and effectively repair consumer trust following reputational crises.

Recognizing the harm that damaged consumer trust can cause, companies facing reputational crises often engage in attempts to repair consumer trust. However, the effectiveness of these trust repair attempts is often underwhelming (Diermeier, 2011). For example, despite repeated attempts to repair consumer trust, three years after the Chipotle food poisoning crisis the firm's sales and stock price still hasn't recovered (Hsu, 2017). In addition, more than ten years after the financial crisis, and despite repeated attempts to burnish their reputations, consumer confidence in big banks like Citigroup and Bank of

American Merrill Lynch remains at all time lows (Gallup, 2017). These examples and many others suggest that there is a need to better understand how firms can effectively repair consumer trust following reputational crises.

In this article we address this issue by proposing a new theoretical framework for repairing consumer trust. In particular, drawing on evidence in the justice and punishment literatures, we propose that in order to repair consumer trust following reputational crises firms should focus on two core activities: self-punishment and deterrence of future harm. Furthermore, we hypothesize that the degree to which firms need to focus on these two activities depends on the type of trust violation that has occurred. For example, we hypothesize that following a trust violation like that committed by Chipotle (what we refer to as a "competence violation"), firms should focus on deterrence, while following a violation like that committed by Volkswagen (what we refer to as an "integrity violation") firms should focus on both deterrence and self-punishment.

Our theoretical framework differs from the prior trust repair literature for several reasons discussed in detail below. Perhaps the most important reason is that while the majority of the prior literature on repairing trust following violations of different types is in the interpersonal context (e.g. P. H. Kim et al., 2004), we are focused on trust violations in the marketing context. The marketing context differs from the interpersonal context in several ways, including that firm reputational crises often cause substantial harm to consumers (meaning that a primary concern of consumers may be harm deterrence), and that modern consumers are distrusting of firms in general (meaning that "cheap talk" responses like denials and simple apologies are unlikely to be credible).

Our theoretical framework allows us to make novel predictions about the specific trust repair strategies firms should pursue following trust violations of different types. Specifically, while the previous trust repair literature recommends apologizing following a competence violation (P. H. Kim et al., 2004), we predict that regulation by credible third-parties will be more effective at repairing consumer trust because it fulfills deterrence concerns. In addition, while the previous literature recommends denial following an integrity violation (P. H. Kim et al., 2004), we predict that self-imposed repentance (a combination of apology, self-punishment, and penance) will be more effective at repairing consumer trust because it fulfills both self-punishment and deterrence concerns. Finally, we predict that following a "double whammy" trust violation (the simultaneous violation of competence and integrity), firms are better off pursuing repentance rather than third-party regulation because of its ability to fulfill consumer punishment concerns. To our knowledge, ours is the first set of studies to address repairing trust following the simultaneous violation of competence and integrity.

In the following section we review the definition of trust, and then discuss the important role that consumer trust plays in marketing. Then, we discuss the major ways that firms can violate consumer trust during reputational crises, and we review how the previous literature has recommended repairing trust following violations. Following this, we form hypotheses about the activities firms should focus on following trust violations of different types, and we make predictions about the effectiveness of specific trust repair strategies at repairing consumer trust. We test our predictions in a series of four studies.

Finally, in the General Discussion we discuss how managers may apply our findings during real-world reputational crises, and we discuss promising areas for future research.

3.2 The Construct of Trust and its Role in Marketing

Trust is defined as the willingness to accept vulnerability based upon positive expectations about another party's future behavior (Mayer, Davis, & Schoorman, 1995). Virtually all economic transactions between buyers and sellers require some level of trust (Arrow, 1972). Consistent with the view that trust between buyers and sellers is critical, previous research indicates that the degree to which consumers trusts a firm can influence critical marketing outcomes like purchase intentions and customer loyalty (Bart, Shankar, Sultan, & Urban, 2005; Chaudhuri & Holbrook, 2001; Doney & Cannon, 1997; Garbarino & Johnson, 1999; Morgan & Hunt, 1994; Schlosser et al., 2006; Sirdeshmukh, Singh, & Sabol, 2002). Given the crucial role that consumer trust plays in determining business success, it is unsurprising that firms are motivated to repair consumer trust following reputational crises.

3.3 Trust Violation Types

We conjecture that two of the most important factors that determine consumer trust in a firm are beliefs about the firm's integrity and competence. Integrity is defined as the extent to which an entity adheres to societal norms and mores such as being honest and not knowingly causing harm to others, and competence is defined as the extent to which an entity has the expertise and skills needed to perform a particular task adequately and safely (Mayer et al., 1995). Integrity is violated when an entity takes intentional actions that harm undeserving others, and competence is violated when an unintentional lack of expertise or skill results in harm to others (P. H. Kim et al., 2004). In this article we examine trust violations in which firms display low integrity ("integrity violations", low competence ("competence violations"), and both low integrity and low competence ("integrity + competence violations").

Our conjecture is consistent with previous literature indicating that integrity and competence are two of the most important determinates of trust in other people (Mayer et al., 1995) and in firms (Schlosser et al., 2006). While benevolence can also influence consumer trust in marketing contexts, such as when evaluating the trustworthiness of front line employees (Sirdeshmukh et al., 2002), evidence suggests that benevolence may not be as important when evaluating the trustworthiness of for-profit firms as a whole (Aaker, Vohs, & Mogilner, 2010). Thus, in this article we focus on situations in which firms violate consumer integrity and competence expectations.

3.4 Literature Review: Repairing Trust Following its Violation

The majority of previous theorizing in the literature about how to repair trust following different types of violations is in the context of interpersonal relationships. This work indicates that following an integrity violation guilty parties are best off denying their behavior, and that following a competence violation guilty parties are best off apologizing for their behavior and potentially offering some form of penance (Dirks et al., 2011; P. H. Kim et al., 2004). These results are explained using a trait diagnosticity framework (Skowronski & Carlston, 1987). Specifically, because people assume that someone who demonstrates low integrity is inherently an immoral person, it is best to deny an integrity violation rather than admit it and apologize. However, because people assume that even highly competent people can display incompetence sometimes, it is acceptable to admit a competence violation and apologize.

There are several reasons why the trust repair strategies that have been demonstrated to work well following integrity and competence violations in the interpersonal domain may not be as effective in the case of firms. First, while in interpersonal contexts people may believe denials following integrity violations, given the low trust that modern consumers have in firms in general (Gallup, 2017), denials by firms may cause consumers to become even more suspicious (Schul, Mayo, & Burnstein, 2004) . Second, while people may be quick to forgive competence violations in interpersonal contexts, for-profit firms are expected to be highly competent at all times (Aaker et al., 2010), meaning that competence violations may be harder to recover from in this context (Skowronski & Carlston, 1987). Finally, while most of the trust violations studied in the interpersonal domain are relatively minor (e.g. lying on a job application;

P. H. Kim et al., 2004), reputational crises often cause substantial harm to consumers. Thus, while denials and apologies may be substantial enough to repair trust in the interpersonal domain, this may not be true in the context of firms (Carlsmith, Darley, & Robinson, 2002).

Although mostly focused on constructs other than trust (such as brand attitudes), the reputation management literature has examined how firms can best respond following reputational crises of different types. However, this research is inconclusive as of yet. This is because while some research in this literature has found that violation type influences the effectiveness of different firm responses (Coombs & Holladay, 1996; Mattila, 2009), the majority of the research in this literature has found that violation type doesn't matter (Bradford & Garrett, 1995; Claeys et al., 2010; Dutta & Pullig, 2011; Sora Kim & Sung, 2014; Lee, 2004). Thus, there is a need to examine further if and how violation type influences the effectiveness of different trust repair strategies firms can pursue.

3.5 Critical Components of Trust Repair: Self-Punishment and Deterrence

We propose that in order to effectively repair consumer trust following reputational crises, firms need to focus on two core activities to varying degrees: self-punishment and deterrence. Punishment involves admitting wrongdoing, being penalized, and offering penance to harmed parties. Research suggests that following intentionally harmful actions like integrity violations, harmed parties desire punishment (Carlsmith et al., 2002; Cushman, 2008). In addition, punishment of offending parties can increase the

likelihood that harmed parties will be willing to reengage in trusting relationships with them (Hampton, 1991). Thus, following integrity violations, punishment of offending firms may help to repair consumer trust. Punishment is likely to matter less following competence violations, however, as people have less of a desire to punish offenders when harm was caused unintentionally (Cushman, 2008).

While any type of firm punishment may help repair consumer trust following integrity violations, we propose that punishment will be especially effective at repairing consumer trust when it is self-imposed (e.g. an internal firm decision to pay back injured consumers) as opposed to other-imposed (e.g. by government regulators). This is because relative to other-imposed punishment, self-imposed punishment by a firm is more likely to signal to consumers a sincere belief within the firm that its prior offensive behavior was wrong. The proposed relative ineffectiveness of other-imposed punishment may be one reason why consumers remain so distrustful of big banks more than ten years after the financial crisis (Gallup, 2017). While the banks did receive punishment, most of it was imposed by government regulators, and bank executives avoided self-punishing bad actors within their firms (Griffin, Kruger, & Maturana, 2017).

Our distinction between self- vs. other-imposed punishment is a new and important one in the behavioral literature. While there is extensive prior work on the importance of punishment in maintaining order and social norms (Bottom, Gibson, Daniels, & Murnighan, 2002; Carlsmith et al., 2002; Crockett, Özdemir, & Fehr, 2014), the previous literature has not discussed how self- vs. other-punishment may lead to different outcomes, nor has it systematically compared the two punishment types. Thus,

we contribute to the literature by introducing the notion that self- vs. other punishment may differ in important ways, and by testing for these differences.

Deterrence involves taking credible actions that will prevent harm from occurring in the future. Before reengaging in a trusting relationship with a firm that has committed an integrity or competence violation, consumers are likely to desire that the firm takes actions to deter future harm. This is because trust requires positive expectations about another party's future behavior (Mayer et al., 1995), and expectations are more likely to be positive when the likelihood of future harm occurring is low. Given the central role that the likelihood of future harm occurring is likely to play in consumer trusting decisions following reputational crises, we expect deterrence to be important following both integrity and competence violations. Although self-punishment may be an effective deterrence mechanism in certain circumstances, evidence suggests that the perceived correlation between punishment and deterrence can be quite low (Carlsmith et al., 2002). Thus, firms that pursue self-punishment following integrity violations are also likely to need to pursue separate deterrence activities.

While deterrence has been previously suggested as trust repair mechanism, this suggestion has not been supported empirically (Dirks et al., 2011), potentially because it was tested in the context of interpersonal trust violations in which the threat of future harm is fairly low. Thus, we contribute to the literature by documenting the critical and unique role that deterrence can play in trust repair. In the General Discussion we return to a discussion of the possible relationship between punishment and deterrence.

3.6 Trust Repair Predictions

Given our theorizing about the types of activities firms should focus on in order to repair consumer trust following trust violations of different types, we can now make predictions about the effectiveness of different trust repair strategies. A comparison of our predictions to those made previously in the literature can be seen in Table 4.

	Org Behavior	**Reputation Management**	**Current Article**
Violation Type			
Integrity	Denial*	Apology	Self-Imposed Repentance
Competence	Apology + Penance*	Excuse Making/Denial	Third-Party Regulation
Integrity + Competence	-	-	Self-Imposed Repentance
Main Dependent Variable(s)	Interpersonal trust	Firm image and attitudes	Firm trust
Representative Publications	Kim et al. (2004), Dirks et al. (2011)	Coombs et al. (1996), Kim & Sung (2014)	

Table 4. Repair strategies recommended in the previous literature and in the current article following integrity, competence, and integrity + competence violations. Repair recommendations that have received significant empirical support in the previous literature are marked by an asterisk (*).

Following an integrity violation by a firm, we predict that repentance will be an effective strategy for repairing consumer trust. Repentance involves admitting

wrongdoing, punishment, and reforming the parts of the "self" that caused the bad behavior in order to deter its reoccurrence (Hampton, 1991). Thus, repentance is likely to address the punishment and deterrence concerns that consumers have following integrity violations. While reform is challenging to prove in the case of a person that has behaved immorally (P. H. Kim et al., 2004), a firm may be able to credibly reform by, for example, firing the employees who caused the integrity violation.

In addition, we predict that the punishment-related activities associated with repentance will be more effective when they are self- (vs. other) imposed. This is because, as discussed previously, self-imposed punishment likely sends a strong signal to consumers that an offending firm is committed to reform internally, while other-imposed punishment (like that imposed on big banks following the financial crisis in 2006; Griffin et al., 2017) is less likely to signal an internal commitment to reform. Thus we predict that, following an integrity violation, self-imposed repentance will be more effective at repairing consumer trust than will other-imposed repentance.

Following a competence violation by a firm, we predict that third-party regulation will be an effective strategy for repairing consumer trust. Third-party regulation involves partnering with credible outside organizations to ensure that the behavior of an offending party improves going forward (Dirks et al., 2011; Heinze, Uhlmann, & Diermeier, 2014). The third-party could bring additional expertise and skills into an organization, thus addressing consumer concerns about the deterrence of future harm following competence violations. While repentance may also increase trust following a competence violation to

a certain degree, we expect third-party regulation to be more effective, as punishment and apologies may signal that an incompetent firm is focused on the wrong activities.

In addition to third-party regulation by credible outside organizations, we also introduce the novel trust repair strategy of third-party regulation by consumers themselves. Third-party regulation by consumers could take the form of making investments to seek out the voice of the consumer in the marketplace, and of asking consumers to inform an offending firm's business practices. In either case, we expect that having consumers serve as a third-party regulator will serve as a strong signal that an incompetent firm is committed to improving its competence. To our knowledge, third-party regulation by consumers is a novel idea in the literature, although firms like Samsung have pursued variants of it following reputational crises (CBS News, 2017).

Firms can also commit integrity and competence violations simultaneously. For example, following the Target data breach it was revealed that the company didn't have the expertise to prevent a relatively simple hack from exposing customer data (a competence violation), and the company was blamed for intentionally underinvesting in helping customers recover from the breach (an integrity violation; Riley, Elgin, Lawrence, & Matlack, 2014). While third-party regulation may be somewhat effective at repairing consumer trust in this situation, we expect repentance to be a more effective trust repair strategy in any situation that involves an integrity violation. This is because (per our theorizing) punishment and deterrence via the removal of bad actors are critical

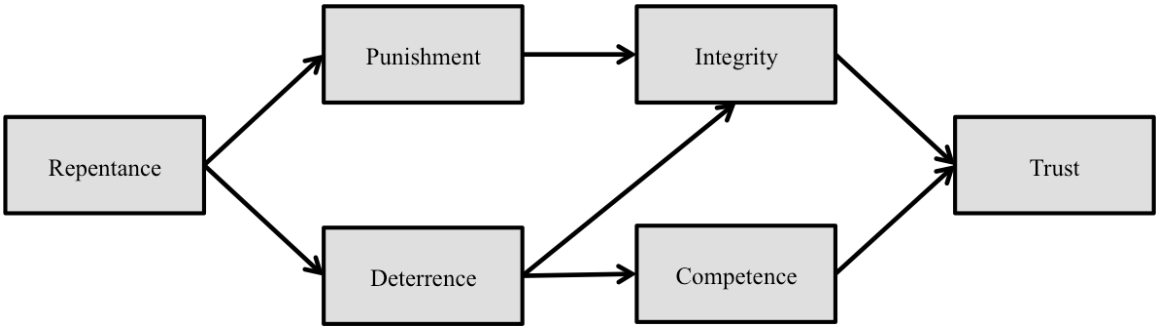
to repairing trust following integrity violations, and third-party regulation doesn't emphasize either of these activities.

One reason that the study of consumer trust is so important is that previous research suggests that it is a determinant of critical marketing outcomes like purchase intentions (e.g. Bart et al., 2005). If this is indeed the case, then we can predict that successful trust repair attempts following integrity and competence violations will lead to increased consumer purchase intentions, and that the influence of the repairs on purchase intentions will be mediated through consumer trust. This is tested in Study 2.

3.7 Mediation Through Integrity and Competence Beliefs

In this section we make predictions about how consumer perceptions that an offending firm has punished bad actors and/or taken steps to deter future harm following repentance and third-party regulation influences consumer integrity and competence beliefs (see Figure 11A for our repentance predictions and Figure 11B for our third-party regulation predictions). Previous research suggests that trust repair strategies operate by changing beliefs about an offending party's integrity and competence (P. H. Kim et al., 2004). We expect this to be the case in our studies as well. In addition, we add to the literature by demonstrating that changes in punishment and deterrence perceptions mediate the influence of trust repair strategies on integrity and competence beliefs.

FIGURE 11A – How Repentance Repairs Consumer Trust Following An Integrity Violation



1 1B – How Third-Party Regulation Repairs Consumer Trust Following A Competence Violation

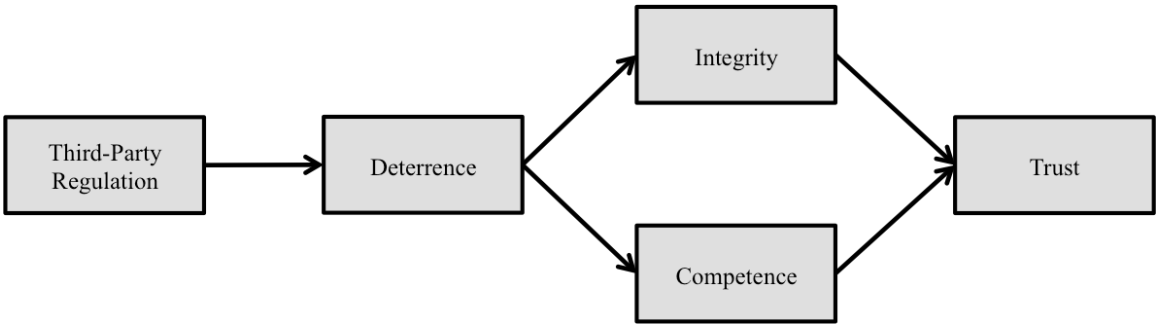


Figure 11. The proposed cognitive mechanisms through which it is predicted that repentance and third-party regulation repair consumer trust following reputational crises that involve integrity and competence violations. Following an integrity violation, repentance (Figure 11A) increases consumer perceptions that an offending firm has been punished and has taking steps to deter future harm. Following a competence violation, third-party regulation (Figure 11B) increases consumer perceptions that an offending firm has taking steps to deter future harm. Punishment perceptions influences integrity beliefs, and deterrence perceptions influence integrity and competence beliefs. Integrity and competence beliefs influence trust. In the SEM models tested in Studies 2-4, we also allow repair types to influence integrity and competence beliefs, and deterrence and punishment perceptions to influence trust. This is to allow for measurement

error in the models. In addition, punishment and deterrence and integrity and competence are allowed to co-vary. Full SEM results for Studies 2-4 can be found in the Appendices.

Specifically, we expect that following integrity violations, repentance will increase both punishment and deterrence perceptions. We then expect punishment and deterrence perceptions to influence integrity beliefs, but only deterrence perceptions to influence competence beliefs (there is no arrow connecting punishment perceptions to competence beliefs in Figure 11A). Deterrence perceptions should influence competence beliefs because steps taken to deter future harm from occurring (such as getting rid of bad actors or partnering with credible third-parties) should lead to an increase in consumer beliefs that a firm has ability to produce high-quality products and services. Deterrence perceptions should influence integrity beliefs because taking steps to deter future harm from occurring is likely to be seen by consumers as an example of the firm doing the "right" thing. Following competence violations, we expect that third-party regulation will influence deterrence perceptions, but not punishment perceptions (punishment perceptions are not represented in Figure 11B). Then, similar to repentance, deterrence perceptions should influence both integrity and competence beliefs.

3.8 Trust Violation Severity

In addition to differing in content, integrity and competence violations also vary in their perceived severity. In particular, previous research has demonstrated that integrity violations are more damaging to trust than competence violations (Sora Kim & Sung, 2014). Given this difference, it could be the case that different trust repair strategies are

more or less effective following trust violations of different types not because of differences in the content of the trust violations, but because of differences in the severity of the trust violations. We deal with this potential issue in two ways. First, in Studies 2-4 we use structural equation modeling (SEM) to test the specific, non-severity related cognitive mechanisms (changes in consumer perceptions and beliefs) that mediate the influence of firm trust repair strategies on consumer trust. Second, in Studies 1-4 we measure the perceived severity of the different trust violations and include violation severity in our analyses. If our trust repair predictions hold even when differences in trust violation severity are controlled for statistically, than it is less likely that the differential effectiveness of different trust repair strategies following different types of trust violations by firms can be explained by differences in trust violation severity.

3.9 Introduction to Studies

We test our predictions summarized in Table 4 in a series of four studies. Study 1 is a field experiment in which we perform an initial test of consumer preferences for repentance and third-party regulation following real reputational crises faced by Volkswagen and Chipotle. In Study 2 we test the effectiveness of repentance (third-party regulation) at repairing consumer trust following integrity (competence) violations in a controlled lab setting. In addition, in Study 2 the degree to which increased trust following a successful trust repair attempt leads to an increase in purchased intentions. In Study 3 we test the effectiveness of repentance and third-party regulation at repairing

trust following a trust violation that involves both low integrity and incompetence. In addition, in Study 3 we test whether self-imposed repentance is more effective than other-imposed repentance at repairing trust. In Study 4 we test whether bringing the voice of the consumer into the firm (a novel form of third-party regulation) is an effective method for repairing consumer trust following competence violations. In addition, in Studies 2-4 we test the cognitive paths through which repentance and third-party regulation repair consumer trust summarized in Figure 1.

3.10 Study 1

Our theorizing suggests that following integrity violations consumers are primarily concerned with firms being punished and banishing bad actors in order to deter future harm, and that following competence violations consumers are primarily concerned with firms take credible steps to increase their expertise and skills in order to deter future harm. If these concerns are met, then consumers may be more willing to reengage in trusting relationships with the offending firms (Hampton, 1991). As an initial test of our theorizing, in Study 1 we recruited customers of companies that had recently committed large-scale integrity and competence violations and asked them whether repentance (which addresses punishment and bad-actor deterrence concerns) or third-party regulation (which addresses concerns about whether a firm has the expertise and skills to deter future harm) would be more effective at repairing their trust in the offending companies. If our theorizing is correct, then customers of the company that committed the integrity violation should indicate that repentance would most effectively

repair their trust, and customers of the company that committed the competence violation should indicate that third-party regulation would most effectively repair their trust.

At the time of the study two highly publicized reputational crises were occurring: (1) Volkswagen had been caught intentionally deceiving consumers and government regulators about the environmental friendliness of many of the company's cars (Ewing & Davenport, 2015), and (2) there had been widespread reports of consumers getting food poisoning after eating at Chipotle Mexican Grill (Hauser, 2015). Given the nature of the trust violations, we expected that consumers would perceive the Volkswagen reputational crisis as resulting from an integrity violation, and the Chipotle reputational crisis as resulting from a competence violation. These expectations were verified in a pretest (see Web Appendix A).

Customers of Volkswagen and Chipotle were recruited to participate in the study. Two surveys were developed: one for Volkswagen customers and one for Chipotle customers. The surveys presented participants with two trust repair strategies that the focal company could pursue: repentance or third-party regulation. Participants were then asked to choose the trust repair strategy that would most effectively repair their trust in the focal company. Consistent with our theorizing, we expected that Volkswagen customers would be more likely to choose repentance, and that Chipotle customers would be more likely to choose third-party regulation.

Method

Participants. Volkswagen and Chipotle customers were recruited on Twitter to take part in an unpaid survey. We made contact with Volkswagen and Chipotle customers in two ways: (1) by directly messaging Twitter users who were tweeting about Volkswagen and Chipotle, and (2) by running advertisements targeted at Twitter users that were Volkswagen and Chipotle customers. 108 Volkswagen customers opened the Volkswagen survey and 167 Chipotle customers opened the Chipotle survey.

Procedure. The Volkswagen and Chipotle surveys began in the same way. First, participants consented to taking part in the study and read a brief introduction. Then, participants indicated the extent to which the current reputational crisis had damaged their trust in the focal company (Volkswagen or Chipotle, depending on the survey) on a scale ranging from 1 (*not at all*) to 5 (*very much*). This was used as a measure of trust violation severity. After filling out several additional measures (not reported here because they are not pertinent to the main prediction of interest), participants were presented with two trust repair strategies (repentance or third-party regulation) and asked to pick the strategy that would most effectively repair their trust in the focal company. In both the Volkswagen and Chipotle surveys the repentance option included apologizing for the harm caused to consumers, paying large fines to the government, and compensating any customers that were harmed by the company's actions. In the Volkswagen survey the third-party regulation option involved partnering with the US Environmental Protection Agency to ensure that Volkswagen met emissions standards in the future, and in the Chipotle survey the third-party regulation option involved partnering with IEH laboratories (a leading food safety testing company) to prevent food safety issues from

occurring again in the future. After choosing the strategy that would most effectively repair their trust in the focal company, participants were asked to report their usage of the focal company's products. In the Volkswagen survey participants were asked to rate how long they had owned a Volkswagen from 1 (between 0 and 1 years) to 6 (more than 5 years). In the Chipotle survey participants were asked to rate how often they ate at Chipotle from 1 (Never) to 9 (More than 30 times per month). Finally, participants reported their gender and age, and were thanked for their participation in the study.

Results

In total, 87 participants completed the Volkswagen survey and 105 participants completed the Chipotle survey. The participants that completed the Volkswagen survey averaged 40 years of age, were 70% male, and had owned a Volkswagen for an average of 2 to 3 years. The participants that completed the Chipotle study averaged 23.5 years of age, were 62% male, and ate at Chipotle an average of 1-5 times per month.

Trust violation severity. We first examined the extent to which the reputational crises had damaged Chipotle and Volkswagen customers' trust in the respective companies. Consistent with previous research indicating that integrity violations harm trust more than competence violations (Sora Kim & Sung, 2014), Volkswagen customers reported that their trust had been harmed significantly more ($M = 4.16$, $SD = 1.28$) than Chipotle customers ($M = 3.02$, $SD = 1.50$; $t(1,191) = 5.61$, $p < .001$).

Trust repair strategy choice. We next examined the extent to which Volkswagen and Chipotle customers indicated that repentance or third-party regulation would be the

most effective way to repair their trust. Consistent with our prediction, more Volkswagen customers chose repentance (87%) than third-party regulation (13%) as their preferred trust repair strategy, and more Chipotle customers chose third-party regulation (75%) than repentance (25%) as their preferred trust repair strategy (Pearson chi-squared test of independence: $\chi^2(1, N = 192) = 74.86$, $p < .001$).

Finally, we examined whether the difference in the extent to which Volkswagen and Chipotle customers prefer repentance vs. third-party regulation could be explained by differences in the perceived severity of the Volkswagen and Chipotle trust violations. In order to test this, we first regressed the choice of preferred trust repair strategy type (1 = repentance, 0 = third-party regulation) against trust violation type (1 = Volkswagen, 0 = Chipotle) using logistic regression. Consistent with the previously reported results, the likelihood of choosing repentance as the preferred trust repair strategy was higher for Volkswagen customers than for Chipotle customers (*log odds* = 3.06, $z = 7.76$, $p < .001$). We then added trust violation severity to the model. Trust violation severity also predicted participants' trust repair strategy preference: as the perceived severity of the trust violation increased, so did the likelihood of choosing repentance as the preferred trust repair strategy (*log odds* = .35, $z = 2.71$, $p = .007$). However, the influence of trust violation type on participants' trust repair strategy preferences remained significant (*log odds* = 2.80, $z = 6.96$, $p < .001$), indicating that trust violation severity does not fully explain the influence of trust violation type on trust repair strategy preference.

Discussion

The results of Study 1 are consistent with our predictions: Volkswagen customers (who had been subjected to an integrity violation) indicated that repentance would be the most effective way to repair their trust, and Chipotle customers (who had been subject to a competence violation) indicated that third-party regulation would be the most effective way to repair their trust. In addition, although the Volkswagen trust violation was judged to be more severe than the Chipotle trust violation, this difference in severity did not fully explain the difference in preference for repentance and third-party regulation observed between Volkswagen and Chipotle customers.

While Study 1 provides a first test of our theorizing in an ecologically valid setting, it has several limitations. First, although we were able to control for differences in the severity of the Volkswagen and Chipotle trust violations, the trust violations may have also differed in other ways unrelated to consumers' integrity and competence beliefs about the firms. In addition, while we were able to observe the preferred trust repair strategies of Volkswagen and Chipotle customers, we were not able to observe the extent to which the preferred strategies actually repaired consumer trust following the crises. These limitations are addressed in Study 2. In addition, in Study 2 we test the influence of firm trust repair strategies on a critical marketing outcome: purchase intentions.

3.11 Study 2

The goal of Study 2 was to test the effectiveness of repentance and third-party regulation following integrity and competence violations in a more controlled setting than in Study 1. Following established practice in the reputational crisis and trust repair

literatures (Coombs & Holladay, 1996; P. H. Kim et al., 2004; Puzakova, Kwak, & Rocereto, 2013), we first presented participants with vignettes that described either an integrity or competence violation committed by a firm. Then, participants read information about how the firm responded to the trust violation (either no response, repentance, or third-party regulation). Finally, information about participants' trust in the firm, purchase intentions, perceptions about the extent to which the firm was pursuing punishment and deterrence, beliefs about the firm's integrity and competence, and perceptions about the severity of the firm's trust violation was collected.

Method

Participants and Design. Participants (N = 595; mean age = 38.5; 56% female) recruited through Amazon's Mechanical Turk (AMT) were randomly assigned to the conditions of a 2 (Violation type: integrity, competence) x 3 (Repair type: no repair, repentance, third-party regulation) between-subjects factorial design.

Procedure. Participants read a vignette about a company producing a new type of blood test that was malfunctioning and returning inaccurate results (for the full text of all vignettes and measures used in this study, see Web Appendix B). In the integrity violation condition, participants read that the blood tests were malfunctioning because the CEO of company had decided to use cheap components in the company's blood tests in order to save money, and that the CEO had lied about the quality of the components to the public. In the competence violation condition, participants read that the blood tests were malfunctioning because the technology in them was new and the company did not yet have the expertise necessary to ensure that they worked well.

Next, participants in the repentance and third-party regulation repair conditions read about the steps the company was taking to repair consumer trust. In the repentance condition, participants read that the CEO of the company had been fired, and that the company's new CEO had apologized to consumers. In addition, participants read that patients and doctors who had purchased the company's defective blood tests would receive a refund from the company, and that the company's drug tests would be discounted for the next year. In the third-party regulation condition, participants read that the company's CEO had announced that the company had partnered with experts at the US Food and Drug Administration (FDA) to certify that its blood tests were accurate and to make recommendations on how to improve the company's blood tests in the future. Participants in the no-repair condition did not see any information on steps the company was taking to repair consumer trust. This condition served as the baseline against which the effectiveness of repentance and third-party regulation were evaluated.

After reading the information about the company, participants rated their agreement with two statements about the firm's trustworthiness (e.g. "Blood tests from the company can be trusted going forward"), one statement about purchase intentions ("I am interested in purchasing a blood test from the company in the future"), one statement about the degree to which the firm had been punished for its behavior ("The company is getting the punishment it deserves"), one statement about the degree to which the firm had taken steps to deter future harm ("The company's actions will prevent the company from harming consumers in the future"), and two statements each related to their beliefs about the firm's integrity (e.g. "The company has a great deal of integrity") and

competence (e.g. “The company has the expertise necessary to ensure that its blood tests work well”) on scales ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Trust violation severity was measured with one question (“How severe was the company’s violation of consumer trust?”) on a scale ranging from 1 (*not at all*) to 5 (*very much*). Finally, participants provided their demographic information, were thanked for their participation, and were paid.

Results

For the main analysis reported below, when a construct was measured with two indicators, the indicators were averaged together (scale reliability coefficients: trust $\alpha = .83$, integrity $\alpha = .99$, competence $\alpha = .89$).

Manipulation check. We first assessed whether our manipulation of trust violation type was successful. We did this by comparing the means of participants’ integrity and competence beliefs in the no-repair condition. Participants’ integrity beliefs were lower in the integrity violation condition ($M = 1.65$, $SD = 0.88$) than in the competence violation condition ($M = 2.69$, $SD = 0.95$; $t(1, 201) = 8.12$, $p < .001$). In addition, participants’ competence beliefs were lower in the competence violation condition ($M = 2.08$, $SD = 0.91$) than in the integrity violation condition ($M = 3.43$, $SD = 1.13$; $t(1, 201) = 9.31$, $p < .001$). Thus, our manipulation of trust violation type was successful.

Consumer trust. In order to test our main trust repair prediction, consumer trust was regressed against trust violation type, trust repair type, and their interaction. There was a significant main effect of violation type on trust such that consumer trust was lower following an integrity violation ($M = 2.14$, $SD = 1.01$) than following a competence

violation (M = 2.42, SD = 0.95; F(1, 589) = 14.22, p < .001). In addition, there was a significant main effect of trust repair: consumer trust was higher following repentance (M = 2.42, SD = 0.93) and following third-party regulation (M = 2.50, SD = 1.01) compared to when no trust repair activity occurred (M = 1.94, SD = 0.93; F(2, 589) = 22.07, p < .001). Most importantly, the predicted interaction between trust violation type and trust repair type was significant (F(2, 589) = 18.43, p < .001). Planned contrasts were used to explore the interaction further. Following an integrity violation, consumer trust was higher following both repentance (M = 2.58, SD = 0.99) and third-party regulation (M = 2.12, SD = 0.90) compared to the baseline no-repair condition (M = 1.75, SD = 0.97; repentance vs. no-repair: F(1, 589) = 40.83, p < .001, third-party regulation vs. no-repair: F(1, 589) = 8.33, p = .004). In addition, as predicted, repentance was more effective at repairing consumer trust than third-party regulation (F(1, 589) = 12.48, p < .001). Following a competence violation, consumer trust was higher following third-party regulation (M = 2.91, SD = 0.99) compared to the baseline no-repair condition (M = 2.14, SD = 0.86; F(1, 589) = 33.46, p < .001). Repentance did not increase consumer trust compared to the baseline no-repair condition (M = 2.26, SD = 0.85; F(1, 589) = 0.84, p = .36). In addition, as predicted, third-party regulation was more effective at repairing consumer trust than repentance (F(1, 589) = 24.15, p < .001).

Trust violation severity. We next tested whether the differences in the effectiveness of repentance and third-party regulation following integrity and competence violations could be explained by differences in the perceived severity of the two trust violation types. Consistent with the previous literature (Sora Kim & Sung, 2014) and

with Study 1, participants judged the integrity violation to be more severe (M = 4.40, SD = 0.84) than the competence violation (M = 3.73, SD = 1.02; $F(1, 593) = 77.34$, $p < .001$). In order to test whether violation type severity could explain the differential effectiveness of repentance vs. third-party regulation following integrity and competence violations we regressed consumer trust on violation type, repair type, their interaction, and violation severity. Violation severity was a significant predictor of consumer trust: as the perceived severity of a trust violation increased, consumer trust decreased ($\beta = -.39$, $p < .001$). More importantly, however, the predicted interaction between violation type and repair type remained significant even after controlling for violation severity $F(2, 588) = 15.89$, $p < .001$). Rerunning the planned contrasts testing the effectiveness of repentance vs. third-party regulation following integrity and competence violations revealed no significant changes in the relative effectiveness of the trust repair strategies. Thus, the differences in effectiveness of repentance vs. third-party regulation following trust violations of different types cannot be explained by differences in the severity of the violations.

Purchase intentions. Purchase intentions were regressed against purchase violation type, repair type, and their interaction. As expected, the results mirrored the trust repair results. Specifically, the interaction between violation type and repair type was significant ($F(1, 589) = 16.03$, $p < .001$). In the integrity violation condition, purchase intentions were higher following repentance (M = 2.58, SD = 1.14) than following third-party regulation (M = 2.09, SD = 1.06; $F(1, 589) = 10.93$, $p = .001$) and no-repair (M = 1.64, SD = 0.95; $F(1, 589) = 40.26$, $p < .001$). In the competence violation

condition, purchase intentions were higher following third-party regulation (M = 2.96, SD = 1.05) than following repentance (M = 2.32, SD = 1.03; $F(1, 589) = 17.89$, $p < .001$) and no-repair (M = 2.28, SD = 0.95; $F(1, 589) = 20.21$, $p < .001$). The results held when trust violation severity was included in the model.

Cognitive mechanisms of trust repair. We used SEM to test the cognitive paths through which repentance and third-party regulation repair consumer trust and increase purchase intentions. Before testing our predictions, we tested the discriminant validity of the measured constructs. We submitted all the relevant measures to a confirmatory factor analysis with one factor specified for each of the measured constructs (six total). For constructs measured with one indicator (punishment, deterrence, purchase intentions), we followed the advice of J. C. Anderson and Gerbing (1988) and set the error variances to the smallest of the error variances estimated for the constructs measured with multiple indicators (trust, integrity, competence). The six-factor model fit the data well ($\chi^2(15, N = 595) = 18.15$, $p = .26$; RMSEA = .02). For the remainder of the analysis, the constructs were represented by a linear combination of their indicators.

In order to test the predicted cognitive mechanisms through which repentance and third-party regulation repair consumer trust, we fit the models represented in Figure 11, with the addition of a path between trust and purchase intentions. The paths through which repentance and third-party regulation increased consumer trust and purchase intentions were estimated for each of the trust violation types (integrity and competence) simultaneously in order to provide an overall model goodness of fit statistic. The repentance and third-party regulation repairs were compared to the no-repair baseline in

the model within each violation type. The main predicted difference between repentance and third-party regulation was that repentance would influence perceptions of punishment, while third-party regulation would not. In addition, we predicted that perceptions of punishment would not influence competence beliefs. Our predictions were included in the model by setting the relevant model paths to zero.

The model was fit in MPLUS (Muthen & Muthen, 2017) using 10,000 bootstrapped samples. Per Iacobucci (2010), the model fit was satisfactory (χ^2(16, N = 595) = 20.83, p = .19; RMSEA = .03, CFI = .99, SRMR = .02). Here we report the main mediating paths of interest for repentance in the integrity violation condition and third-party regulation in the competence violation condition. The full SEM results can be seen in Web Appendix C. In the integrity violation condition, repentance (*rep*) influenced perceptions of punishment (*pun*) and deterrence (*det*), which then influenced integrity beliefs (*integ*) and subsequent trust (*rep→pun→integ→trust*: *b* = .026, 95% *CI* [.01, .07]; *rep→det→integ→trust*: *b* = .34, 95% *CI* [.22, .48]. In addition, deterrence influenced competence beliefs (*comp*), which then influenced trust (*rep→det→comp→trust*: *b* = .02, 95% *CI* [.01, .04]). Finally, the paths through the relevant constructs to purchase intentions (*purch*) were also significant (*rep→pun→integ→trust→purch*: *b* = .02, 95% *CI* [.003, .05]; *rep→det→integ→trust→purch*: *b* = .24, 95% *CI* [.15, .35]; *rep→det→comp→trust→purch*: *b* = .01, 95% *CI* [.005, .03]).

In the competence violation condition, third party-regulation (*reg*) influenced deterrence, which then influenced integrity and competence beliefs and subsequent trust (*reg→det→integ→trust*: *b* = .06, 95% *CI* [.03, .13]; *reg→det→comp→trust*: *b* = .12, 95%

CI [.07, .19]). Finally, the paths through the relevant constructs to purchase intentions were also significant (*reg→det→integ→trust→purch*: *b* = .05, 95% *CI* [.02, .10]; *reg→det→comp→trust→purch*: *b* = .08, 95% *CI* [.04 , .15]). Thus, our predictions about the cognitive paths through which repentance and third-party regulation increase consumer trust and purchase intentions were supported.

Discussion

The goal of Study 2 was to test the effectiveness of repentance and third-party regulation at repairing consumer trust and increasing purchase intentions following integrity and competence violations, and to test the cognitive mechanisms through which any increases occur. Consistent with our predictions, repentance was most effective at repairing trust and increasing purchase likelihood following an integrity violation, and third-party regulation was most effective at repairing trust and increasing purchase intentions following a competence violation. In addition, as predicted, the influence of repentance and third-party regulation on trust and purchase intentions was mediated through punishment and deterrence perceptions and integrity and competence beliefs.

As mentioned in the Introduction, while firms can commit either integrity or competence violations, they often commit both simultaneously (e.g. the Target data breach; Riley et al., 2014). Previous research has not examined the most effective way to repair trust following violations of this type. Thus, in Study 3 we test the effectiveness of repentance and third-party regulation following trust violations that combine elements of low integrity and low competence. In addition, one of our central predictions is that self-imposed repentance will be more effective at repairing consumer trust than will other-

imposed repentance following the violation of consumer integrity expectations. This is also tested in Study 3.

3.13 Study 3

The goal of Study 3 was to test the effectiveness of repentance and third-party regulation following the simultaneous violation of integrity and competence by a firm. In addition, we tested whether self-imposed repentance is more effective than other-imposed repentance at repairing trust following trust violations that involve low integrity. In a manner similar to Study 2, we first presented participants with a vignette that described a firm that had committed integrity and competence violations simultaneously. Then, participants read information about how the firm responded to the trust violation (either no response, self-imposed repentance, other-imposed repentance, or third-party regulation). Given our theorizing that punishment is necessary to repair consumer trust following an integrity violation, we expected repentance to be more effective than third-party regulation at repairing consumer trust following a violation that combines elements of both low integrity and low competence. In addition, we expected self-imposed repentance to be more effective than other-imposed repentance.

Method

Participants and Design. Participants ($N = 400$; mean age = 36; 48% female) recruited through AMT were randomly assigned to one of four conditions: no repair, self-imposed repentance, other-imposed repentance, or third-party regulation.

Procedure. Participants read a vignette about a company that produces snack foods (for the full text of all vignettes and measures used in this study, see Web Appendix D). News has just come out that 120 people have gotten sick after consuming snacks made by the company that were contaminated with listeria. Participants then read that the company didn't have the expertise to test its food for listeria (a competence violation), but that it had been informed about the presence of listeria before people started getting sick by an independent food safety lab. However, the company chose to do nothing with the information and kept shipping snacks (an integrity violation).

Next, participants in the self-imposed repentance condition read that company had decided to fire its CEO, cover the medical expense of people that had gotten sick, and offer refunds to people that had bought the company's snacks during the crisis. Participants in the other-imposed repentance condition read the same information, but were told that the repentant actions had not been freely chosen by the firm, but rather were occurred after government regulators applied pressure to the firm. Participants in the third-party regulation condition read that the company was working with the Center for Disease Control to determine the cause of the listeria contamination and to prevent similar outbreaks from occurring in the future. Participants in the no-repair condition did not see any information on steps the company was taking to repair consumer trust.

After reading the information about the company, participants rated their trust in the company and its products, the degree to which the firm had been punished for its behavior, the degree to which the firm had taken steps to deter future harm, their integrity and competence beliefs about the firm, and the severity of the firm's trust violation. The

measures were the same as those used in Study 2. Finally, participants provided their demographic information, were thanked for their participation, and were paid.

Results

For the main analysis reported below, when a construct was measured with two indicators, the indicators were averaged together (scale reliability coefficients: trust $\alpha = .88$, integrity $\alpha = .88$, competence $\alpha = .87$).

Manipulation check. We first assessed whether our manipulation of trust violation type was successful. We did this by testing whether both the perceived integrity and competence of the company in the no-repair condition were below the midpoint of the scale (that is, that participants disagreed with statements saying that the company had integrity and competence). Participants' integrity beliefs were significantly lower than the scale midpoint of 3 ($M = 1.56$, $SD = 0.89$; $t(1, 98) = 16.30$, $p < .001$), as were their competence beliefs ($M = 2.13$, $SD = 1.22$; $t(1, 98) = 7.11$, $p < .001$). Thus, our manipulation of trust violation type was successful.

Consumer trust. In order to test our main trust repair predictions, consumer trust was regressed against trust repair type. There was a significant effect of trust repair type ($F(3, 396) = 24.25$, $p < .001$). We used planned contrasts to test our specific predictions. Self-imposed repentance ($M = 2.66$, $SD = 0.99$), other imposed repentance ($M = 2.02$, $SD = 0.95$), and third-party regulation ($M = 2.13$, $SD = 1.00$) all repaired consumer trust relative to the no-repair control condition ($M = 1.52$, $SD = 0.81$; self-imposed repentance vs. control: $t(1, 396) = 71.93$, $p < .001$; other-imposed repentance vs. control: $t(1, 396) = 13.63$, $p < .001$; third-party regulation vs. control: $t(1, 396) = 20.52$, $p < .001$). As

expected, repentance was more effective than repairing consumer trust than third party regulation ($t(1, 396) = 26.03$, $p < .001$). In addition, self-imposed repentance was more effective at repairing consumer trust than other-imposed repentance ($t(1, 396) = 23.83$, $p < .001$). Thus, our main trust repair predictions were supported.

Severity. We next tested whether the differences in the effectiveness of repentance and third-party regulation following could be explained by trust violation severity. In order to test whether trust violation severity explained the differential effectiveness of repentance vs. third-party regulation we regressed consumer trust on the repair types (self-imposed and other-imposed repentance, third-party regulation) and violation severity. Violation severity was a significant predictor of consumer trust ($\beta = -.46$, $p < .001$). More importantly, however, the influence of repair type on consumer trust remained significant after controlling for violation severity $F(3, 395) = 21.32$, $p < .001$). Rerunning the planned contrasts testing the effectiveness of self-imposed repentance vs. other-imposed repentance and third-party regulation revealed no significant changes in the relative effectiveness of the trust repair strategies. Thus, the unique effectiveness of self-imposed repentance following combined integrity and competence violations at repairing consumer trust cannot be explained by the severity of the violation.

Cognitive mechanisms of trust repair. We used SEM to test the cognitive paths through which self-imposed repentance repairs consumer trust. Before testing our predictions, we tested the discriminant validity of the measured constructs using the same procedure as used in Studies 2. A five-factor model fit the data well ($\chi^2(12, N = 400) = 20.07$, $p = .07$; RMSEA = .04).

In order to test the predicted cognitive mechanisms through which repentance and third-party regulation repair consumer trust following a joint integrity and competence violation, we fit the models represented in Figure 11. The repentance and third-party regulation repair conditions were compared to the no-repair baseline in the model. Similar to Study 2, we predicted that third-party regulation by consumers would not influence perceptions of punishment, and that perceptions of punishment would not influence competence beliefs. Our predictions were included in the model by setting the relevant model paths to zero.

The model was fit in MPLUS using 10,000 bootstrapped samples. The model fit was satisfactory ($\chi^2(5, N = 400) = 16.37$, $p = .006$; RMSEA = .08, CFI = .99, SRMR = .03). Here we report the mediating paths of interest for self-imposed repentance (the most effective trust repair strategy). The full model can be seen in Web Appendix E. Self-imposed repentance (*rep*) influenced perceptions of punishment (*pun*) and deterrence (*det*), which then influenced integrity (*integ*) beliefs and trust (*rep→pun→integ→trust*: $b = .03$, 95% *CI* [.01, .06]; *rep→det→integ→trust*: $b = .38$, 95% *CI* [.26, .52]). Self-imposed repentance also influenced trust through deterrence perceptions and competence (*comp*) beliefs (*rep→det→comp→trust*: $b = .04$, 95% *CI* [.003, .09]).

Discussion

The goal of Study 3 was to test the effectiveness of repentance and third-party regulation following a combined integrity and competence violation by a firm. In addition, we sought to test whether self-imposed repentance is more effective than other-imposed repentance at repairing trust following a reputational crisis that involves an

integrity violation. Consistent with our predictions, repentance was more effective at repairing trust than third-party regulation, and self-imposed repentance was more effective than other-imposed repentance. In addition, as predicted, the influence of self-imposed repentance on trust was mediated through deterrence and punishment perceptions and integrity and competence beliefs.

As mentioned in the Introduction, there may be more than one type of third-party group that firms can partner with to repair consumer trust following competence violations. Previous research has discussed partnering with credible regulators or non-profits to repair trust (although never specifically after a competence violation; Dirks et al., 2011; Heinze et al., 2014). However, it may also be the case that partnering with consumers themselves following a reputational crisis can increase deterrence perceptions by signaling that an offending firm's behavior is being regulated. If this is the case, this will be a novel contribution to the trust-repair literature, and will give firms another tool for repairing consumer trust following reputational crises.

3.14 Study 4

The goal of Study 4 was to test the effectiveness of a new type of third-party regulation following a trust violation by a firm: partnering with consumers. Similar to Study 2, we first presented participants with vignettes that described either an integrity or competence violation committed by a firm. Then, participants read information about how the firm responded to the trust violation (either no response or third-party regulation by consumers). Given that third-party regulation does not explicitly include punishment

and removal of bad actors from an offending firm, we expected that third-party regulation by consumers would be more effective at repairing consumer trust following the competence violation than following the integrity violation.

Method

Participants and Design. Participants (N = 399; mean age = 38; 54% female) recruited through AMT were randomly assigned to the conditions of a 2 (Violation type: integrity, competence) x 2 (Repair type: no repair, third-party regulation by consumers) between-subjects factorial design.

Procedure. Participants read a vignette about a company that produces organic lotions for babies (for the full text of all vignettes and measures used in this study, see Web Appendix F). News has just come out that some of the ingredients in the lotions are grown with pesticides that can be harmful to a baby's skin. In the integrity violation condition, participants read that this happened because the CEO of the company decided to not test the ingredients received from suppliers for pesticides in order to save money, and that the CEO had lied and said that he was 100% confident that the company's lotions were pesticide free. In the competence violation condition participants read that the company doesn't have the expertise needed to test ingredients for pesticides, and that the company was not aware that there were pesticides in its products.

Next, participants in the third-party regulation repair conditions read about the steps the company was taking to repair consumer trust. Specifically, participants read that the CEO would be meeting with customers who bought the contaminated products to learn about how they could be improved. In addition, it was announced that the company

would be creating a customer advisory panel to get customer input into the ingredient suppliers that the company should work with. Participants in the no-repair condition did not see any information on steps the company was taking to repair consumer trust.

After reading the information about the company, participants rated their trust in the company and its products, the degree to which the firm had been punished for its behavior, the degree to which the firm had taken steps to deter future harm, their integrity and competence beliefs about the firm, and the severity of the firm's trust violation. The measures were the same as those used in Study 2. Finally, participants provided their demographic information, were thanked for their participation, and were paid.

Results

For the main analysis reported below, when a construct was measured with two indicators, the indicators were averaged together (scale reliability coefficients: trust $\alpha = .87$, integrity $\alpha = .91$, competence $\alpha = .91$).

Manipulation check. We first assessed whether our manipulation of trust violation type was successful. We did this by comparing the means of participants' integrity and competence beliefs in the no-repair condition. Participants' integrity beliefs were lower in the integrity violation condition ($M = 1.73$, $SD = 0.83$) than in the competence violation condition ($M = 2.55$, $SD = 0.90$; $t(1, 196) = 6.59$, $p < .001$). In addition, participants' competence beliefs were lower in the competence violation condition ($M = 2.00$, $SD = 1.10$) than in the integrity violation condition ($M = 4.18$, $SD = 0.88$; $t(1, 196) = 15.41$, $p < .001$). Thus, our manipulation of trust violation type was successful.

Consumer trust. In order to test our main trust repair prediction, consumer trust was regressed against trust violation type, trust repair type, and their interaction. There was a significant main effect of violation type on trust such that consumer trust was lower following an integrity violation ($M = 1.97$, $SD = 0.91$) than following a competence violation ($M = 2.54$, $SD = 1.09$; $F(1, 397) = 37.68$, $p < .001$). In addition, there was a significant main effect of trust repair: consumer trust was higher following third-party regulation by consumers ($M = 2.57$, $SD = 0.93$) than when no trust repair activity occurred ($M = 1.92$, $SD = 0.85$; $F(1, 397) = 50.74$, $p < .001$). Most importantly, the predicted interaction between trust violation type and trust repair type was significant ($F(1, 397) = 6.94$, $p = .009$). Planned contrasts were used to explore the interaction further. Following an integrity violation, consumer trust was significantly higher following third-party regulation by consumers ($M = 2.17$, $SD = 0.97$) compared to the baseline no-repair condition ($M = 1.75$, $SD = 0.79$; $F(1, 397) = 10.20$, $p < .001$). This was also the case following a competence violation: consumer trust was significantly higher following third-party regulation ($M = 3.00$, $SD = 1.09$) than in the baseline no-repair condition ($M = 2.08$, $SD = 0.88$; $F(1, 397) = 47.03$, $p < .001$). Critically, as indicated by the significant interaction between violation type and repair type, while third-party regulation caused a significant increase in consumer trust following both the integrity and competence violations, the increase in trust was larger following the competence violation than following the integrity violation.

Trust violation severity. We next tested whether the differences in the effectiveness of repentance and third-party regulation following integrity and competence

violations could be explained by differences in the perceived severity of the two trust violation types. Consistent with the previous literature (Sora Kim & Sung, 2014) and Studies 1-3, participants judged the integrity violation to be more severe ($M = 4.36$, $SD = 0.87$) than the competence violation ($M = 3.80$, $SD = 0.97$; $F(1, 399) = 37.47$, $p < .001$). In order to test whether violation type severity could explain the differential effectiveness of repentance vs. third-party regulation following integrity and competence violations we regressed consumer trust on violation type, repair type, their interaction, and violation severity. Violation severity was a significant predictor of consumer trust ($\beta = -.49$, $p < .001$). Most importantly, however, the predicted interaction between violation type and repair type remained significant even after controlling for violation severity $F(1, 396) = 5.67$, $p = .02$). Rerunning the planned contrasts testing the effectiveness of third-party regulation by consumers following integrity and competence violations revealed no significant changes in the relative effectiveness of the trust repair strategy. Thus, the difference in effectiveness of third-party regulation by consumers following trust violations of different types cannot be explained by differences in the severity of the violations.

Cognitive mechanisms of trust repair. We used SEM to test the cognitive paths through which third-party regulation by consumers repairs consumer trust. Before testing our predictions, we tested the discriminant validity of the measured constructs using the same procedure as in Studies 2 & 3. A five-factor model fit the data well ($\chi^2(12, N = 399) = 13.87$, $p = .31$; RMSEA = .02).

In order to test the predicted cognitive mechanisms through third-party regulation by consumers repairs consumer trust, we fit the model represented in figure 11B. The paths through which third-party regulation repaired consumer trust were estimated for each of the trust violation types (integrity and competence) simultaneously in order to provide an overall goodness of fit statistic. The third-party regulation repair was compared to the no-repair baseline in the model within each violation type. We predicted that third-party regulation by consumers would not influence perceptions of punishment, and that perceptions of punishment would not influence competence beliefs.

The model was fit in MPLUS using 10,000 bootstrapped samples to estimate standard errors. The model fit was satisfactory ($\chi^2(16, N = 399) = 41.49$, $p = .001$; RMSEA = .09, CFI = .98, SRMR = .04). Here we report the central mediating paths of interest for third-party regulation in the competence violation condition. The full SEM results can be seen in Web Appendix G. In the competence violation condition, third party-regulation (*reg*) influenced deterrence, which then influenced integrity and competence beliefs and subsequent trust (*reg→det→integ→trust*: $b = .20$, 95% *CI* [.11, .34]; *reg→det→comp→trust*: $b = .02$, 95% *CI* [.003, .06]). Thus, our predictions about the cognitive paths through which third-party regulation repairs consumer trust following competence violations were supported.

Discussion

The goal of Study 4 was to test the effectiveness of a new strategy for third-party regulation that has not been tested previously in the literature: partnering with consumers. Consistent with our predictions, third-party regulation by consumers was an effective

strategy for repairing consumer trust, and was more effective in the competence violation condition than in the integrity violation condition. In addition, as predicted, the influence of third-party regulation by consumers on trust was mediated by deterrence perceptions and integrity and competence beliefs, but not by punishment perceptions.

3.15 General Discussion

The results of four studies supported our proposition that following competence violations by firms, consumers are primarily concerned with deterrence of future harm, and that following integrity violations by firms consumers are concerned with deterrence of future harm and punishment. Our proposition was supported by the differential preference for third-party regulation (deterrence) and repentance (deterrence + punishment) following real-life competence and integrity violations by firms in Study 1, and by the differential effectiveness of third-party regulation and repentance at repairing consumer trust following competence and integrity violations by firms in Studies 2-4. We used SEM in studies 2-4 to provide further support for our proposition by demonstrating that following competence violations third-party regulation repaired consumer trust by increasing deterrence perceptions, and that following integrity violations repentance repaired consumer trust by increasing deterrence and punishment perceptions.

Theoretical Contributions and Areas for Future Research

Our results make several important theoretical contributions. First, our results support the novel proposition that trust repair requires punishment and deterrence following integrity violations, and deterrence following competence violations. Previous

research has identified that punishment-related activities can aid in trust repair in general, but a separate role for deterrence-related activities has not previously been identified (Dirks et al., 2011). In addition, to our knowledge we are the first to theorize and demonstrate the differential importance of punishment and deterrence for repairing trust following trust violations of different types. Our results help elucidate what types of activities are important to repair trust following violations of different types, and lay a theoretical foundation that will allow future researchers to propose novel trust repair strategies not tested in this article that firms can pursue following reputational crises.

Our results also support the novel proposition that while punishment in general can aid in repairing trust following integrity violations, self-imposed punishment is a particularly potent trust-repair strategy. Previous research treats punishment as a unitary construct (e.g. Crockett et al., 2014), and our results open up new opportunities for researchers to explore how perceptions of self- vs. other-punishment influences justice perceptions, forgiveness, and related constructs in a variety of different domains. In addition, the demonstrated potency of self- (vs. other-) punishment for repairing consumer trust suggests that firms like Volkswagen, Citigroup, and Bank of America Merrill Lynch missed significant opportunities to repair consumer trust following their respective reputational crises when they allowed government regulators to be "first movers" in assigning punishment, instead of self-imposing punishment on themselves.

Our distinction between self- vs. other-punishment can also help shed light on a current disagreement in the literature about the relationship between punishment and deterrence. Specifically, previous research disagrees about whether people perceive

punishment as deterring future bad behavior: while some results point to there being no perceived relationship between punishment and deterrence (Carlsmith et al., 2002), others suggest a significant correlation between the two constructs (Crockett et al., 2014; Mooijman, van Dijk, Ellemers, & van Dijk, 2015). Although not reported in the main text of this article, our results suggest that the perceived ability of punishment to deter future bad behavior may be moderated by punishment type. Specifically, in Study 3 the correlation between punishment and deterrence perceptions was larger when punishment was self-imposed (r = .34, 95% CI: [.14, .50) than when punishment was other-imposed (r = -.08, 95% CI: [-.27, .11]). Future research should continue to explore how the self- vs. other- distinction moderates perceptions that punishment deters future bad behavior.

One limitation of our results is that we assume that all trust violations and trust repair strategies of a single type are created equal. This is not necessarily the case, as violations and repairs within a type may vary in severity/strength (and potentially in other ways as well). For example, the integrity violation committed by Volkswagen was massive in magnitude, and likely perceived as being much more severe than smaller-scale integrity violations committed by other firms. It could be the case that the specificity of a firm's trust repair strategy matters more as the severity of the trust violation increases. Thus, while Volkswagen may need to engage in significant self-punishment to repair consumer trust, firms that have committed less severe integrity violations may be able choose from a broader set of trust repair strategies. Future research should explore if varying the severity of a trust violation moderates the differential effectiveness of targeted trust repair strategies. More generally, our results point to an opportunity for a

broader research agenda exploring how different characteristics of trust violations and repair strategies interact to determine repair strategy effectiveness.

Managerial Implications

Our results have important practical implications for managers. In particular, we demonstrate the importance of choosing a trust repair strategy that fits the particular type of trust violation that a firm has committed. It is well documented that firms tend to take a minimal and legalistic approach to responding to reputational crises, such as issuing noncommittal apologies and promises to "do better" (Diermeier, 2011). However, this approach can backfire, as occurred when the CEO of United Airlines described a situation in which a passenger was dragged off one of the airline's flights as a standard "re-accommodation" procedure (Creswell & Maheshwari, 2017). Our results suggest that firms can more effectively repair consumer trust following reputational crises by taking targeted actions that address consumer punishment and deterrence concerns. This being the case, firms will need to weigh the benefits of effectively repairing consumer trust with the potential costs (legal and otherwise) of actions associated with self-punishment and deterrence, such as admitting wrongdoing. For example, in some cases the cost of admitting wrongdoing may be so high that an offending firm may be best served financially by denying wrongdoing and dealing with the low consumer trust that is likely to result. That said, if the cases of Volkswagen and United Airlines are any indication, the days in which firms could plausibly deny wrongdoing and hope to avoid punishment by consumers and government regulators may be over.

Our results also provide managers with specific strategies they can use to repair consumer trust following reputational crises of different types, such as self-imposed repentance following integrity violations and third-party regulation following competence violations. Importantly, we don't expect these to be the only trust repair strategies that will work following violations of these types. Rather, any repair strategy that addresses underlying punishment and deterrence concerns may work. For example, following a competence violation a firm could allay consumer deterrence concerns by making a large and credible investment in new safety technology. This is in part how Samsung was able to so quickly repair consumer trust following their exploding battery crisis: they revealed the details of a new 8-point battery safety test that included technologically advanced methods such as using X-ray to test for battery abnormalities (CBS News, 2017).

Finally, our results (and in particular the results of Study 4) demonstrate the utility of giving consumers voice during and after reputational crises. In the new age of digital marketing, firms have the ability to easily and publically solicit feedback from consumers during crises. Even if firms don't actively seek out feedback, consumers are likely to provide it anyway on social media, as occurred in abundance following the reputational crises faced by Target, United, Volkswagen, and others. Thus, managers could consider taking a more active role in the solicitation of feedback during reputational crises, as our results suggest that doing so can be an effective way to repair consumer trust.

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Appendix A – Essay 1: NFA Scale Development and Items

To my knowledge no easily-administered scale measuring a person's domain-agnostic trait NFA exists in the literature. Previous research has used Hong's trait reactance scale (Hong & Faedda, 1996) as a measure of NFA (Leander, Shah, & Chartrand, 2011). However, reactance and autonomy are different constructs (Radel et al., 2011, Study 3), and Hong's reactance scale contains items that are specific to reactance and not to autonomy, such as acting opposite to what one has been told to do. There are measures of the degree of autonomy a person actually experiences in their life (Gagné, 2003; Weinstein, Przybylski, & Ryan, 2012), which should be positively correlated with NFA (Sheldon & Schüler, 2011). However, these are not direct measures of NFA, and may be influenced by non-NFA factors, such as the level of education one has achieved. In addition, the degree of autonomy one actually experiences in life is correlated with life satisfaction (Sheldon & Hilpert, 2012; Sheldon et al., 1996), which could also influence judgments of aversive events like price increases (Suldo & Huebner, 2004).[3] Thus, I sought to develop a more direct measure of domain-agnostic trait NFA.

I began by generating 16 items that people with high trait NFA would be most likely to endorse as being important to them using deductive item development (Hinkin, 1998). I used the deductive approach because autonomy has been well defined in the literature as self-governance and rule by the self, and a lack of pressure or regulation by forces outside of the self (Ryan & Deci, 2006). Sample items included "Being able to

[3] I thank an anonymous reviewer for pointing this out.

determine my own behavior, without the influence of others," and "Being free from others trying to influence my behavior." I then administered the items to 300 participants recruited from an online subject pool in order examine their factor structure. Participants were asked to rate how important each of the administered items was to them on a scale ranging from 1 (*Unimportant*) to 7 (*One of the most important things in my life*).

After collecting the data, I performed exploratory factor analysis (EFA) using the maximum likelihood estimator with varimax rotation. For factor extraction I used Kaiser's criterion (eigenvalues greater than 1). The EFA revealed one factor that explained 93% of the variance in the 16 items. Following EFA, I was interested in reducing the number of items in order to reduce contextual effects (e.g. participant boredom). I did this by eliminating items that were similar in content to others, but that had lower informational values. This left six items (the list of retained items can be seen in Appendix Table 1). The internal reliability of the six-item scale was satisfactory (**ω**= .88, 95% CI: [.85, .91]).

Item #	Item Text	EFA Loading
1	Being free to do what I want to do, not what others want me to do.	.86
2	Always being able to choose for myself what to do and say.	.85
3	Being free to choose for myself how to spend my time	.82
4	Being free from others pressuring me to do or say certain things.	.81
5	Being free from others telling me what to do.	.79
6	Having input into decisions that affect me.	.75

Appendix Table 1. The six-item NFA scale. Participants rate how important the content of each item is to them from 1 (*Unimportant*) to 7 (*One of the most important things in my life*).

I then administered the remaining six items to a new group of 300 participants recruited from an online subject pool in order to perform confirmatory factor analysis (CFA), and to test the scale's convergent and discriminant validity. In addition to responding to the NFA scale, participants responded to the Self-Authorship subscale of the Index of Autonomous Functioning (IAF: Weinstein et al., 2012), the experienced autonomy subscale of the Basic Psychological Needs Scale (BPNS; Gagné, 2003), the Behavioral Inhibition Scale (BIS; Carver & White, 1994), the Satisfaction with Life Scale (SWLS; Diener et al., 1985), the short version of the Fair Market Ideology Scale (FMIS; Jost et al., 2003), and the Social Value Orientation Scale (SVOS; Van Lange, De Bruin, Otten, & Joireman, 1997). Finally, participants reported their income.

The Self-Authorship subscale of the IAF and the experienced autonomy subscale of the BPNS measure the actual amount of autonomy one experiences in life (e.g. “I feel like I am free to decide for myself how to live my life”). Given that the strength of basic needs is positively correlated with the extent to which the needs are actually satisfied in life (Sheldon & Schüler, 2011), I expected participant NFA to be positively correlated with Self-Authorship and experienced autonomy.

I measured participant BIS in order to rule out the possibility that our NFA scale inadvertently taps into general reactivity to negative stimuli and events. This was important because the judgment domain we were interested in applying the NFA scale in (price fairness) is concerned with consumers’ responses to negative events (price increases), and moral judgments are influenced by negative emotions (Haidt, 2001). By measuring participant BIS (which is a validated measure of general reactivity to negative stimuli) I hoped to be able to demonstrate discriminant validity between the NFA scale and BIS.

I measured life satisfaction in order to rule out the possibility that my NFA scale is inadvertently tapping into general positive emotionality and satisfaction in life. Previous research suggests that having a high sense of satisfaction in life can buffer against the psychological threat posed by aversive events (Suldo & Huebner, 2004). By measuring participant life satisfaction using the SWLS (a validated measure of life satisfaction), I hoped to be able demonstrate discriminant validity with the NFA scale.

I collected responses to the FMIS and SVOS again because of the particular judgment domain I planned to use the NFA scale in (price fairness). The FMIS measures

the belief that any legal action a firm takes in the free market is "fair." Clearly, if NFA and FMIS are highly correlated, then any relationship I find between NFA and price fairness may just be capturing a correlated belief effect. When responding to the SVOS, participants are forced to choose how they would prefer to split up a pool of rewards with another person: either evenly (high equity), moderately benefitting themselves (moderate equity), or highly benefiting themselves (low equity). Previous research indicates that SVOS is a reliable measure of inequity aversion (Van Dijk, De Cremer, & Handgraaf, 2004). If NFA and SVOS are highly correlated, then any relationship I find between NFA and price fairness may be capturing a correlated inequity aversion effect (i.e. a dislike of non-cost-justified price increases because they are inequitable). Finally, I collected income information in order to rule out the possibility that the NFA scale is highly correlated with income (i.e. perhaps people with a higher need for autonomy are more likely to achieve high income levels). This is important because the judgment domains I hoped to use the NFA scale in (price fairness) may be sensitive to income effects.

Following data collection, I submitted the NFA scale to a CFA to test the one-factor hypothesis. Per Hu and Bentler (1999) and Iacobucci (2010), the fit of the one-factor model was satisfactory (χ^2 (9) = 21.96, p = .01; RMSEA = .069; CFI = .99). This result suggests that my NFA scale is tapping into a single construct.

I next tested the convergent and discriminant validity of the NFA scale by examining the correlations between NFA and the other constructs of interest (95% confidence intervals are computed for correlation coefficients using bootstrapping; see Table A2 for summary). As expected, the NFA scale was positively correlated with the

Self-Authorship subscale of the IAF (r = .59, p < .001, 95% CI: [.49, .70]) and with the experienced autonomy subscale of the BPNS (r = .31, p < .001, 95% CI: [.20, .41]), which is consistent with suggestions in the literature that need strength translates into need satisfaction (Sheldon & Schüler, 2011). In order to test the discriminant validity between the NFA scale and the Self-Authorship and experienced autonomy scales we used the AVE-SV method, a conservative test of discriminant validity (Voorhees, Brady, Calantone, & Ramirez, 2016). The 95% confidence intervals for the discriminant validity indices (DVI) computed for both the NFA and Self-Authorship scales (DVI = .12, 95% CI: [.01, .25] and the NFA and experienced autonomy scales (DVI = .37, 95% CI: [.20, .48] did not include zero, indicating satisfactory discriminant validity.

I next examined the correlations between NFA and BIS, and NFA and SWLS (life satisfaction). The NFA scale was not significantly correlated with BIS (r = .08, p = .15, 95% CI: [-.03, .19]). This suggests that the NFA scale is not just capturing general reactivity to negative stimuli. The NFA scale was only modestly correlated with the SWLS (r = .12, p = .05, 95% CI: [.003, .24]), indicating that the NFA scale is not just inadvertently picking up on participant life satisfaction. Importantly, the correlation between my NFA scale and life satisfaction was significantly lower than the correlation between the Self-Authorship subscale of the IAF and life satisfaction (r = .51, p < .001, 95% CI: [.42, .60) and between the experienced autonomy subscale of the BPNS and life satisfaction (r = .50, p < .001, 95% CI: [.41, .60]). Given that life satisfaction can influence judgments of aversive events like price increases (Suldo & Huebner, 2004), this

result validates the need to develop a new and easily-administered NFA scale, as opposed to simply asking people how much autonomy they experience in daily life.

I next examined the relationship between NFA and FMIS (fair market ideology), SVOS (a measure of inequity aversion), and income. NFA and FMIS were uncorrelated (r = .08, p = .22, 95% CI: [-.05, .20]), indicating that the NFA scale is not inadvertently capturing beliefs about the fairness of firm actions in market contexts. NFA and SVOS were also uncorrelated (r = .01, p = .89, 95% CI: [-.11, .13]), indicating that the NFA scale is not inadvertently capturing inequity aversion. Finally, NFA was modestly and negatively correlated with income (r = -.12, p = .02, 95% CI: [-.23, -.02]). Given this, I decided to control for participant income effects when examining the relationship between NFA and price fairness judgments in Studies 1, 3, & 4. Overall, my analysis suggests that the NFA scale has satisfactory convergent and discriminant validity.

	M	***SD***	**1**	**2**	**3**	**4**	**5**	**6**	**7**
1. Need for Autonomy	5.84	0.90							
2. Self-Authorship	5.67	1.04	0.59						
3. Experienced Autonomy	4.91	1.06	0.31	0.54					
4. BIS	2.70	0.67	0.08	-0.11	-0.30				
5. Satisfaction with Life	4.76	1.51	0.12	0.51	0.50	-0.32			
6. Fair Market Ideology	3.24	0.64	0.08	0.16	0.07	-0.15	0.23		
7. Social Value Orientation	2.62	0.54	0.01	0.00	0.10	0.06	-0.02	-0.10	
8. Income	3.36	1.44	-0.12	-0.04	0.06	-0.05	0.22	0.04	-0.01

Appendix Table 2. Means, standard deviations, and correlations for the constructs measured in the convergent and discriminant validity test reported in Appendix A.

Appendix B – Essay 1: Price Increase Scenarios

1. You like to eat a certain brand of ice cream for dessert. The ice cream has become more popular with consumers, and the grocery store where you shop raises its price by X%.
2. You subscribe to a movie streaming service. The streaming service has grown in popularity over the last few years, and it raises its monthly fee by X%.
3. You need to buy a new winter coat. The brand of winter coat you are planning to buy has become very popular this winter. The manufacturer of the winter coast raises the price of the coat by X%.
4. You need to buy a new computer for work. A new model of computer has come out on the market that you are interested in buying, but it is selling much better than expected. The company that makes the computer raises its price by X%.
5. You like to drink a certain brand of juice with breakfast. The juice has been selling much better than normal and the grocery store where you shop raises its price by X%.
6. You go to a gym in your area. The gym has become more popular, and it raises the price of membership by X%.
7. You need to buy a new mobile phone, and have found one you like. When you go to purchase the phone online, you see that the manufacturer has increased the

price of the phone by X% due to increased consumer demand.

8. You need to buy a new pair of shoes for work, and you have found a pair you want to get. When you go to purchase the shoes, you find out that they have been selling better than expected, and in response the company that makes them has increased their price by X%.
9. You like to drink a certain brand of beer. The beer has been selling better than normal, and the grocery store where you shop increases its price by X%.
10. You need to buy a new swimsuit. The brand of swimsuit you are planning to buy has become very popular. The manufacturer of the swimsuit raises its price by X%.

Appendix C – Essay 1: Study 2 NFA Manipulations

Instructions

Please spend 2-3 minutes reading the information below carefully. We are studying how people respond to new scientific findings, and we want to know what you think about the research described below that was just published yesterday.

High NFA

New research from Nobel Prize winner Richard Thaler shows that one of the keys to life satisfaction and happiness is feeling like you are completely free to determine what happens to you, and that you are free from pressure from others to behave or act in certain ways. For example, in a survey of over 10,000 adults in the United States, the people who were happiest were those who felt in completely able to determine what they do and say, felt like they had significant input into actions by others that will affect them, and felt free from pressure from others.

The happiest adults in the United States also said that they that they pushed back quickly when others tried to pressure them or manipulate them.

Psychologists and counselors are now recommending that to increase their happiness, people focus on making sure that they feel like they able to choose for themselves what happens to them, and that they are free from others trying to pressure them.

Low NFA

New research came out yesterday about how lions and cheetahs hunt zebras and gazelles on the African savannah, and how zebras and gazelles try to get away from the predators. As expected, lions and cheetahs are much faster and stronger than zebras and gazelles. However, the zebras and gazelles that are able to escape from the predators don't necessarily run the fastest. Instead, they run at a moderate speed, and right when the predators are about to pounce, they pivot in a different direction, causing the predators to miss them and either give up or go after someone else.

The researchers collected this data by attaching radio collars to lions, cheetahs, zebras, and gazelles, and then tracking their movements over a number of years. Obviously this was a huge research effort, and took a lot of patience and initiative on the part of the researchers.

Appendix D – Essay 1: Meta-Analysis With Dichotomized NFA

Meta-Analysis Factors	Model 1	Model 2	Model 3
Participant NFA	-0.27	-0.27	-0.24
	(0.11)	(0.11)	(0.11)
Price Increase Amount	-2.68	-2.68	-2.68
	(0.13)	(0.13)	(0.13)
NFA × Price Increase Amount	-1.08	-1.09	-1.06
	(0.20)	(0.20)	(0.20)
Product Category Covariates			
High Product Substitutability (vs. Low)		0.08	0.08
		(0.02)	(0.02)
Service (vs. Product)		0.01	0.01
		(0.02)	(0.02)
Technological		0.05	0.05
		(0.01)	(0.01)
Utilitarian (vs. Hedonic)		0.04	0.04
		(0.01)	(0.01)
Communal Harm		-0.18	-0.18
		(0.02)	(0.02)
Age			0.00
			(0.00)
Gender			0.24
			(0.05)
Income			0.01
			(0.00)
Education			0.06
			(0.02)
Politically Conservative (vs. Liberal)			0.10
			(0.02)
Life Satisfaction			0.00
			(0.02)
Study Random Effects			
Between-Study Variance	0.08	0.07	0.06
	(0.06)	(0.06)	(0.05)
Product Category Variance	0.0001	0.00006	0.00006
	(0.00008)	(0.00005)	(0.00005)

Participant Random Effects			
Between-Participant Variance	0.93	0.93	0.9
	(0.03)	(0.03)	(0.03)
Product Category Variance	.0003	.0003	.0003
	(.00008)	(.00008)	(.00008)
Model Log Likelihood	-	-	-21,107.35

Appendix Table 3. Meta-analysis results with dichotomized NFA. Factors that had a significant ($p < .05$) influence on participant price fairness judgments are bolded. Overall model fit is provided by log likelihood values.

Appendix E – Essay 2: Study 2 Stimuli And Measures

Study Introduction

Theranos is a startup that has developed a new high-tech way to test people's blood for diseases. Unlike normal blood tests, which need a whole vial of blood and are expensive for patients, Theranos' tests work with just a pin-prick of blood from a finger. This greatly reduces the amount of discomfort that a patient has to undergo when having their blood drawn, and it reduces the cost of the test for patients.

Integrity Violation

This morning the New York Times reported that Theranos' high-tech blood tests sometimes don't work well, and can return inaccurate results. About 5,000 consumers have been affected. The article goes on to say that Theranos has the expertise needed to produce accurate blood tests. However, in order to save money and boost her own salary, the CEO of Theranos decided to produce the company's blood tests using cheap components from China, which often malfunction. At the same time, the CEO has been lying to consumers, telling them that the company's blood tests are produced using high-quality components from the United States.

Competence Violation

This morning the New York Times reported that Theranos' high-tech blood tests aren't working well, and often return inaccurate results. About 5,000 consumers have been

affected. The article goes on to say that the technology behind the blood tests is very new, and that Theranos does not currently have the medical expertise needed to verify that its blood tests are working well and are accurate. The CEO of Theranos has been open about these issues, but given that the technology is so new, the company's medical staff hasn't been able to solve them yet.

Repentance Trust Repair

In response to the report, Theranos' board of directors has fired the CEO effective immediately. The new CEO of Theranos has apologized, and has offered a full refund to those doctors and patients who received inaccurate blood tests. In addition, as a way of apologizing further, Theranos will be offering all consumers a 25% discount on its blood tests for the next year.

Third-Party Regulation Trust Repair

Theranos' CEO responded to the report by saying that in order to address concerns about the accuracy of the company's new blood testing technology, the company has been partnering with experts at the US Food and Drug Administration (FDA). The CEO went on to say that the FDA experts have worked with Theranos to certify that the company's blood tests are accurate, and to make recommendations on how to continue improving the technology. At this point, the CEO finished, the FDA has declared that the issues with the company's blood tests have been resolved.

Measures

For the measures related to trust, punishment, deterrence, integrity, and competence participants rated their agreement on 5-point scales ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). For the measures related to trust violation severity, participants rated the intensity of the trust violation on 5-point scales ranging from 1 (*not at all*) to 5 (*very much*).

Trust 1: "Blood tests from the company can be trusted going forward."

Trust 2: "I would be willing to base a medical diagnosis on the company's blood test in the future."

Purchase Intentions: ""I am interested in purchasing a blood test from the company in the future."

Punishment: "The company is getting the punishment it deserves."

Deterrence: "The company's actions will prevent the company from harming consumers in the future."

Integrity 1: "Sound principles seem to guide the company's behavior."

Integrity 2: "The company has a great deal of integrity."

Competence 1: "The company has the technology necessary to ensure that its blood tests work well."

Competence 2: "The company has the expertise necessary to ensure that its blood tests work well."

Severity: "How severe was the company's violation of consumer trust?"

Appendix F – Essay 2: Full SEM Results From Study 2

Integrity Violation Condition

Dependent Variable	**Predictors**	**Coeficient**	**95% CI**
Deterence			
	Repentance	1.13	[.83, 1.41]
	Third-Party Regulation	0.61	[.31, .88]
Punishment			
	Repentance	0.49	[.23, .74]
Integrity			
	Repentance	0.23	[.83, 1.41]
	Third-Party Regulation	-0.09	[.31, .88]
	Deterrence	0.50	[.40, .60]
	Punishment	0.09	[.01, .17]
Competence			
	Repentance	0.00	[-.34, .32]
	Third-Party Regulation	-0.09	[-.31, .33]
	Deterrence	0.50	[.06, .30]
Trust			
	Integrity	0.60	[.47, .71]
	Competence	0.10	[.04, .16]
	Deterrence	0.23	[.13, .33]
	Punishment	-0.03	[-.10, .05]
Purchase Likelihood			
	Trust	0.70	[.54, .83]
	Integrity	0.32	[.18, .50]
	Competence	-0.01	[.-.06, .04]

Note. Full SEM results from the integrity violation condition in Study 2. In addition to the paths reported above, punishment and deterrence perceptions are allowed to co-vary (*coefficient* = .32, 95% CI: [.17, .48]), as are integrity and competence beliefs (*coefficient* = .00, 95% CI: [-.07, .08]).

Competence Violation Condition

Dependent Variable	Predictors	Coeficient	95% CI
Deterence			
	Repentance	0.12	[-.15, .36]
	Third-Party Regulation	0.61	[.34, .86]
Punishment			
	Repentance	0.19	[-.02, .41]
Integrity			
	Repentance	-0.03	[-.24, .17]
	Third-Party Regulation	0.19	[-.21, .22]
	Deterrence	0.69	[.51, .71]
	Punishment	0.06	[-.04, .17]
Competence			
	Repentance	0.19	[-.04, .42]
	Third-Party Regulation	0.67	[.42, .91]
	Deterrence	0.46	[.34, .56]
Trust			
	Integrity	0.17	[.08, .27]
	Competence	0.44	[.36, .52]
	Deterrence	0.31	[.20, .42]
	Punishment	-0.05	[-.12, .03]
Purchase Likelihood			
	Trust	0.10	[.04, .16]
	Integrity	0.60	[.47, .71]
	Competence	0.10	[.04, .16]

Note. Full SEM results from the competence violation condition in Study 2. In addition to the paths reported above, punishment and deterrence perceptions are allowed to co-vary (*coefficient* = .14, 95% CI: [.04, .26]), as are integrity and competence beliefs (*coefficient* = .12, 95% CI: [.05, .19]).

Appendix G – Essay 2: Study 3 Stimuli

Study Introduction

Vion Inc. manufactures snack foods, including pita chips. The Wall Street Journal just reported that more than 120 people have gotten sick after eating pita chips made by Vion. An investigation has revealed that Vion's mixing machines were contaminated with Listeria, a common form of bacterial contamination. Vion does not employ experts with the skill necessary to detect Listeria in food, so at first it didn't know that its pita chips were contaminated. However, Consumer Reports does independent safety and quality tests of products and grocery stores and discovered that Vion's pita chips were contaminated with Listeria before consumers started getting sick. Consumer Reports informed Vion of the problem with its pita chips, but the company decided to take no actions and continued shipping the contaminated pita chips to consumers.

Self-Imposed Repentance Trust Repair

In response to the article in the Wall Street Journal, Vion's board of directors has decided to fire the company's CEO effective immediately. Vion's new CEO has apologized for the companies actions and has personally decided to offer to fully cover the medical expenses of the customers that got sick eating Vion pita chips. As a way of apologizing further, the company will be offering monetary rebates to any consumers that

bought Vion pita chips during the listeria contamination crisis.

Other-Imposed Repentance Trust Repair

In response to the article in the Wall Street Journal, government regulators have forced Vion's board of directors to fire the company's CEO effective immediately. In addition, the government's lawyers have forced Vion's new CEO to apologize for the companies actions and to offer to fully cover the medical expenses of the customers that got sick eating Vion pita chips. Finally, the government's lawyers are making the the company offer monetary rebates to any consumers that bought Vion pita chips during the listeria contamination crisis as a way of apologizing further.

Third-Party Regulation Trust Repair

In response to the article in the Wall Street Journal, Vion's CEO has stated that he has personally decided that the company will work with experts at the Center for Disease Control (CDC) to determine the cause of the listeria contamination and to prevent the company's products from becoming contaminated with listeria in the future.

Appendix H – Essay 2: Full SEM Results From Study 3

Dependent Variable	Predictors	Coeficient	95% CI
Deterence			
	Self-Imposed Repentance	1.10	[.81, 1.38]
	Other-Imposed Repentance	0.59	[.30, .86]
	Third-Party Regulation	0.74	[.45, 1.02]
Punishment			
	Self-Imposed Repentance	0.46	[.21, .71]
	Other-Imposed Repentance	1.05	[.77, 1.33]
Integrity			
	Self-Imposed Repentance	0.61	[.36, .87]
	Other-Imposed Repentance	-0.15	[-.38, .09]
	Third-Party Regulation	0.12	[-.11, .36]
	Deterrence	0.53	[.43, .64]
	Punishment	0.09	[.02, .16]
Competence			
	Self-Imposed Repentance	-0.05	[-.37, .28]
	Other-Imposed Repentance	-0.06	[-.37, .25]
	Third-Party Regulation	0.15	[-.17, .25]
	Deterrence	0.51	[.39, .62]
Trust			
	Integrity	0.65	[.57, .73]
	Competence	0.07	[.001, .14]
	Deterrence	0.12	[.05, .20]
	Punishment	0.06	[.03, .12]

Note. Full SEM results from Study 3. In addition to the paths reported above, punishment and deterrence perceptions are allowed to co-vary (*coefficient* = .16, 95% CI: [.04, .28]), as are integrity and competence beliefs (*coefficient* = .19, 95% CI: [.11, .29]).

Appendix I – Essay 2: Study 4 Stimuli

Integrity Violation

Conteso produces natural and organic lotions and ointments for babies. This morning the Wall Street Journal reported that some of the natural ingredients that the company purchases from suppliers and includes in its products are coated with a new type of chemical pesticide that can be harmful to a baby's skin. Conteso already has the expertise and technology needed to test whether ingredients it gets from suppliers are contaminated with pesticides (it is importantly to independently verify this). However, in order the save money, the CEO of the company decided not to carefully choose suppliers and test their products. At the same time, the CEO has been lying, telling customers that he is 100% confident that Conteso's products are pesticide free.

Competence Violation

Conteso produces natural and organic lotions and ointments for babies. This morning the Wall Street Journal reported that some of the natural ingredients that the company purchases from suppliers and includes in its products are coated with a new type of chemical pesticide that can be harmful to a baby's skin. It turns out that it takes a lot of chemical engineering technology and expertise to verify that ingredients from suppliers are free of pesticides, and Conteso doesn't currently have access to this technology or

expertise. Conteso was not aware that there were pesticides in its products.

Third-Party Regulation by Consumers Repair

In response to the report, the CEO of Conteso said that the company wants to make things right with consumers. To this end, the CEO announced that he will be meeting with many customers who bought the products to get their feedback and learn how they can improve the product. Finally, the CEO announced that the company is creating a customer advisory panel to get customer input into which suppliers Conteso should work with.

Appendix J – Essay 2: Full SEM Results From Study 4

Integrity Violation Condition

Dependent Variable	**Predictors**	**Coeficient**	**95% CI**
Deterence			
	Third-Party Regulation	0.47	[.20, .76]
Integrity			
	Third-Party Regulation	0.05	[-.14, .23]
	Deterrence	0.61	[.51, .71]
Competence			
	Third-Party Regulation	-0.24	[-.51, .04]
	Deterrence	-0.02	[-.14, .11]
Trust			
	Integrity	0.72	[.60, .32]
	Competence	0.01	[-.06, .09]
	Deterrence	0.11	[-.002, .22]

Note. Full SEM results from the integrity violation condition in Study 4. In addition to the paths reported above, punishment and deterrence perceptions are allowed to co-vary (*coefficient* = .28, 95% CI: [.12, .47]), as are integrity and competence beliefs (*coefficient* = -.08, 95% CI: [-.18, .01]).

Competence Violation Condition

Dependent Variable	Predictors	Coeficient	95% CI
Deterence			
	Third-Party Regulation	0.65	[.36, .95]
Integrity			
	Third-Party Regulation	0.61	[.39, .82]
	Deterrence	0.34	[.38, .58]
Competence			
	Third-Party Regulation	0.12	[-.18, .41]
	Deterrence	0.34	[.17, .50]
Trust			
	Integrity	0.75	[.49, .77]
	Competence	0.10	[.01, .18]
	Deterrence	0.21	[.07, .33]

Note. Full SEM results from the competence violation condition in Study 4. In addition to the paths reported above, punishment and deterrence perceptions are allowed to co-vary (*coefficient* = -.09, 95% CI: [-.27, .07]), as are integrity and competence beliefs (*coefficient* = .05, 95% CI: [-.06, .16]).