University of Alberta

Consumer Inaction Traps

by

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Abstract

This dissertation proposes and tests a theory of consumer inaction traps – situations where consumers repeatedly fail to take actions to address relatively small problems, and end up suffering disproportionately from these problems as a result. I demonstrate that initially forgoing action leads to a trap where subsequent opportunities to address a problem are not taken because they are relatively less attractive than opportunities that were previously foregone. I show that this trap can be avoided by removing the opportunity for initial inaction, by eliminating the consumer's responsibility for the initial inaction, or by decoupling the current opportunity to address the problem from previous opportunities. Specific examples of these inaction traps are examined using incentive compatible experiments in the domains of product malfunctions (Essay 1) and declining investments (Essay 2). Experimental manipulations are used to both pinpoint the mechanism underlying these effects, and identify potential interventions to reduce or eliminate the impact of these traps.

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INTRODUCTION

Consumer research typically focuses on actions, such as purchases, choices among sets of alternatives, and complaints. In this dissertation I take a different perspective and examine the antecedents and consequences of consumer *inaction*. In particular, I theorize and present evidence for a set of conditions that can create inaction traps. These traps keep consumers from taking actions that would increase utility. I present factors that lead consumers to defer change and continue with their current behavior and demonstrate how this lack of action or change, affects consumer welfare. More colloquially, the situations I examine could be described as "ruts." They are continuations of a given course of behavior, failing to take actions that could improve consumer well being.

Consumer inaction is a worthy topic of study because inaction, rather than action, is the dominant pattern of behavior. We are constantly foregoing the majority of possible actions and thus the few actions we take are only a tiny subset of what could be. Inaction becomes detrimental when consumers fail to take actions that would improve their consumption experience or welfare. Specific examples explored in this dissertation include the failure to address a product malfunction and the failure to sell an underperforming asset. These persistent patterns of inaction can allow relatively minor issues to cause disproportionate harm to consumers.

I build on prior work in psychology, particularly inaction inertia: the tendency to avoid taking desirable actions when similar, and superior courses of action have been previously foregone (Arkes, Kung, & Hutzel, 2002; Tykocinski, Israel, & Pittman, 2004; Tykocinski, Pittman, & Tuttle, 1995; Tykocinski & Pittman, 1998; Zeelenberg, Nijstad, van Putten, & van Dijk, 2006), and decision deferral: postponing making a decision until some later time (Dhar & Nowlis, 1999; Dhar, 1996, 1997; Greenleaf & Lehmann, 1995). The theory developed here, and supported by experimental data, is that relatively smaller issues can lead to inferior outcomes for consumers because consumers initially defer the decision to address or endure smaller issues long enough to miss superior opportunities to take action. At subsequent decision points, opportunities to address these issues, though still desirable, are not taken because they are relatively less attractive. I show that this trap can be avoided by removing the opportunity for initial inaction, by eliminating the consumer's responsibility for the initial inaction, or by decoupling the current opportunity to address the problem from previous opportunities. Critically, the observed behavior cannot be explained using plausible alternative accounts based on melioration (Herrnstein, Loewenstein, Prelec, & Vaughan, 1993; Herrnstein & Vaughan, 1980), temporal discounting (Frederick, Loewenstein, & O'Donoghue, 2002), consumer lock-in (Zauberman, 2003), or affective forecasting (Wilson & Gilbert, 2003). These findings contribute to our understanding of consumer behavior and have important implications for consumers and producers.

The dissertation consists of two essays, each exploring consumer inaction in a different consumption domain. In essay 1, I examine consumer inaction traps in the domain of product malfunctions. In four experiments, I show that consumers can have relatively less enjoyable consumption experiences when the products they are using have smaller rather than larger malfunctions. Experiment 1 demonstrates the basic effect. In Experiment 2, I show that when consumers are prompted to forecast enjoyment if the smaller malfunction was addressed vs. not addressed, they correctly predict that the experience would be more enjoyable if the malfunction was addressed. This suggests that consumers are capable of accurately predicting the impact of smaller malfunctions on their consumption experiences, but that they tend not to make such forecasts spontaneously (i.e., without being prompted).

In Experiments 3 and 4, I demonstrate two ways in which the disproportionate negative impact of smaller malfunctions on consumption experience can be eliminated. One such intervention is to create a state of inaction without the consumer having missed any opportunities to address the malfunction. The other is to change the means by which the consumer can address the malfunction following initial inaction, thus reducing the comparability between the current opportunity to address and those that were previously foregone. These interventions prevent initial inaction from becoming a trap, and they free consumers to address malfunctions that have already persisted for some time.

In essay 2, I investigate the phenomenon of inaction traps in the domain of financial decision making, focusing on the psychology of how investors choose to

either keep or sell assets that have experienced some decline. Building on prior work showing that investors tend to hold declining assets for too long (Grinblatt & Keloharju, 2001; Odean, 1998; Shefrin & Statman, 1985; Weber & Camerer, 1998), I examine whether that effect is sensitive to the magnitude of the decline. Intuitively, all investors would prefer that an asset they own decline by a smaller rather than larger amount. However, I hypothesize that, relative to moderately inferior assets, dramatically inferior assets – those with more rapid declines – might actually be less costly to investors in the long run. This paradoxical effect occurs because, although a large decline directly decreases wealth to a greater extent, it also motivates investors to sell the declining asset more quickly. When investors miss early opportunities to sell an inferior asset, they become less likely to ever sell that asset because future opportunities to sell are relatively less attractive than previously forgone ones. For this reason, moderately inferior assets can trap investors into keeping these poorer investments longer, leading to substantial losses of wealth.

In the first two experiments, I show that moderately inferior assets can indeed be more costly to investors than dramatically inferior ones, but also that this effect can be reversed. I show that the threat of "slowly sinking" assets is significantly reduced when investors are prevented from maintaining their asset allocations via mere inaction. Using a forced selling manipulation, I demonstrate that when investors must actively choose how to invest their capital afresh in each period, they are much less likely to keep poor assets that decline slowly. Another intervention that overcomes the inaction trap is to provide aggregated price

histories. Historical price information neutralizes the inaction trap associated with slowly sinking assets in that it tends to unmask the slow decline, revealing the larger long-term trend while simultaneously emphasizing the difference between the current and previously forgone opportunities.

Based on the theory that investors fall into a pattern of inaction when faced with a slowly declining asset, investors might also fail to respond to a declining asset if that decline is broken into smaller segments via more frequent performance monitoring. In the third experiment of essay 2, I examine the impact declining assets have on wealth while manipulating the frequency with which investments are monitored. I predict, and show evidence demonstrating, that although more frequent monitoring creates more opportunities to sell a declining asset, it increases the likelihood that initial opportunities for action will be missed. More frequent monitoring breaks the decline into smaller chunks and also makes each individual opportunity for action seem less urgent. I show that this effect is distinct from the "smoothing" benefit that less frequent monitoring also provides for investments with noisy returns (Thaler, Tversky, Kahneman, & Schwartz, 1997). These inaction traps occur because it is not immediately evident that action should be taken and subsequent opportunities for action are relatively less attractive. Moreover, the option to act in the future is a double-edged sword. The more frequent future opportunities are, the more trivial the current opportunity appears and, therefore, the more likely it is that initial opportunities will be missed.

These two consumption domains were selected because they are very complementary in the dimensions that they cover. The types of consumption covered by Essay 1 are very hedonic and require subjective measures of consumption experience while the investment decisions in Essay two are much more utilitarian and allow for objective measures. The other key difference is that product malfunctions rarely spontaneously correct themselves, while underperforming investments can and do recover without any action on the consumer's part. Despite these differences, the evidence supports the theory that a general mechanism, combining decision deferral and inaction inertia, can create inaction traps across consumption domains.

Throughout the dissertation I use lab-based experiments that capture the essence of the phenomena of interest. The experiments extend across time and participants have multiple opportunities to take some action. Participants' decisions, the timing of their decisions and the consequences of these decisions are measured. I examine different types of consumer inaction in each essay. However, across the essays I am interested in revealing why consumers might fail to take important actions, how the cycle of inaction can be broken, and how these decisions affect consumer welfare.

This dissertation makes three important contributions. First, it advances our understanding of inaction. Building on prior work on inaction inertia and choice deferral, it proposes a theory of why inaction traps occur, how decision makers get into them, and the significant impact these traps can have on consumer welfare. Second, it treats consumption experience and investing as dynamic and

interactive processes that unfold across time as the consumer makes a series of decisions in response to the performance of products or financial assets. Finally, this dissertation identifies effective interventions that can disrupt patterns of inaction, thus allowing decision makers to get out of ruts and take action when needed.

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Essay 1: The Big Cost of Small Problems: Consumer Inaction Traps in the Domain of Product Malfunctions

Unfortunately, consumer products frequently develop malfunctions. For instance, approximately one third of all computers require repairs within the first four years (Consumer Reports, 2011a). Although consumers have opportunities to address product malfunctions through repair or replacement, these actions are often delayed or deferred. According to a recent survey, 40% of US automobile owners were putting off repairs or maintenance on their primary vehicle (Consumer Reports, 2011b). Addressing a malfunction is often not immediately necessary because many malfunctions, although disruptive, do not render the product unusable. Therefore, while some malfunctions are addressed quickly, others may persist and continue to impair performance. Whether and when a consumer decides to address a malfunction determines the overall impact that malfunction will have on the consumer's usage experience. The present research examines how the interplay between the occurrences of product malfunctions and consumers' opportunities to address the malfunctions shape decisions about addressing these malfunctions and consumption experiences.

Enhancing our understanding of consumption experiences has been identified as an area with immense potential for significant new discoveries within the domain of consumer research (Janiszewski, 2010). In particular, although much is known about purchase decisions (Bettman, Luce, & Payne, 1998, 2008; Lynch, Marmorstein, & Weigold, 1988), and there is some prior

work on replacement decisions (Okada, 2001), relatively little is known about maintenance or repair decisions that consumers make in connection with products they already own. The present work highlights the fact that consumption experiences are a function of the consumer's interaction with the consumption object, and reflect a variety of post-purchase consumer decisions in response to how the consumption object is performing.

Evidence from the four experiments reported in this article demonstrates what we label a consumer inaction trap. This trap leads consumers to not address relatively smaller product malfunctions and suffer from them to a greater degree as a result. We explain this effect by showing that consumers are more likely to defer the decision of whether to address a more minor product malfunction and that, once the initial opportunities to address the malfunction have passed, addressing the problem in the future is increasingly unlikely as subsequent opportunities are comparatively less attractive.

The remainder of the article is organized as follows. In the next section, we review relevant prior research and present a theoretical account for a consumer inaction trap. Next we present four experiments, which demonstrate the effect and offer support for the theoretical account. Finally we conclude with a discussion of the implications of these findings and opportunities for future research.

CONCEPTUAL FRAMEWORK

We propose that smaller product malfunctions can create an inaction trap for consumers whereby the malfunctions go unaddressed, and the consumers suffer a disproportionate negative impact on consumption experience. This trap is made possible because of an inclination to initially defer a decision over addressing a smaller malfunction and a tendency to view subsequent opportunities to address the malfunction as less attractive than those that were initially foregone.

Product Malfunctions

We define a product malfunction as any decline in product performance that reduces the consumer's enjoyment of the product. Product malfunctions can vary on a number of dimensions beyond magnitude. For instance, they may also differ in their consistency and trends. Malfunctions may escalate, decline or remain constant over time. Although such variations and patterns are a real part of consumers' experiences, we focus on the essence of this phenomenon, which is common across all problem types.

Prior work on product malfunctions has tended to focus either on consumer complaining behavior (L. Dunn & Dahl, 2012; Gilly & Gelb, 1982) or on the effectiveness of firms' attempts to recover from such failures (Challagalla, Venkatesh, & Kohli, 2009; Maxham & Netemeyer, 2002). The current work

examines product malfunctions from the consumer's perspective, exploring how consumers respond to such problems and how these actions, or lack thereof, impact consumption experiences.

Addressing Malfunctions

We define the act of addressing a malfunction as steps taken by the consumer, or performed on his or her behalf, that restore a product with a malfunction to its original working state. These actions include repair performed by the consumer, repair performed by another party, and replacement of the product. In the case of repair, these are remedial actions and distinct from maintenance in that the latter preserves product performance by preventing a product that is fully functional from slipping into a problem state, whereas repairs restore a product that no longer has full functionality to its normal working state. The cost of addressing a malfunction is sometimes proportional to the magnitude of the malfunction. However, the cost is often fixed, for example, when addressing involves replacing the entire product, or replacing an entire component of the product, such as the screen on a smartphone.

Choice Deferral

When confronted with a minor product malfunction that does not dramatically impair product performance, consumers are more likely to defer the decision over whether to address the malfunction because there is more uncertainty about whether addressing or enduring the malfunction is optimal. Decisions can be deferred or avoided for a variety of reasons, including anticipated regret, the difficulty of making a choice, or the costs of taking action (Anderson, 2003; Dhar & Nowlis, 1999; Dhar, 1996, 1997; Greenleaf & Lehmann, 1995). Deferring decisions is not always detrimental; in some cases new information may facilitate a better decision at a later time. Similarly, a natural preference for options that require no action conserves effort (Ritov & Baron, 1992). However, in the case of addressing product malfunctions, deferral presents an important risk in that the benefit gained from addressing the malfunction decreases as the number of remaining usage occasions or the amount of remaining usage time diminishes. The time remaining could refer to the time until other parts of the product fail, time until the consumption experience ends, time until the product is surpassed by improved technology, or time until the product is replaced because of some external replacement cycle, such as the end of cell phone contract. In each case, addressing a malfunction later leaves less consumption time in which to enjoy the benefit of addressing before the product is no longer used. Thus, any deferral may be a missed opportunity in that subsequent opportunities to address the malfunction are, all else equal, inferior. In many cases, consumers can still choose to address the malfunction some time in

the future. However, on future occasions, consumers may find themselves trapped by prior choices due to "inaction inertia."

Inaction Inertia

When related choices are made in sequence, current options may be compared to previously available options even though, normatively, the latter are irrelevant to the current choice. Inaction inertia is the decreased likelihood of taking an attractive course of action when a similar and superior course of action has been previously foregone (Tykocinski et al., 1995). In the years since its initial discovery, the finding has been replicated by several research teams in a variety of domains (Arkes et al., 2002; Butler & Highhouse, 2000; Kumar, 2004; Tykocinski et al., 2004; Tykocinski & Pittman, 1998; van Putten, Zeelenberg, & van Dijk, 2007; Van Putten, Zeelenberg, & Van Dijk, 2009; Zeelenberg et al., 2006). This effect distinct from related work on escalation of commitment through action such as the sunk cost effect (Arkes & Blumer, 1985; Cunha, Jr & Caldieraro, 2009), or the foot-in-the-door effect (Freedman & Fraser, 1966), in that it describes the inertial effect of a failure to take action on subsequent opportunities for action. For example, imagine a traveller who is considering joining an airline's frequent flier rewards program. Initially, she might be uncertain as to whether she will use the airline enough to justify the time and effort required to sign up. As she uses the airline more, it becomes clear that the benefit will likely justify the cost, however the later opportunity to sign up is

devalued because better opportunities to do so, before many flights had been taken on that airline, have already been missed. Therefore, she may decide not to sign up for the program because the current opportunity to do so is relatively unattractive.

Recent research has focused on identifying the mechanism that underlies the inaction inertia effect. Earlier accounts suggested that regret, either anticipated regret from taking an inferior opportunity for action (Butler & Highhouse, 2000; Tykocinski & Pittman, 1998), or experienced regret related to the missed superior opportunity (Arkes et al., 2002; Kumar, 2004), drove the effect. However, these accounts have more recently been rejected by work showing that devaluation of later, inferior opportunities, that are evaluated less favorably relative to earlier, superior missed opportunities, drives the effect and that regret may arise only as a byproduct of that devaluation (Zeelenberg et al., 2006).

We propose that while initial inaction is due to decision deferral, continuing to not address a product malfunction at subsequent opportunities is driven by inaction inertia. If a malfunction would be worth addressing at a later point in time, then logically it would have been even better to address it at the earliest opportunity. An earlier intervention would increase the benefit derived as more usage time or usage occasions would still be in the future and thus subject to the improved performance that the intervention brings. Thus, the initial decision to not address the malfunction can be thought of as a missed opportunity, and subsequent opportunities to address the malfunction – although potentially still attractive – will be comparatively inferior.

The current paper contributes to the inaction inertia research stream in several ways. Prior work assumes a decision maker has already missed a superior opportunity for action. This perspective leaves out the question of how decision makers might get into these situations; a question we directly examine. Similarly, prior work generally ends with the choice to take or avoid action, whereas we extend the analysis through consumption to analyze the impact of these choices on consumption experience. Prior work on inaction inertia has generally relied on hypothetical scenarios. In the current paper, we use incentive compatible consumption experiences where participants' choices impact their experience.

Predictions

We predict that relatively less severe product malfunctions can create a trap for consumers leading to a greater adverse effect on consumption experiences than more severe malfunctions. This trap has two components, the first of which is initial decision deferral. When faced with a smaller malfunction, we predict that consumers are much more likely to initially defer the decision of whether to address the malfunction. This initial deferral can become costly because of the second component of the trap: inaction inertia. Because decision makers evaluate current opportunities for action relative to opportunities that were previously forgone, later opportunities for action, although attractive in an absolute sense, are often not taken because they are relatively less attractive than other opportunities

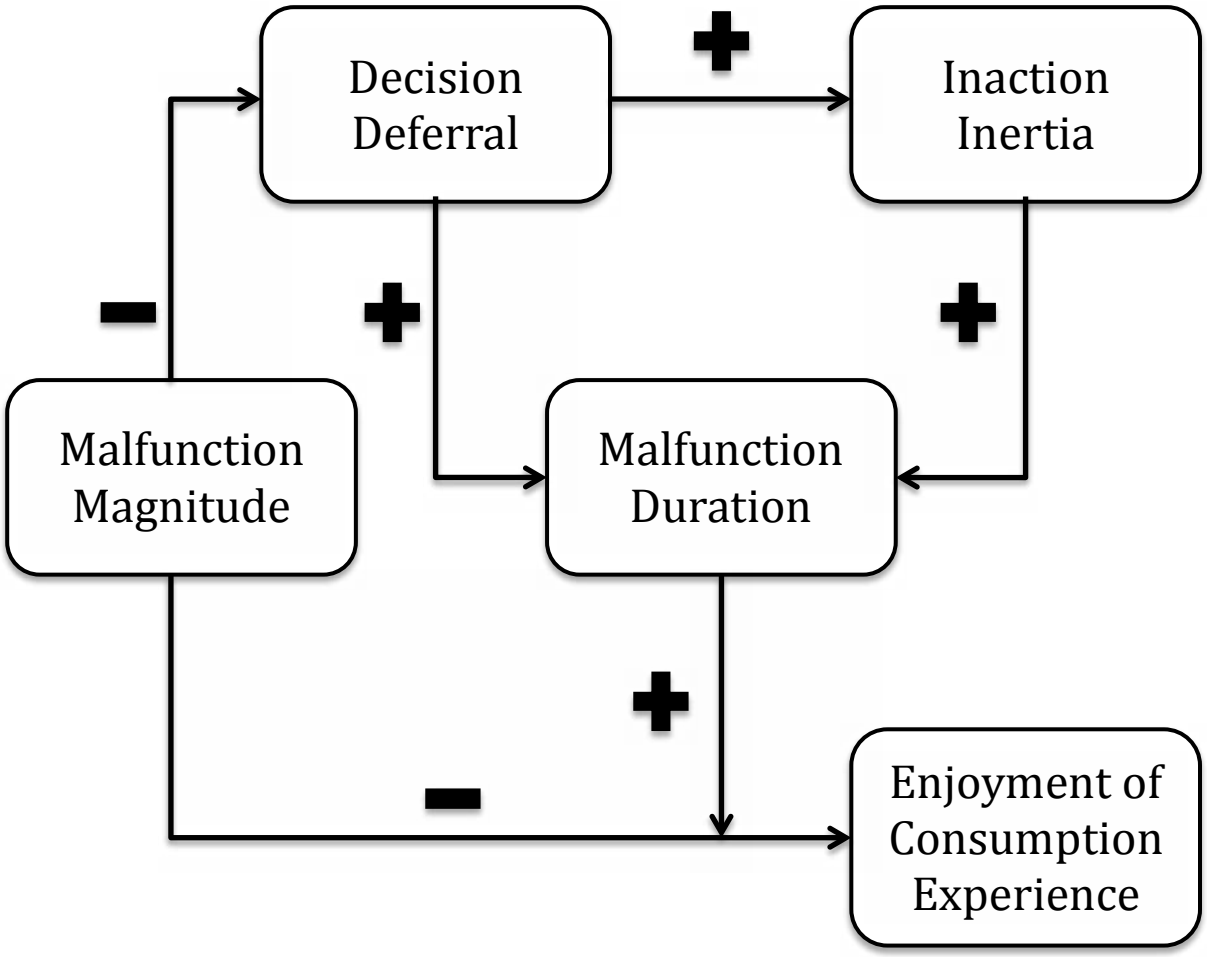
that have already passed. This trap leads consumers to allow smaller malfunctions to persist, leading to a disproportionate impact on consumption experience.

These predictions describe multiple effects of malfunction magnitude on consumption experience (see figure 1-1). Larger malfunctions are a more significant direct detriment to consumption experience because they interfere with enjoyment to a greater degree than smaller malfunctions. However, it is possible for larger malfunctions to indirectly *improve* consumption experience because they reduce the likelihood that the consumer will defer the decision to address the malfunction, which in turn reduces the likelihood that inaction inertia will set in. Both initial decision deferral and inaction inertia prolong the malfunction by reducing the likelihood that it is addressed. Since consumption experience is jointly impacted by the magnitude and duration of the malfunction, a smaller malfunction that persists for a long time may harm consumer enjoyment more than a larger malfunction, which is addressed quickly.

FIGURE 1-1:

MULTIPLE EFFECTS OF MALFUNCTION MAGNITUDE

ON CONSUMPTION EXPERIENCE



EXPERIMENT 1

In this experiment, we sought to establish that it is possible for a smaller malfunction to lead to a worse consumption experience than a larger malfunction and that this effect is driven by differences in the decision to address the malfunction or not, and the timing of this decision. We also look for evidence that this effect could alternatively be driven by procrastination.

Method

Eighty-four participants watched a 10-minute video clip of stand-up comedy and rated their enjoyment of the clip. Participants were randomly assigned to a smaller or larger malfunction condition. In the smaller malfunction condition, short (2-4 second), bursts of audio static occurred two times per minute, while in the larger malfunction condition, bursts of audio static occurred eight times per minute. An intermittent malfunction was selected to reduce the likelihood that participants would adapt to the malfunction and the timing of the bursts of static was jittered so that participants would not know when the next burst would occur. In both conditions participants could address the malfunction (getting rid of the audio static) at any time by pressing a button. However the cost of addressing the malfunction was that the participant would hear no audio at all for one minute after pressing the button. Therefore, the cost is borne during the usage experience, which ensures that retrospective evaluations of the experience

reflect this cost, in cases where the participant chooses to address the malfunction. Prior to the start of the experience, all participants watched a 30 second preview clip with the malfunction present. They then rated how annoying they perceived the malfunction to be, proceeded to the 10-minute video, and made the decision to address the malfunction or not as they saw fit. After watching the entire clip participants rated how much the enjoyed the experience. It was predicted that participants in the smaller malfunction condition would be less likely to repair the malfunction and that this would lead to lower ratings of enjoyment.

Results and Discussion

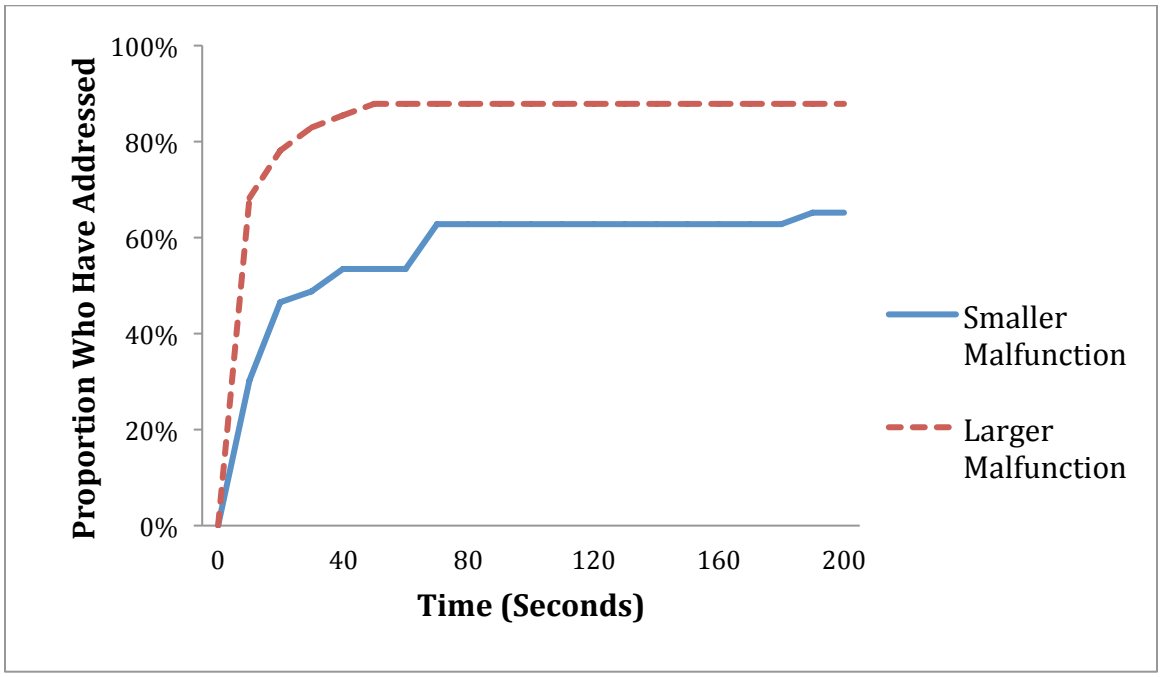
As a manipulation check, participants rated how annoying they found the malfunction to be on a scale from 0 = "not at all annoying" to 10 = "extremely annoying." This measure was obtained following the preview clip but before the 10-minute video. As expected, participants in the smaller malfunction condition found the static to be less disruptive *(M*=8.88) than those in the larger malfunction condition (*M*=9.58; $t(82)=3.03$, $p = .003$). Note that the absolute difference in these numbers is quite small. We believe that this is because the individual bursts of static were equally annoying across conditions, they simply occurred more frequently in the larger malfunction magnitude condition. Therefore, some participants may have been rating how annoying they found each burst of static, reducing the difference between the two conditions.

In line with our framework, and despite the fact that they found the malfunction *less annoying*, participants in the smaller malfunction condition reported enjoying the experience less (M=6.72) than participants in the larger malfunction condition (M=7.98; $t(82)=2.37$, $p = .02$). That is, smaller malfunctions had a disproportionate impact on enjoyment and, therefore, consumers had a less positive experience when the problem was smaller.

As predicted, this effect appears to be driven by how participants respond to the malfunction. Participants' decisions to address the malfunction or not are shown in figure 1-2. Note that the figure only displays the first 200 seconds of the experience as no participants made the decision to address the malfunction after this point. Participants in the smaller malfunction condition were significantly less likely to address the malfunction (65% vs. 88%; Fischer's Exact test, $p < .05$). Consistent with this finding, participants in the smaller malfunction condition experienced the malfunction for a greater length of time (M=216s) than participants in the larger malfunction condition (M=77s; $t(82)=2.78$, $p = .007$). Looking only at participants who chose to address the malfunction at some point during the experience, participants in the smaller problem condition still waited longer to do so (M=26s) than participants in the larger malfunction condition (M=8s; $t(62)=3.48$, $p = .0009$). In sum, despite the fact that participants in the smaller malfunction condition faced an objectively superior experience, they ended up enjoying the experience less. They were more likely to allow the malfunction to persist and therefore, it continued to hamper their enjoyment of the video.

FIGURE 1-2:

TIMING OF ADDRESSING BY MALFUNCTION MAGNITUDE



These results are consistent with the proposed inaction inertia account of the phenomenon. Participants in the smaller malfunction condition appear to wait longer to make a decision, even if they ultimately address the malfunction. Passing up on initial opportunities to address the malfunction influences future choices by making subsequent opportunities appear relatively less attractive.

One alternative account of the phenomenon is that participants in the smaller malfunction condition who never addressed the malfunction or who delayed addressing it were procrastinating. Procrastination occurs when individuals postpone actions that they recognize as normative (for review, see Steel, 2007). Procrastination has been characterized as an inconsistency in

preferences over time (Ariely & Wertenbroch, 2002). For example, in advance of the tax-filing deadline, many taxpayers intend to file their taxes early, but the present never seems like a good time to work on them. Then, after scrambling at the deadline, many regret not starting sooner and resolve to begin earlier next year. This pattern of preference reversal has also been described as a hot-cold empathy gap in that individuals may struggle to imagine how they will feel during the experience, in particular, how difficult it may be to resist temptation, and therefore, hold different attitudes while outside the experience than those held in it (Loewenstein, 1996).

In the context of the current study, participants in both conditions may have recognized that addressing the malfunction would be the optimal thing to do in the long run. However, for those in the smaller malfunction condition, the experience with the malfunction present was still fairly enjoyable and, thus, they might have put off addressing the problem until later because they were enjoying the experience and did not wish to incur the costs of addressing the malfunction in the present. Two measures were taken to test for this alternative explanation. First, after reporting their enjoyment of the video experience, participants were asked to indicate how much they regretted their decision to address or not address the malfunction on a scale from 0 = “not at all” to 10 = “very much.” If participants in the smaller malfunction condition were procrastinating, they should experience significantly more regret. This was not the case as neither condition reported much regret at all: participants in the smaller malfunction

condition (M=0.70) did not report any more regret than participants in the larger malfunction condition (M=0.32; t(82)=1.7, NS).

If procrastination was driving participants' failure to repair in the smaller malfunction condition we would also expect that participants would report that they plan to do things differently if they had the chance again. To test this, we asked participants if they would address the malfunction if they were in a similar situation in the future. The majority of participants who chose not to address the problem in the smaller malfunction condition (60%) reported that they would stand by their decision and not address the malfunction if they were making the choice again. These measures indicate that participants who chose not to address the smaller malfunction did not experience a preference reversal, which we would expect if procrastination was the underlying cause of their failure to address the malfunction. Participants did not view addressing the malfunction as a normative action post experience. We propose that because they did not consider addressing the malfunction until later in the experience, they devalued the opportunities they considered, and subsequently could not recall a worthwhile opportunity to address the malfunction.

The intensity with which people experience enjoyment or discomfort tends to decline over time through a process called hedonic adaptation (Frederick & Loewenstein, 1999). Research on consumption experience has found that disruptions, even aversive ones, can increase enjoyment of a pleasurable experience because the interruptions disrupt hedonic adaptation (Nelson, Meyvis, & Galak, 2009; Nelson & Meyvis, 2008). Is it possible that participants in the

larger malfunction condition enjoyed the video more because addressing the malfunction involved going without audio for one minute, which disrupted their adaptation to the enjoyment of the video? Such an explanation seems highly unlikely given the timing of the interruption. For a single interruption to significantly disrupt hedonic adaptation, it would have to follow a significant amount of adaptation. However, in this experiment, those who addressed the malfunction generally did so very early in the experience. Roughly two thirds addressed the malfunction within the first 10 seconds. Therefore, it seems implausible that disrupted hedonic adaptation is behind the higher enjoyment in the larger malfunction condition.

EXPERIMENT 2

In experiment 2, we seek to rule out alternative explanations for the disproportionate impact of smaller malfunctions based on affective forecasting errors and contrast effects. A secondary objective is to provide a conceptual replication of the ironic effect of product malfunction severity in a different consumption domain, and in particular, a domain that involves continuous interaction between the consumer and the product.

Experiment 1 provided evidence consistent with an inaction trap account where consumers first defer the decision of whether to address smaller product malfunctions and then devalue subsequent opportunities to address the malfunction because they are relatively less attractive than those that were

initially foregone. However, it is also possible that consumers endure smaller malfunctions for longer periods of time because they underestimate the impact smaller malfunctions will have on enjoyment. In deciding whether to address a problem the consumer must first make a prediction about the impact the problem will have on enjoyment and compare this to the expected cost of addressing the problem. If there is a systematic error with the prediction, then this could offer an alternative explanation for the disproportionate impact of smaller malfunctions.

A substantial amount of research in psychology has examined how individuals make predictions about their future feelings. This process of affective forecasting involves mentally simulating future conditions and anticipating how these conditions will make one feel (Wilson & Gilbert, 2003). It has been suggested that all decisions involve such predictions (March, 1978). These forecasts are relevant to decisions about addressing product malfunctions because consumers presumably address malfunctions when they forecast that they would be happier with the costs and benefits of addressing malfunctions than without. Prior work on affective forecasting has looked at predicted and experienced emotional states following various future events such as the outcome of a football game (Wilson, Wheatley, Meyers, Gilbert, & Axsom, 2000), a tenure decision (Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998), or the breakup of a romantic relationship (Eastwick, Finkel, Krishnamurti, & Loewenstein, 2008). In general, this research has found evidence of a consistent impact bias, whereby individuals overestimate the continued impact a specific event will have on their future emotional experience (Gilbert, Driver-Linn, & Wilson, 2002). However,

some situations can produce the opposite effect (E. W. Dunn, Biesanz, Human, & Finn, 2007).

If consumers' forecasts related to product malfunctions also suffer from the impact bias, these forecasts should be overly pessimistic about how much poorer the experience will be if the malfunction goes unaddressed and overly optimistic about how much better the experience will be if the malfunction is addressed. Such forecasts would work against the proposed effect by encouraging consumers to address even smaller malfunctions. However, there could be some aspect of these decisions (e.g., the small performance improvement that addressing a smaller malfunction would bring) that could lead to a forecasting error in the opposite direction. Therefore, it is possible that affective forecasting errors could play a role in the disproportionate impact of smaller malfunctions. Moreover, recent research has demonstrated that, because forecasts are often misremembered, forecasting errors may persist indefinitely (Meyvis, Ratner, & Levav, 2010).

In experiment 2, we examine the possibility that, when faced with relatively smaller malfunctions, consumers underestimate how much more they would enjoy using the product if the malfunction was addressed. To test this possibility, experiment 2 contrasts forecasts of enjoyment and experienced enjoyment.

Pre-test

Experiment 2 used a different consumption experience and therefore it was necessary to first demonstrate that an inaction trap existed in this domain with a particular set of parameters. To achieve this, a pre-test was conducted.

Pre-test Method

Sixty members of a volunteer panel completed the pre-test along with other short studies in exchange for $10. In this pre-test participants played a well known computer game called “Snake” in which each participant directed a snake around the screen using the arrow keys and attempted to eat as many apples as possible without crashing into the walls or the snake's own body. As more apples are consumed the snake grows longer and moves faster. The experience lasted 5 minutes and participants could play as many rounds of the game as time allowed. Each participant was randomly assigned to either the smaller or larger malfunction condition. Participants in the smaller malfunction condition experienced random moves (their snake would randomly turn left or right relative to the direction of travel) 3 times per minute. Participants in the larger malfunction condition experienced these same random moves 20 times per minute. All participants could choose to address the problem (getting rid of the random moves) at any time during gameplay by pressing a button. In all

conditions, the cost of addressing the problem was that the snake would move very slowly for 30 seconds.

Prior to the 5 minutes of gameplay all participants first played a 30 second practice round with no malfunction present to allow them to familiarize themselves with the game and the controls. Next participants played a 30 second preview of the game with the malfunction present and rated how annoying they found the malfunction to be. Participants then saw a preview of how slow the game would be for 1 minute if they chose to address the malfunction. Finally, participants played the game for 5 minutes, addressing or not addressing the problem as they saw fit.

Pre-test Results and Discussion

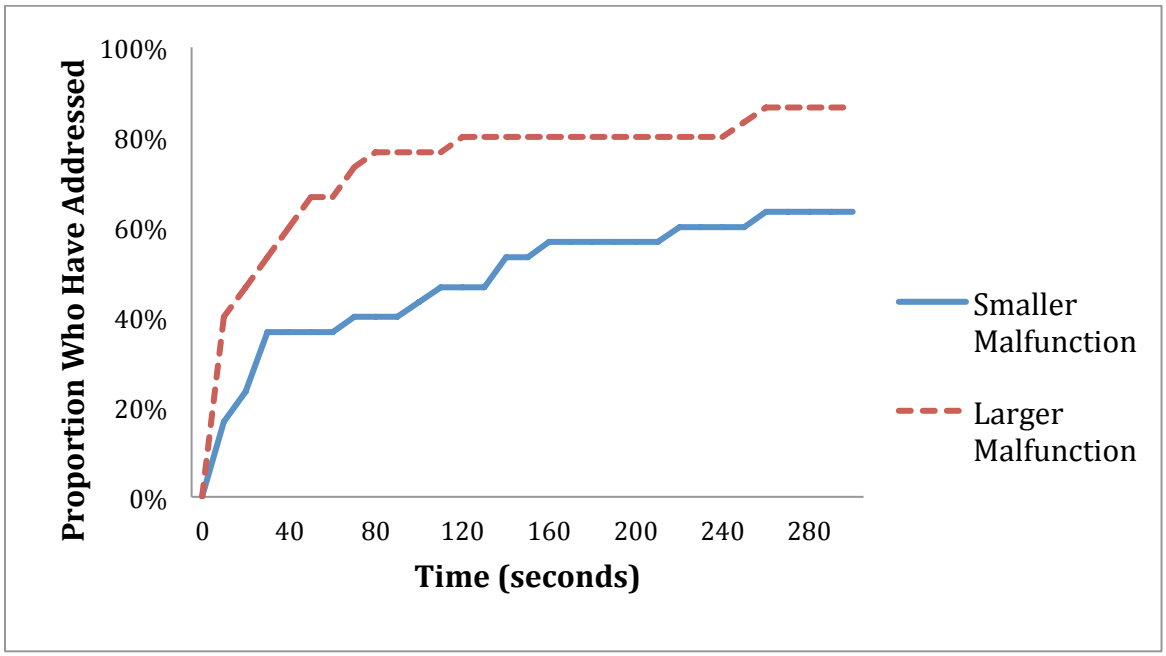
A manipulation check confirmed that participants in the smaller malfunction condition rated the preview of the malfunction as significantly less annoying (M=4.90) than participants in the larger malfunction condition (M=6.93; $t(58)=3.03$, $p<.01$). In line with our framework, although they faced a *less annoying* malfunction, participants in the smaller malfunction condition reported *lower enjoyment* (M=5.10) than participants in the larger malfunction condition (M=6.53; $t(58)=2.08$, $p<.05$).

Across the conditions, participants responded to the malfunction differently. Figure 1-3 illustrates participants' decisions to address the malfunction. Consistent with our hypothesis, participants in the smaller

malfunction condition were significantly less likely to address the malfunction (63.3% vs. 86.7%; Fischer's Exact test, $p < .05$). Similarly, participants in the smaller malfunction condition enjoyed the game in a fixed state (i.e., with the malfunction addressed) for a shorter period of time *(M*=127s*)* than participants in the larger malfunction condition (*M*=197s; *t*(58)=2.52, $p < .05$).

FIGURE 1-3:

TIMING OF ADDRESSING BY MALFUNCTION MAGNITUDE



As in experiment 1, participants in the smaller malfunction condition did not show signs of procrastination. Their reported regret (*M*=2.07) was no different from that reported by participants in the larger malfunction condition (*M*=2.47; *t*(58)=0.54, NS). Participants in the smaller malfunction condition who chose not to address the problem were also unlikely to respond differently in a

similar situation. Indeed, all participants in the smaller malfunction condition who chose not to address the malfunction reported that they would make the same choice again.

Method

Having established in the pre-test that an inaction trap exists with these parameters, we proceeded with the main experiment. However, in this experiment, participants did not make any decisions about whether to address the malfunction of the game. Instead, they either forecast how much they would enjoy the experience if they addressed or did not address the malfunction, or they actually experienced the game with their assigned condition determining whether the malfunction had been addressed or not. The experiment used a 2 (role: forecaster, experiencer) x 2 (malfunction magnitude: larger, smaller) x 2 (malfunction addressed: yes, no) partial between-subjects design in which forecasters made predictions for both having the malfunction addressed and not having it addressed, whereas experiencers were assigned to one of these two states. Participants were 213 undergraduate students who completed the study in exchange for partial course credit.

To illustrate, participants in the experiencer/larger-malfunction/addressed condition played the game as if they chose to address the malfunction at the beginning of gameplay. Therefore, the game was slow with the larger malfunction present for the first 30 seconds, and after that the game speed was normal and the

problem was gone. By contrast, participants assigned to the experiencer/larger-malfunction/not-addressed condition simply played the game for 5 minutes with the larger malfunction present for the entire time.

Our key prediction was that, across problem magnitudes, participants would both forecast and experience greater enjoyment when the malfunction was addressed rather than unaddressed. This is in contrast with an affective forecasting account, which would suggest an interaction where, although experiencers always report greater enjoyment when the malfunction is addressed, forecasters only predict greater enjoyment for addressing the larger malfunction.

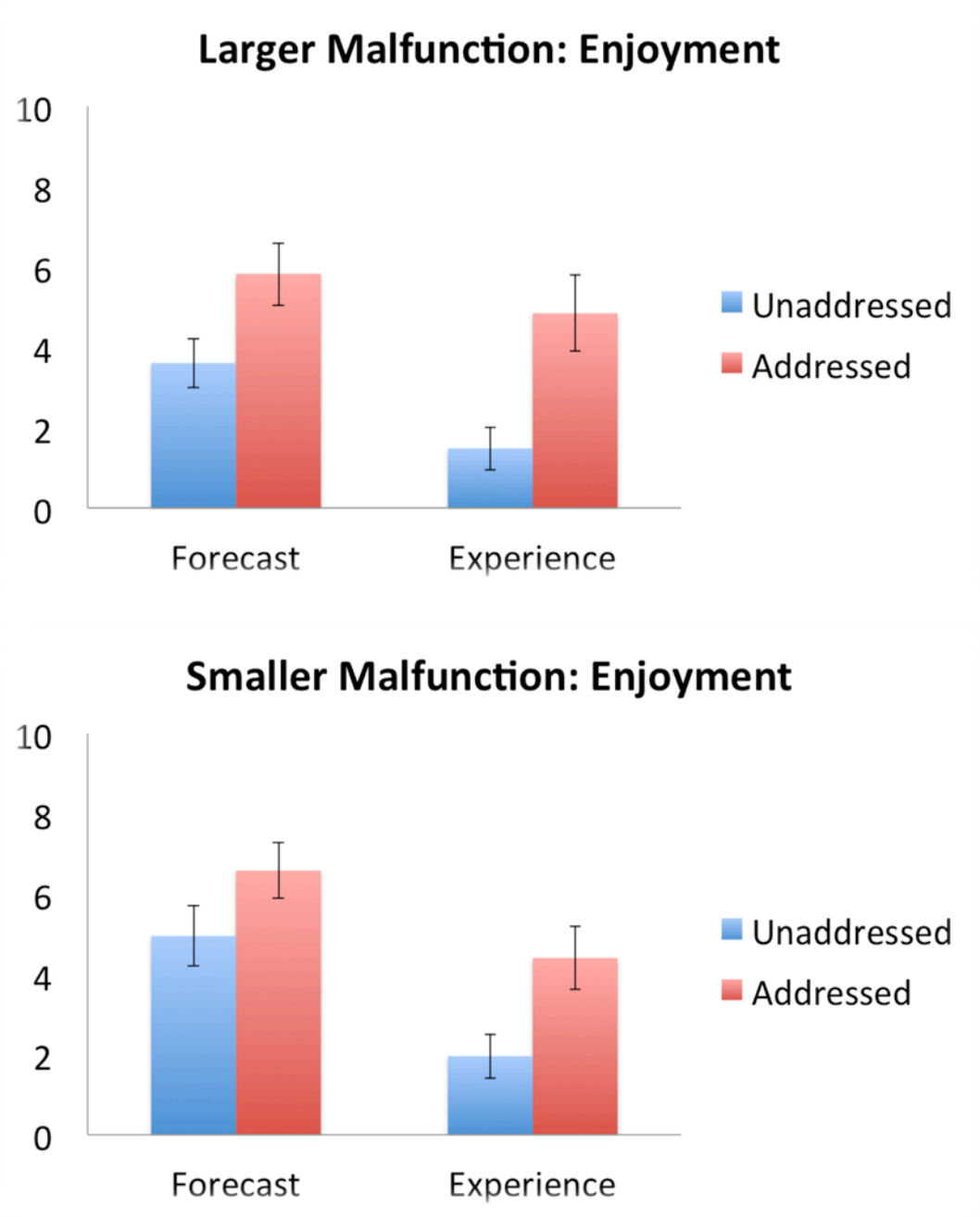
This design also allows us to test a number of other alternative explanations. The first of these is the contrast between the experience with the malfunction present and the experience after the malfunction has been addressed. It is possible that experiencing and addressing a larger malfunction leads to more positive evaluations than experiencing and addressing a smaller malfunction because there is more contrast between the experience with the larger malfunction present and the addressed end state. In other words, the experience at the end feels more enjoyable, because it is compared to something much worse. In this experiment we can compare the experiences of those who start with the larger malfunction and have it addressed with those who start with the smaller malfunction and have it addressed. If contrast is driving the effect, we should see greater enjoyment in the larger malfunction condition.

Results and Discussion

Figure 1-4 shows the enjoyment ratings provided by participants in each condition. A three-way analysis of variance yielded a main effect for rating type, such that forecasters predicted higher enjoyment (M=5.22) than experiencers reported (M=3.21; $F(1, 205)=26.42$, $p < .001$). The main effect of addressing the malfunction was also significant. Participants reported or forecasted higher enjoyment when the malfunction was addressed (M=5.42) compared to when the malfunction was not addressed (M=3.01; $F(1, 205)=37.76$, $p < .001$). Interestingly, the effect of malfunction magnitude on enjoyment was not significant. Participants faced with a larger malfunction enjoyed the experience or predicted enjoyment (M=3.95) as great as participants faced with a smaller malfunction (M=4.52; $F(1, 205)=2.11$, NS). The 3-way interaction was not significant $F(1, 205)=0.04$, $p > .8$ nor were any of the two-way interactions (all p values >.15). Critically, when faced with a smaller product malfunction, forecasters predicted that enjoyment would be greater if the malfunction was addressed (M=6.58) than if it remained unaddressed (M=4.96; $t(50)=2.02$, $p < .05$).

FIGURE 1-4:

ENJOYMENT RATINGS FOR EXPERIENCERS AND FORECASTERS BY MALFUNCTION MAGNITUDE



These results do not support forecasting errors as an account of the observed effect. Although forecasters were overly optimistic about how much they would enjoy playing the game, this bias was consistent across malfunction magnitudes and whether the malfunction was addressed or not. Forecasters accurately predicted that, regardless of malfunction magnitude, addressing the malfunction would lead to a more enjoyable experience. Forecasters appeared to show the typical impact bias for addressing the malfunction in that they overestimated how much they would enjoy the experience with the problem addressed. However, no evidence of an impact bias was found for allowing the malfunction to persist as forecasters again overestimated enjoyment when the problem was unaddressed, whereas an impact bias would predict underestimation.

The results are also inconsistent with the idea that participants in the smaller malfunction conditions in experiments 1 and the experiment 2 pre-test had more negative experiences because they were constantly thinking about whether to address the malfunction or not, and that the act of continuously evaluating the options lowered their enjoyment. The results from experiment 2 demonstrate that even when participants have no choice in the matter, playing the game with the smaller malfunction present is significantly less enjoyable (M=2.0) than playing the game with the malfunction addressed (M=4.4; $t(49)=3.21$, $p = 0.002$). Therefore, it is not the dilemma of whether or not to address the problem, but instead the presence of the malfunction, that leads to a less enjoyable experience.

Both experiencers and forecasters reported higher enjoyment in the smaller malfunction conditions when the malfunction is addressed. This result

suggests two things. First, the normative choice is to address the malfunction even in the smaller malfunction conditions. Second, participants seem to be aware of this when asked to forecast. This is consistent with the proposed mechanism because participants who face a smaller malfunction do not seem to be actively forecasting their enjoyment. Instead, they opt to put up with the problem temporarily, failing to anticipate that their initial inaction will make future actions to address the malfunction increasingly unlikely.

The forecaster-vs.-experiencer study also helps address an alternative account of the phenomenon that relies on the contrast between the experience prior to addressing the malfunction and after addressing it. One reason why participants in the larger malfunction conditions of experiments 1 and the experiment 2 pre-test could have ended up enjoying the experience more is because when they addressed the malfunction, the change in the quality of the experience was more dramatic. Therefore, their experience following addressing the malfunction might have seemed more enjoyable because it was compared to the experience with the larger malfunction present, which was more unpleasant. However, in experiment 2, participants in experiencer/malfunction-addressed conditions did not differ in their enjoyment. Those who experienced the larger malfunction and then had it addressed reported the same enjoyment (M=4.9) as participants who experienced the smaller malfunction and then had it addressed (M=4.4; $t(52)$=0.47, NS). If the prior results were driven by a contrast, participants in the larger malfunction condition should have enjoyed the experience more than those in the smaller malfunction condition. Since we

observed no difference in reported enjoyment, the contrast effect account is not supported.

EXPERIMENT 3

The proposed inaction trap mechanism is based on the theory that consumers initially defer the decision to address smaller malfunctions and then devalue subsequent opportunities for action, as they are relatively less attractive than opportunities that were initially forgone. If this is true, then it should be possible to remove the inaction trap by having the malfunction initially persist, without the consumer having an opportunity to address it. In experiment 3, we test this conjecture. A secondary objective of this experiment was to collect more continuous measures of enjoyment, in part, to confirm that our results are not driven by known biases of retrospective evaluations such as the peak-end rule, in which the extreme points and endpoints of an experience are given extra weight (Fredrickson & Kahneman, 1993; Varey & Kahneman, 1992).

We ran an experiment in which participants had a consumption experience where a larger or smaller malfunction was present and the opportunity to address the malfunction was either immediately and continuously available, or the opportunity was delayed, and not present for the first part of the experience. Our prediction was that when the opportunity to address was immediately and continuously available, participants in the larger malfunction condition would be more likely to address the malfunction and address it quickly, leading to higher

enjoyment ratings. While those in the smaller malfunction condition would be more likely to initially defer the decision to act, and would devalue subsequent opportunities for action because they were less attractive than those that were missed earlier in the experience. In contrast, when the opportunity to address the malfunction was delayed, we predicted that there would be no reason to devalue the opportunities to address that exist later in the experience and therefore, there would be no difference in the likelihood of addressing the malfunction, or enjoyment of the experience, between the larger and smaller malfunction conditions.

This experiment also allows a more direct test of the inaction trap theory in which it produces dramatically different predictions compared to intertemporal discounting (Frederick, Loewenstein, & O'Donoghue, 2002), or consumer lock-in (Zauberman, 2003). Intertemporal discounting would predict that consumers might not address a smaller malfunction given that the future benefits are discounted relative to the present costs. Similarly, consumer lock-in shows that consumers might initially prefer an option that requires less effort, and subsequently be deterred by the cost of switching. However these theories offer no reason to expect that consumers would be *more* likely to address a smaller malfunction when the opportunity to address it is initially unavailable.

Method

One hundred and sixty-one Mechanical Turk users completed the study online, in exchange for a $1.00 payment. The study used a 2(malfunction: larger, smaller) x 2(opportunity to address: immediate, delayed) between subjects design. The consumption experience used in this study was listening to music for 10 minutes. After some basic instructions and a reading check, participants proceeded to the listening experience, where they had control of an on-screen music player and could choose from 12 different songs to listen to. Participants in the smaller malfunction conditions heard one-second bursts of audio static every 32 seconds while those in the larger malfunction condition heard four-second bursts of audio static every 32 seconds. Those in the immediate opportunity to address conditions could get rid of all static bursts at any time during the experience while those in the delayed opportunity conditions only had the ability to get rid of the static bursts starting 150 seconds into the 10-minute experience. In all conditions the cost of addressing the malfunction was to complete a data entry task, which required the participant to enter 20 specific numbers, each followed by a mouse click. Every 30, participants were asked to rate how much they were enjoying the experience. The first rating was obtained prior to the onset of the first static burst. Participants also provided a retrospective enjoyment rating after the experience was over.

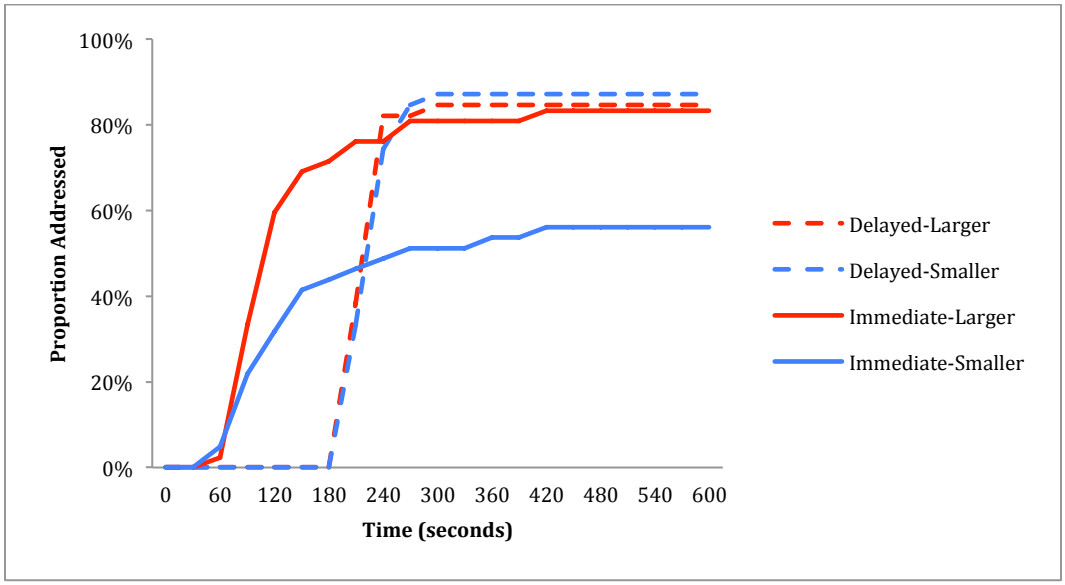
Results and Discussion

A two-way analysis of variance yielded a significant interaction in retrospective enjoyment ratings $F(1, 157)=6.33$, $p = .01$. In the immediate opportunity conditions, enjoyment was significantly higher when the malfunction was larger ($M=8.38$) than when it was smaller ($M=7.51$; $t(81)=2.15$, $p = .03$). However, when the opportunity to address was delayed there was no difference in enjoyment between the larger malfunction condition ($M=8.08$) and the smaller malfunction condition ($M=8.51$; $t(76)=1.37$, $p = .18$ NS).

The enjoyment ratings are consistent with the data on whether participants addressed the malfunction. Figure 1-5 shows the proportion of participants who addressed the malfunction by condition, across the 10-minute experience. Analyzing whether participants addressed the malfunction, using a binomial logistic regression revealed a marginally significant two way interaction between malfunction magnitude and opportunity to address: $\beta = -1.58$, $z(157) = 1.89$, $p = .059$. In the immediate opportunity conditions, more participants addressed the larger malfunction (83%) than the smaller malfunction (56%; Fischer's Exact test, $p=.009$). However, in the delayed opportunity conditions, there was no difference in the proportion of participants who addressed the larger malfunction (85%) and the smaller malfunction (87%; Fischer's Exact test, $p>.99$ NS).

FIGURE 1-5:

TIMING OF ADDRESSING BY CONDITION



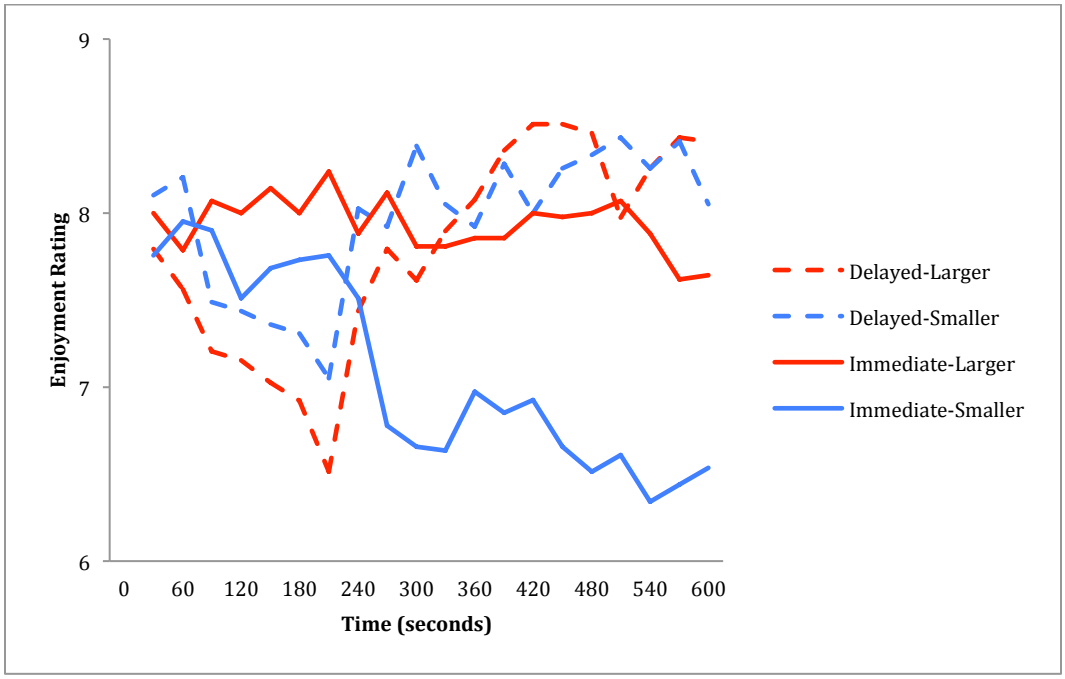
Delaying the opportunity to address the malfunction gave participants time to consider the impact the smaller malfunction was having on their enjoyment without simultaneously causing them to miss superior opportunities for action. When the opportunity became available, they were not held back from taking it by the inertia of previously foregone opportunities. Likewise, when the opportunity arose, there was no need to defer the decision of whether to address the malfunction as participants had already had ample opportunity to consider the impact of the malfunction on their enjoyment.

Figure 1-6 shows the enjoyment ratings by condition across the 10-minute experience. At the time of the first enjoyment rating, before the malfunction appeared, the 2-way interaction was not significant $F(1, 157)=0.83$, $p = .36$ NS, nor were either of the main effects (all p values >.8). In the delayed opportunity

conditions, enjoyment decreases sharply and steadily up until approximately one minute after participants gain the opportunity to address the malfunction. This lines up very well with the data on when participants in those conditions completed the data entry task, removing future bursts of static. Following the addressing of the malfunction by the majority of participants in the delayed opportunity conditions, enjoyment peaks and remains high for the duration of the experience. The only condition exhibiting a downward trend over the experience is the smaller malfunction/immediate opportunity to address condition. In that condition, the lowest proportion of participants addressed the malfunction and therefore it continued to interfere with their enjoyment for the duration of the consumption experience.

FIGURE 1-6:

ENJOYMENT BY CONDITION AND TIME



EXPERIMENT 4

In Experiment 3, the inaction trap was avoided by preventing participants from missing earlier, superior opportunities to address the malfunction. In experiment 4 we attempt to show that it is possible to overcome an inaction trap even when initial opportunities have already been missed. The inertia is caused by an unfavorable comparison between the current opportunity for action and those opportunities that were previously forgone. Prior research has demonstrated that inaction inertia hinges on the similarity between the previously foregone opportunities and those that are subsequently considered (van Putten et al., 2007).

Specifically, Van Putten and colleagues demonstrate that inaction inertia is reduced when the initial opportunity is ambiguously described, when the initial opportunity requires an extra action to obtain, or when the benefit of the current and initial opportunity differs substantially. We extend this and propose that when the initial opportunity requires a different (but no more or less effortful) action to obtain, the comparability of the two opportunities, and therefore inaction inertia, will be reduced.

This experiment used the same consumption experience as experiment 3. All participants experienced a smaller or larger malfunction and had the opportunity to address the malfunction at any point during the experience. For half of the participants the means by which the malfunction could be addressed was the same throughout the experience, while for the other half of the participants, the means of addressing the malfunction changed part way through the experience. We predicted that, when the means of addressing the malfunction did not change, participants in the larger malfunction condition would be more likely to address the malfunction and address it quickly, leading to higher enjoyment ratings. While those in the smaller malfunction condition would be more likely to initially defer the decision to act and would devalue subsequent opportunities for action because they were less attractive than those that were missed earlier in the experience. In contrast, when the means by which the malfunction could be addressed changed, we predicted that the opportunities to address that exist later in the experience would be less comparable to those that were initially forgone. This reduced comparability would disrupt the devaluation

of later opportunities that would otherwise occur. Without that devaluation, we predicted that the proportion of participants who addressed the malfunction in the smaller and larger malfunction would not differ nor would there be a difference in enjoyment.

Finally, we added a measure of maximizing tendency to this experiment (Nenkov, Morrin, Schwartz, Ward, & Hulland, 2008; Schwartz et al., 2002). Maximizing refers to attempting to select the very best alternative and is contrasted against satisficing, or settling for an option that is good enough (Simon, 1955).We hypothesized that maximizers, who seek to make the most of any situation, would be more likely to make a decision early in the experience rather than deferring the choice. This should make them less susceptible to a change in the means of addressing the malfunction later in the experience.

Method

One hundred and ninety Mechanical Turk users completed the study online, in exchange for a $1.00 payment. The study used a 2(malfunction: larger, smaller) x 2(means of addressing: constant, changed) between subjects design. The consumption experience, enjoyment ratings, and malfunction manipulations were the same as in experiment 3. In all conditions the cost of addressing the malfunction was to complete a data entry task, which required the participant to enter 20 specific characters, each followed by a mouse click. However, for this experiment, a second version of the task was created which involved entering

letters into a grid rather than numbers into a single box. These two tasks were pre-tested to confirm that they were equally difficult and equally preferred, but still perceived as different. In all conditions participants were randomly assigned to start with one of the two means. In the changed means conditions participants were informed that the task required to address the malfunction had changed 150 seconds into the ten-minute experience, assuming they had not addressed the malfunction prior to that point.

Following the consumption experience, participants provided a retrospective rating of enjoyment, as in Experiment 3, and then completed a short form of the maximizing tendency scale (Nenkov et al., 2008).

Results and Discussion

Figure 1-7 shows the retrospective enjoyment ratings provided by participants in each condition. A two-way analysis of variance yielded a significant interaction in retrospective enjoyment ratings $F(1, 186)=11.79$, $p = .0007$. When the means of addressing the malfunction was constant, enjoyment was significantly higher when the malfunction was larger ($M=8.49$) than when it was smaller ($M=6.91$; $t(91)=4.20$, $p = .00006$). However, when the means of addressing the malfunction changed partway through the experience there was no difference in enjoyment between the larger malfunction condition ($M=8.51$) and the smaller malfunction condition ($M=8.60$; $t(95)=0.29$, $p = .77$ NS).

FIGURE 1-7:

RETROSPECTIVE ENJOYMENT BY CONDITION

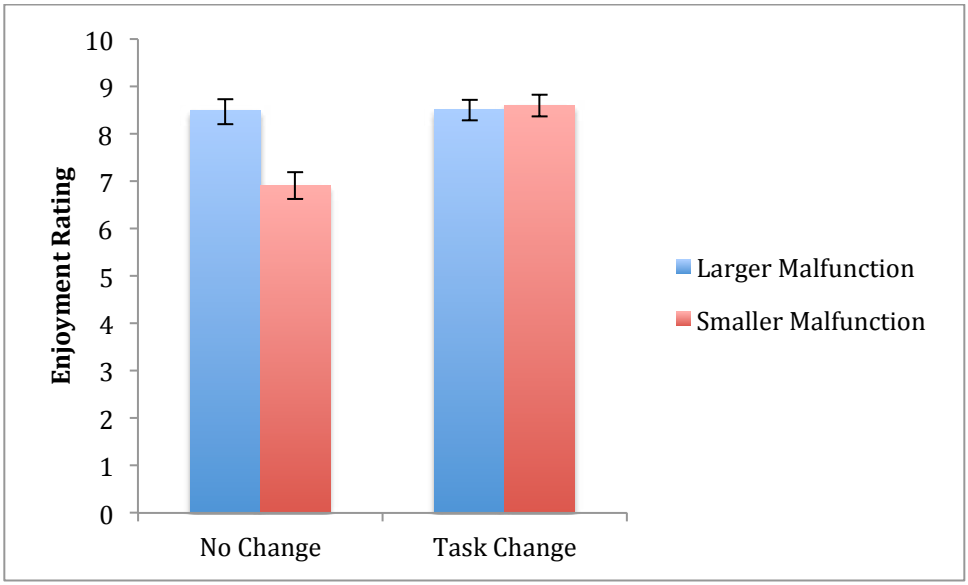
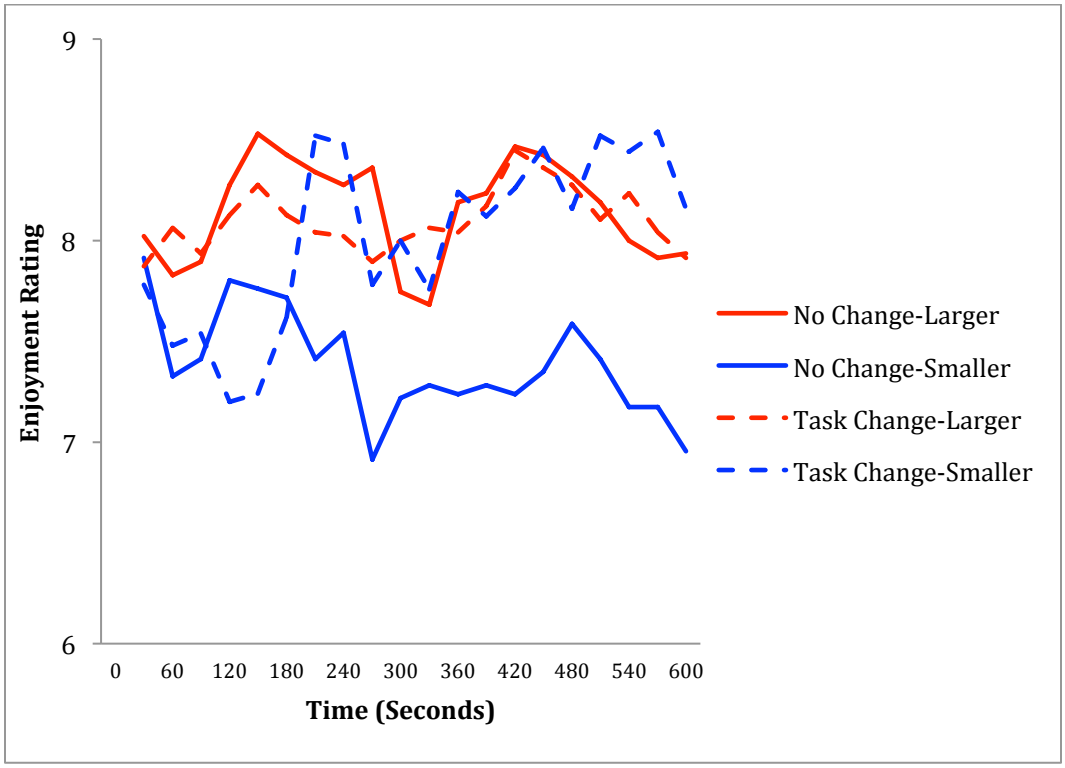


Figure 1-8 shows the enjoyment ratings by condition across the 10-minute experience. At the time of the first enjoyment rating, before the malfunction appeared, the 2-way interaction was not significant $F(1, 157)=0.83$, $p = .36$ NS, nor were either of the main effects (all p values >.8). In the delayed opportunity conditions, enjoyment decreases sharply and steadily up until approximately one minute after participants gain the opportunity to address the malfunction. This is consistent with the data on when participants in those conditions completed the data entry task, removing future bursts of static. Following the addressing of the malfunction by the majority of participants in the delayed opportunity conditions, enjoyment peaks and remains high for the duration of the experience.

FIGURE 1-8:

ENJOYMENT BY CONDITION AND TIME



The enjoyment ratings are consistent with the data on whether participants addressed the malfunction. In analyzing whether participants addressed the malfunction, we used a binomial logistic regression and included our two manipulated variables as well as the maximizing tendency score. The three way interaction among these variables was not significant (β = -0.073, $z(182) = 1.09$, p = .28 NS). However, there was a significant interaction between maximizing tendency and whether the means of addressing the malfunction changed (β = -0.07, $z(184) = 2.07$, p = .04). There was also a marginally significant interaction between malfunction magnitude and whether the means of addressing changed:

$\beta = 1.48$, $z(184) = 1.89$, $p = .06$. For illustrative purposes, we present a graph that uses a median split of the maximizing score to illustrate the interaction between maximizing score and task change on the decision to address the malfunction in Figure 1-9. As the graph illustrates, for participants who scored higher on the maximizing scale, the task change intervention had very little effect on whether participants chose to address the malfunction. When the task did not change 67% of participants addressed the malfunction and when it did change, 74% addressed it. By contrast, for participants who scored lower on the maximizing scale, the task change intervention had a dramatic effect. Only 66% addressed the malfunction when the task did not change, but 91% addressed the malfunction when the task did change. These results indicate that people who show a stronger maximizing tendency are less likely to benefit from an intervention attempting to free them from an inaction trap. This is consistent with our prediction that maximizers are more likely to make a decision early in the experience, rather than deferring the choice. Further evidence of this is found in the data on when participants addressed the smaller malfunction. Collapsing across task change condition, those high in maximizing tendency were much more likely to address the smaller malfunction before the task change occurred, 150 seconds into the experience (57%), than those who were low in maximizing tendency (26%; Fischer's Exact test, $p = .004$). The task change manipulation did not substantially affect those high in maximizing tendency because they had already acted or decided not to act.

FIGURE 1-9:

PROPORTION WHO ADDRESSED THE MALFUNCTION BY MAXIMIZING TENDENCY AND TASK CHANGE

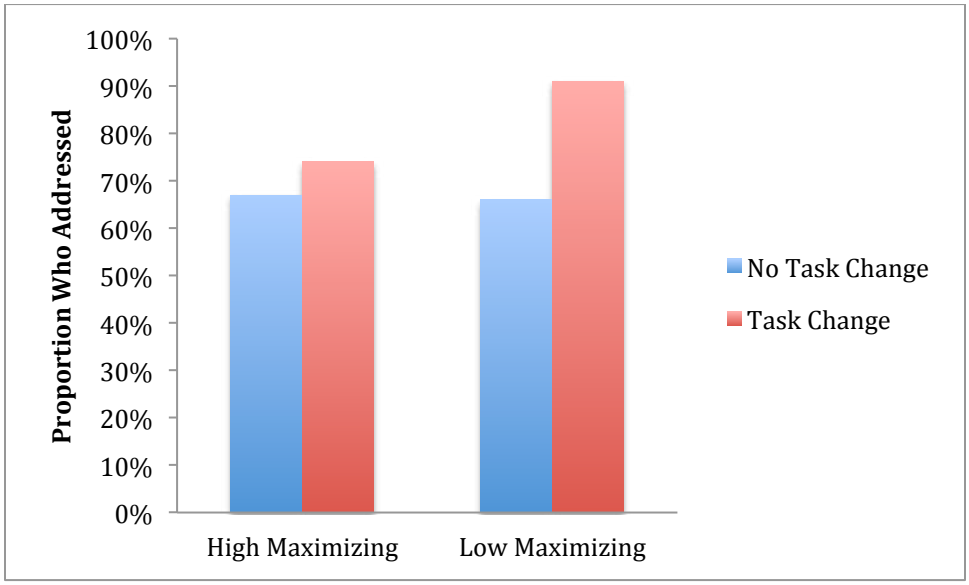
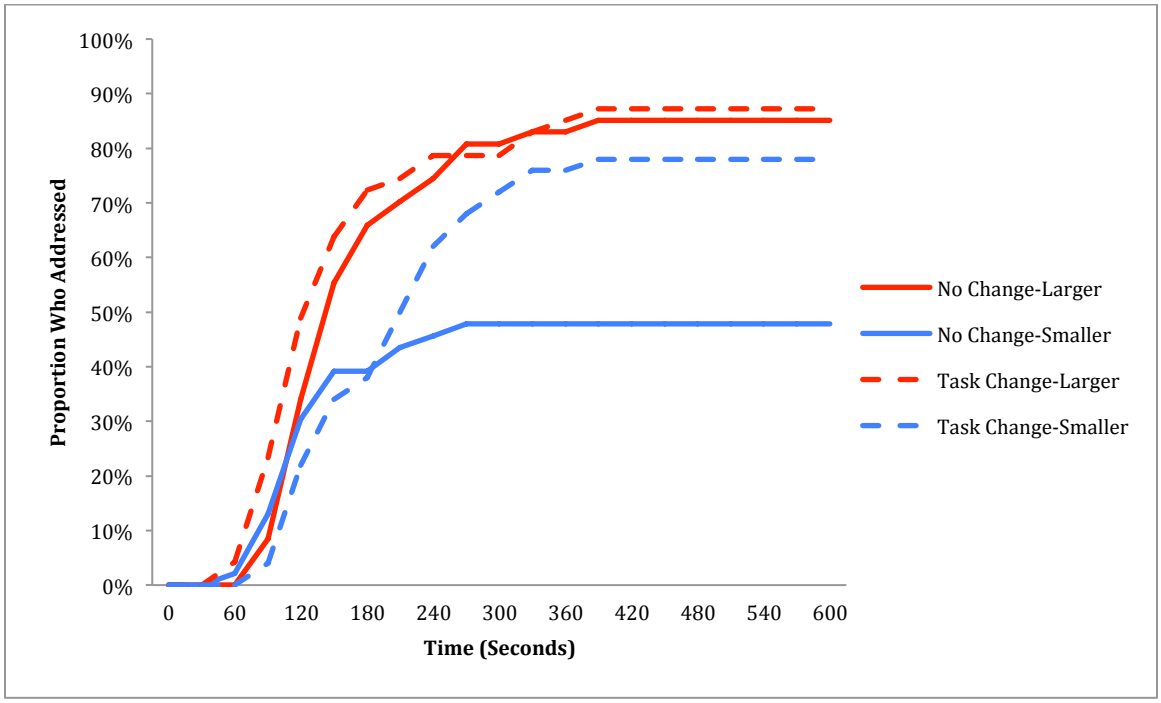


Figure 1-10 shows the proportion of participants who had addressed the malfunction throughout the 10-minute experience by condition. The interaction here is driven by the fact that when the means of addressing the malfunction does not change, significantly more participants in the larger malfunction condition choose to address the malfunction (85%) than in the smaller malfunction condition (48%; Fischer's Exact test, p=.0002). However, in the conditions where the means of addressing the malfunction changed, there was not a significant difference in the proportion of participants who address the malfunction in the larger (87%) and smaller malfunction condition (78%; Fischer's Exact test, p=.17 NS).

FIGURE 1-10:

TIMING OF ADDRESSING BY CONDITION



As with previous experiments, we replicate the expected inaction trap when the means of addressing the malfunction is the same for the entire experience. Participants were significantly more likely to address the malfunction when it was larger rather than smaller. As predicted, the means change manipulation frees participants from the trap by reducing the comparability of the later opportunity for action to the opportunity foregone earlier in the experience. Roughly half of the participants in the smaller malfunction condition who had not yet addressed the malfunction at the time the means changed, 150 seconds into the experience, subsequently did decide to address the malfunction. Note that this

point in the experience is where the two smaller malfunction condition lines diverge.

Changing the means of addressing the malfunction partway through the experience freed participants from the inaction inertia that might otherwise have kept them from addressing the malfunction. Although the new task was functionally equivalent, it was less comparable to the previously available means, reducing the devaluation of the current opportunity.

Emotional Immune Response

Prior work on affective experience has shown that psychological processes that ameliorate emotional distress are only triggered when a certain threshold of distress is reached (Gilbert, Lieberman, Morewedge, & Wilson, 2004). Therefore, a more minor insult may feel more painful, or feel painful for a longer period, because psychological defenses are not activated. Gilbert and colleagues even use the idea that smaller deficiencies in physical products might cause more harm in the long run as a metaphor for their model of emotional distress (Gilbert et al., 2004). While we were partly inspired by this prior work, the results of experiments 3 and 4 are clearly inconsistent with an emotional immune response explanation. Such a model can explain the increased likelihood of addressing larger malfunctions, but cannot account for the increased likelihood of addressing smaller malfunctions when there is no initial opportunity to do so or when the means of doing so changes partway through the experience. It's only by considering the relationship between later opportunities for action and those that

are initially foregone that we can make sense of the patterns of behavior observed in these experiments.

GENERAL DISCUSSION

This research identifies a peculiar phenomenon, the consumer inaction trap, which can lead consumers to suffer more from relatively less severe issues because of the way consumers make decisions to address or endure these problems. Minor product malfunctions are particularly likely to produce these traps because consumers often defer the decision of whether to address these malfunctions and find subsequent opportunities to address the malfunctions relatively less attractive. It seems probable that a host of other decisions are likely to produce similar inaction traps. The essential elements being a tendency to defer the initial decision and the availability of opportunities for action in the future that are comparable, but inferior to, those that are initially forgone. Many decisions related to addressing health issues and selling poor investments, for example, seem likely to share these key features.

Our findings demonstrate that malfunction magnitude has a dual effect on consumption experience. More severe malfunctions directly reduce the pleasure associated with consumption to a greater degree, but they also indirectly improve consumption experiences by reducing decision deferral and inaction inertia; two factors that prolong malfunctions.

The present work extends prior findings on inaction inertia in that it expands the conceptualization of inertia to include the initial inaction. Prior work has taken initial inaction as given and examined how it influences subsequent choices. By extending our frame of analysis, we contribute to a broader understanding of the conditions that produce inaction initially and a richer analysis of not only if, but when, decision makers take subsequent opportunities for action. In addition, by examining how these decisions affect consumption experience, this research adds to our understanding of the consequences of consumer inaction.

One implication of these findings is that consumers might obtain improved product performance and enjoyment if they were to address some problems that are often allowed to persist. These situations could be improved through interventions, in line with behavioral "nudges" (Thaler & Sunstein, 2008), which would improve consumption experiences while still leaving control in the hands of the consumer. For example, maintenance could be scheduled regularly by default with consumers opting out if they so choose.

Extended warranties are another means that producers can use to help prevent consumer suffering from relatively minor problems. Many companies have treated extended warranties as a lucrative revenue stream rather than a means of maximizing customer satisfaction. The pricing of these warranty contracts typically ensures their profitability, but it may discourage many consumers from purchasing them. Lower prices on extended warranties could lead to greater profits in the long run if the resulting greater adoption of these

warranties substantially boosts customer satisfaction. However, further work is required to determine if such a change is viable.

Recent research on extended warranties has attempted to determine why consumers buy these contracts given that they offer little value (Chen, Kalra, & Sun, 2009). We propose one previously unrecognized source of value from extended service contracts: they allow consumers to pre-commit to addressing malfunctions, even relatively minor ones. This pre-commitment prevents decision deferral and inaction inertia, effectively disarming the inaction trap. This strategy of making a decision to address malfunctions prior to beginning consumption was effective at increasing enjoyment and avoiding the big cost of small problems in an unreported follow up to experiment 2 in which participants had to decide whether to address a malfunction prior to the experience. It is also consistent with the forecasting data showing that when asked to make a forecast, consumers can correctly predict the benefit of addressing minor malfunctions. Extended service contracts may offer a real world parallel to our findings and help explain why so many consumers purchase a type of insurance that appears to hold little economic value.

The demonstrated inaction trap prevents consumers from addressing a malfunction that they have already endured for some time, even though they might otherwise see addressing it as a desirable course of action. Taking advantage of a good opportunity after an even better opportunity has been missed requires a shift in attention. Consumers might be able to spur themselves to action after initially deferring a decision to address a malfunction by focusing on the

benefits still to be gained rather than those that were lost as a result of the initial deferral. Similar framing effects have been demonstrated in prior research (Tykocinski et al., 1995) and could be effective here as well. Work on inaction inertia in buying decisions has shown that the addition of a new alternative to the choice set can help overcome the inertia (Tsiros, 2009). When a consumer has missed superior opportunities to repair a malfunction, replacing the product entirely could provide this "new" alternative course of action. Therefore, it is possible that after an extended period of inaction, consumers might more easily overcome inaction and address a problem through replacement rather than repair, even if replacement is the more costly option, and particularly if a previously unavailable replacement product is now in the market.

In our experiments, participants who endured smaller malfunctions, resulting in lower enjoyment, did not report much regret over their decisions, nor did they indicate that they would do anything differently if they had the chance again. These results suggest that consumers may continue to make non-normative decisions to put up with minor malfunctions even though they have likely faced hundreds of similar decisions in the past. The insidious part of the inaction trap is that, after the fact, consumers do not seem to recognize that they were in a trap and therefore, have no intention of responding differently in the future. One intriguing possibility for this lack of learning is that consumers misremember these experiences and the opportunities they had, similar to the misremembering of affective forecasts which prevents learning in that domain (Meyvis et al., 2010).

Decisions about whether to address product malfunctions often involve a great deal of uncertainty. The consumer might be unsure of the exact amount of money or time needed to address a problem, or of the benefit that addressing the problem would produce. The consumer might also be uncertain about how much longer she could still use the product, with or without the malfunction present, before replacement is necessary. All of the uncertainty involved increases the difficulty of making a decision about whether to repair a product. This decision difficulty could very well be a significant contributor to the longevity of small problems. The scenarios used in our experiments were more concrete in terms of costs, benefits, and usage horizons. Future research could explore the role of uncertainty in consumer decisions to address or endure product malfunctions. However, the fact that, in the experiments reported here, smaller problems consistently caused greater discomfort even when costs and benefits were unambiguous suggests that the effect is robust and not purely driven by uncertainty. If anything, we suspect that greater uncertainty would increase the likelihood of decision deferral, leading more consumers to fall into the inaction trap.

The results reported here are inconsistent with a family of alternative explanations according to which decision makers underweight the long-term consequences of their choices. These alternative explanations include melioration (Herrnstein, Loewenstein, Prelec, & Vaughan, 1993; Herrnstein & Vaughan, 1980), hyperbolic discounting (Frederick et al., 2002), and consumer lock-in, where options with lower setup costs are selected despite having higher usage

costs (Zauberman, 2003). Critically, none of these alternative accounts can explain why consumers would be more likely to address a smaller malfunction when the opportunity to address it was initially unavailable, nor can they explain why consumers would be more likely to address a smaller malfunction when a different, but no less costly means of addressing appeared later in the experience. Finally, these theories do not explain why, when smaller malfunctions are addressed, they are addressed much later.

It remains an open question exactly what consumers consider with respect to minor malfunctions that leads them to defer a decision about addressing them. We conjecture that consumers reflexively refrain from addressing smaller problems immediately so that they do not spend all their time addressing problems rather than enjoying consumption experiences. However, despite the well known self-help advice to not "sweat the small stuff" (Carlson, 1997), our findings suggest that consumers might be paying too little attention to minor problems, allowing these problems to persist too long, and suffering disproportionately from them as a result.

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Essay 2: Slow Sinkers Are the Real Stinkers: Why a Plummeting Stock Price Can Be Better for Investors than a Gradual Decline

Our investment decisions have significant consequences for our economic welfare. For instance, as individuals become increasingly responsible for their own retirement savings, their investment decisions gain in importance. Prior work has shown that psychological biases often cause investors to make poor decisions (Barber & Odean, 2000, 2001; Campbell, 2006; Feng & Seasholes, 2005). In the present research, we examine the psychology of deciding whether to sell a poorly performing asset and, in particular, how the combination of initial inaction in the face of a moderate decline in an asset's value and subsequent inaction inertia with respect to that asset can paradoxically leave investors *more* vulnerable to losses from moderately inferior than from dramatically inferior assets.

THEORETICAL BACKGROUND

Investors often find themselves holding an asset that performs worse than comparable assets. We propose that underperforming assets can be paradoxically more dangerous to investor wealth when they are only inferior to a moderate, rather than dramatic, degree. The reason a moderately inferior asset can cause larger losses in the long run is that the asset's performance does not sufficiently

chasten the investor into selling it immediately. As selling involves transaction costs, it is reasonable for an investor to be reluctant to sell an asset that is only slightly worse than comparable assets. Deferring decisions is not necessarily detrimental and, in some cases, new information may facilitate a better decision at a later time (Anderson, 2003). Moreover, a natural preference for inaction conserves effort (Ritov & Baron, 1992).

However, the initial failure to sell a moderately inferior asset can influence *subsequent* decisions. Individuals may be dissuaded from taking an attractive course of action because they compare the current opportunity to superior, previously forgone opportunities (Arkes et al., 2002; Butler & Highhouse, 2000; Kumar, 2004; Tykocinski et al., 2004; Tykocinski & Pittman, 1998; van Putten et al., 2007; Van Putten et al., 2009; Zeelenberg et al., 2006). This influence has been labeled "inaction inertia" (Tykocinski et al., 1995). Prior demonstrations of inaction inertia in the investment domain have shown that investors are less likely to sell an asset when they have missed a prior opportunity to sell it at a higher price (Butler & Highhouse, 2000; Tykocinski et al., 2004). When investors miss an earlier, more desirable opportunity to sell a poorly performing asset, they become less likely to act on subsequent opportunities because these opportunities appear relatively less attractive.

If investors can become trapped by a prior failure to sell an inferior asset, it is important to understand how they make initial decisions to sell or keep underperforming assets. Choosing to sell a poorly performing financial asset can be difficult. Indeed, research has shown that investors tend to hold flagging assets

for too long (Grinblatt & Keloharju, 2001; Odean, 1998; Shefrin & Statman, 1985, 2000; Weber & Camerer, 1998). This phenomenon, combined with the premature selling of assets that have gained value, has been labeled the "disposition effect" (Shefrin & Statman, 1985). This pattern of behavior is consistent with prospect theory (Kahneman & Tversky, 1979; Tversky & Kahneman, 1992) in that an asset that has lost value relative to a reference price is coded as a loss. The initial purchase price of the asset is a natural reference point for evaluating new prices (although investors may adapt their reference price over time). Selling an asset that has lost value is challenging because it requires the investor to convert an unrealized "paper loss" into an actual monetary loss (Weber & Camerer, 1998). According to prospect theory (Kahneman & Tversky, 1979; Tversky & Kahneman, 1992), decision makers are risk seeking for losses, and therefore tend to retain a losing asset in the hopes that it will recover.

Although investors are reluctant to sell assets that have lost value, prior research has shown that individual investors are inclined to infer positive correlations between past and future asset performance (Andreassen & Kraus, 1990; Bange, 2000; De Bondt, 1993; Dhar & Kumar, 2001). Therefore, when the value of an asset has decreased, investors tend to believe that it is likely to continue to decline. Investors who buy and sell in accordance with these inferences are called "positive feedback traders" (DeLong, Shleifer, Summers, & Waldmann, 1990) or "momentum investors" (e.g. Dhar & Kumar, 2001; Morrin et al., 2002) (e.g. Dhar & Kumar, 2001; Morrin et al., 2002). This strategy is also commonly observed among professional stock brokers (Morrin et al., 2002). The

typical investor is inclined to believe that trends will continue rather than reverse and, on observing a recent decline in an asset that s/he holds, is likely to predict that the asset's value will fall further (Andreassen & Kraus, 1990; Bange, 2000; De Bondt, 1993).

Thus, the investor who holds an asset that has recently lost value is torn between two competing psychological forces. On the one hand, s/he wants to avoid selling an asset that has lost value relative to its reference price as this means realizing a loss (Grinblatt & Keloharju, 2001; Odean, 1998; Shefrin & Statman, 1985; Weber & Camerer, 1998). On the other hand, the investor infers from the decline that the asset is likely to fall further and, therefore, should be sold before the loss becomes even larger (Andreassen & Kraus, 1990; Bange, 2000; De Bondt, 1993; Dhar & Kumar, 2001). We propose that the *severity* of the decline in value is a key determinant of which of these two forces dominates.

While investors might hold on to inferior assets for too long, they typically do not retain them indefinitely. In particular, large changes in the value of an asset do tend to trigger action (Andreassen, 1988; Grinblatt & Keloharju, 2001). This is consistent with the empirical fact that stock exchange trading volumes are higher on days where average price changes are larger (Crouch, 1970; Granger & Morgenstern, 1970; Ying, 1966). Prior work has shown that this relationship is causal, with larger price changes stimulating more trades (Andreassen, 1988). Investors are more likely to act following a larger price change because such changes are more likely to attract attention. Investors are more likely to act following price changes of greater magnitude because such changes tend to attract

more attention and, as has been shown in connection with buying decisions, differential attention influences which assets investors take action on (Barber & Odean, 2008). In addition, we propose that critically, a larger negative price change is seen as a stronger signal of future poor performance by the average investor.

We hypothesize that a dramatically inferior asset, which declines rapidly, can actually be *better* for the investor in the long run than a moderately inferior asset. This occurs because a dramatic short-term drop in value attracts more attention and is perceived to be a more negative signal about an asset's future performance. This signal is more likely to overpower the investor's reluctance to realize losses, increasing the probability that the inferior asset is sold quickly. In contrast, an asset that is underperforming to a lesser extent does not send as clear a signal about future performance. Therefore, the investor is more likely to continue to hold a moderately inferior asset in the hopes that its value will increase. Continuing to hold an asset following a small decline is not particularly costly in the short term. However, we propose that investors become less likely to sell a poor asset the longer they hold it, due to inaction inertia.

Once an initial opportunity to sell has been forgone, inaction inertia is greater following a larger than a smaller decline in the value of an asset because, in the case of a larger decline, the difference between the superior, prior opportunity to sell and the current opportunity is larger than it would be following a smaller decline (Tykocinski et al., 2004). However, inaction inertia only occurs when an initial opportunity to sell is missed. We propose that smaller declines in

value render investors more likely to miss initial opportunities to sell because investors are more likely to predict that the asset's value might recover in this case, whereas a larger decline tends to trigger instant selling. Consequently, moderately inferior assets are more likely than dramatically inferior ones to trap investors through inaction inertia because dramatically inferior assets tend to be sold more quickly – before inaction inertia can have an impact on the decision to sell.

The critical aspect of the proposed theoretical account for why slowly "sinking" assets can render investors worse off than assets that underperform more dramatically is the tendency to keep these moderately inferior assets long enough to miss the best opportunities to sell them and to then devalue subsequent opportunities because they are relatively less attractive than ones that were not taken initially. For inaction inertia to prevent investors from selling an inferior asset, it must be possible to maintain one's investment in this asset through mere inaction. Although such a reinvestment protocol is the norm in reality – if an investor takes no action, s/he continues to hold the same number of shares of an asset – we will alter this experimentally in order to test the proposed account. Specifically, our theory predicts that moderately inferior assets can trap investors and produce greater financial losses in a setting where investors continue to hold the same number of shares unless they take action to buy or sell, but that this effect vanishes when investors are prevented from maintaining their asset allocations via inaction and are instead required to *actively* choose how to invest

their capital afresh in regular intervals, rendering the decision to reinvest capital in the inferior asset equally effortful as investing that capital in a different asset.

EXPERIMENT 1

Method

Participants

To test these hypotheses, we conducted an experiment in which 152 participants (mean age = 22.7 years; 58 male, 94 female) completed a consequential investment task. Participants were members of a volunteer research panel at a major North American university who completed the experiment in exchange for a monetary payment.

Procedure

Participants were initially endowed with an investment portfolio worth $40,000. Their task objective was to maximize the value of their portfolio at the end of the experiment. Upon completion of the experiment, all participants received a fixed payment of $7.00 plus 0.0005% of the final value of their portfolio. On average, the variable payment amounted to $4.08.

Each participant's investment portfolio was initially divided evenly among four assets, which were randomly (independently for each participant) labeled share A, share B, share C, and share D. Prior to each of 20 investment periods, participants were shown the current prices of all assets and could then reallocate the value of their investments across the four assets. Participants were not permitted to keep money out of the market (e.g., as cash), nor were they able to borrow additional funds to invest.

Three of the four assets provided positive rates of return over the 20 investment periods, and these averaged 1%, 3%, and 5% per period, respectively. In addition, all participants had a fourth asset that was inferior to the other three in performance – the focal asset – in their initial portfolio. The severity of the focal asset's poor performance was manipulated as either *dramatically inferior* (averaging a return of -6% per period) or *moderately inferior* (averaging 0%). All prices were determined individually for each participant and subject to random variations of up to plus or minus 3% per period. The prices of the assets were not affected by participant behavior.

The second manipulated factor was the reinvestment protocol for participants' holdings at the end of each investment period. In the *standard-trading* condition, participants continued to hold the same number of units of each asset by default, unless they chose to make a trade. We use the label "standard trading" as this condition resembles the predominant reinvestment protocol in practice. By contrast, in the *forced-selling* condition, all units were automatically sold at the end of each investment period, and participants had to allocate their

entire capital across assets afresh. We hypothesized that forced selling would render participants less likely to retain inferior assets, eliminating the paradoxical advantage of starting with a dramatically inferior asset. (See Appendix A for examples of what participants saw in each of these conditions.)

Thus, the overall design was a 2 (focal asset performance: dramatically inferior vs. moderately inferior) x 2 (reinvestment protocol: standard trading vs. forced selling) x 20 (period) mixed factorial design with focal asset performance and reinvestment protocol manipulated between subjects. We hypothesized that with standard trading, participants would paradoxically earn less if the focal asset was moderately inferior rather than dramatically inferior, and that this would be driven by greater ownership of units of the focal asset in the moderately inferior condition. However, we predicted that forced selling would correct this tendency to continue to hold moderately inferior assets once an initial opportunity to sell has been forgone, in turn restoring the natural pattern of outcomes such that a dramatically inferior asset leads to a lower portfolio value.

Results

First, we examine total portfolio value at the end of the 20th investment period. There was a significant main effect of gender, with males earning more *(M* = $84,036, *SD* = $8,979) than females (*M* = $80,233, *SD* = $9,763), $t(75) = 2.40$, $p = .017$, $d = .40$. However, gender does not qualify our conclusions as it does not interact with any other variables.

Critically, as predicted, there was a significant interaction effect between focal asset performance and reinvestment protocol, $F(3, 148) = 8.35$, $p = .004$, $\eta^2 = .053$ (see Figure 2-1). In the standard-trading condition, participants earned *less* money when their portfolio initially included the moderately inferior focal asset *(M* = $77,834, *SD* = $9,196) than if it included the dramatically inferior focal asset (*M* = $82,264, *SD* = $9,741), $t(75) = 2.05$, $p = .044$, $d = .47$. By contrast, in the forced-selling condition, participants earned more when their portfolio initially contained the moderately inferior focal asset *(M* = $85,514, *SD* = $8,683) than if it included the dramatically inferior focal asset (*M* = $81,209, *SD* = $9,587), $t(73) = 2.04$, $p = .045$, $d = .47$.

FIGURE 2-1

FINAL PORTFOLIO VALUE BY REINVESTMENT PROTOCOL AND FOCAL ASSET PERFORMANCE

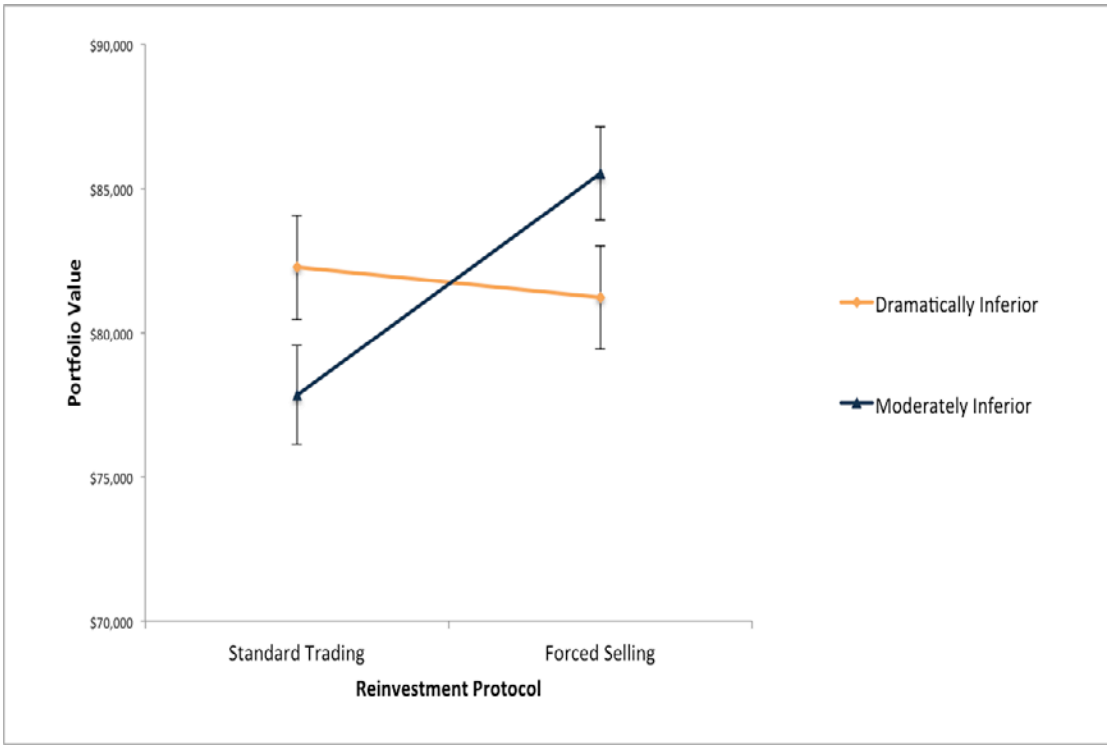
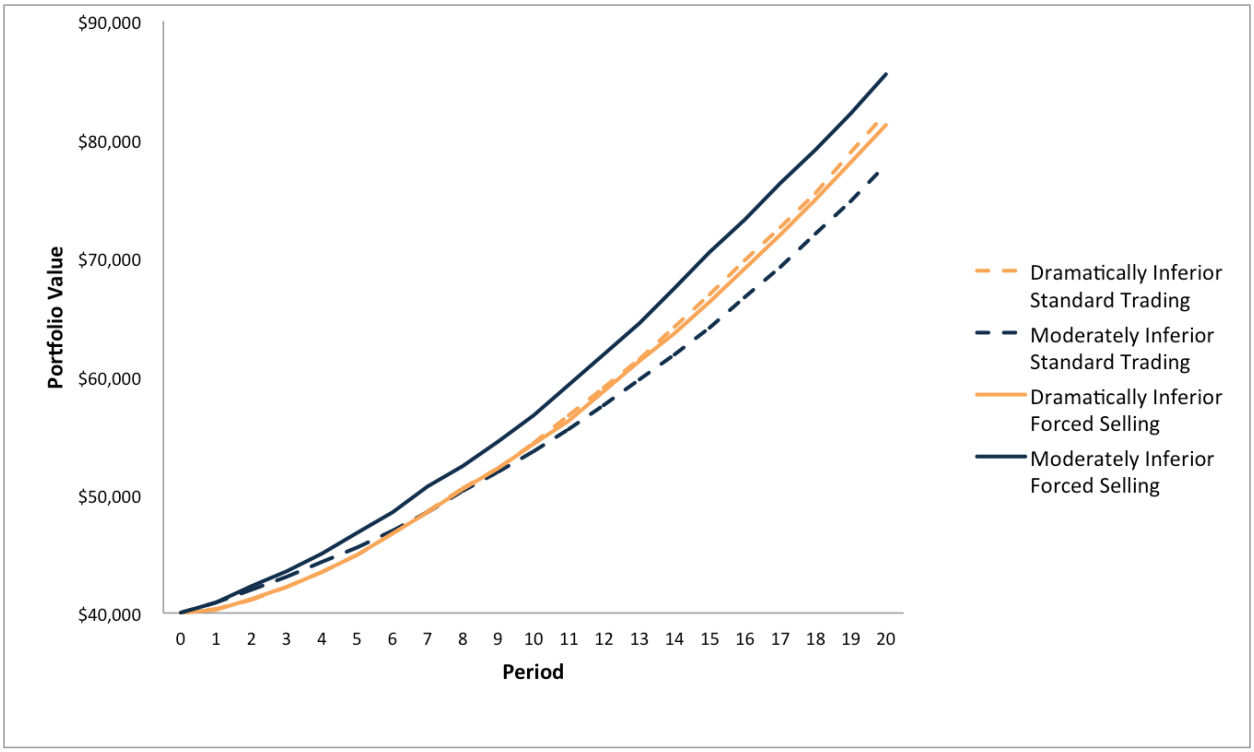


Figure 2-2 shows portfolio value across all 20 investment periods. While the dramatically inferior focal asset conditions initially have the lowest portfolio values, they exceed those of the moderately inferior/standard-trading condition by the midpoint of the task, and this advantage increases through the later stages.

FIGURE 2-2:

PORTFOLIO VALUE BY PERIOD

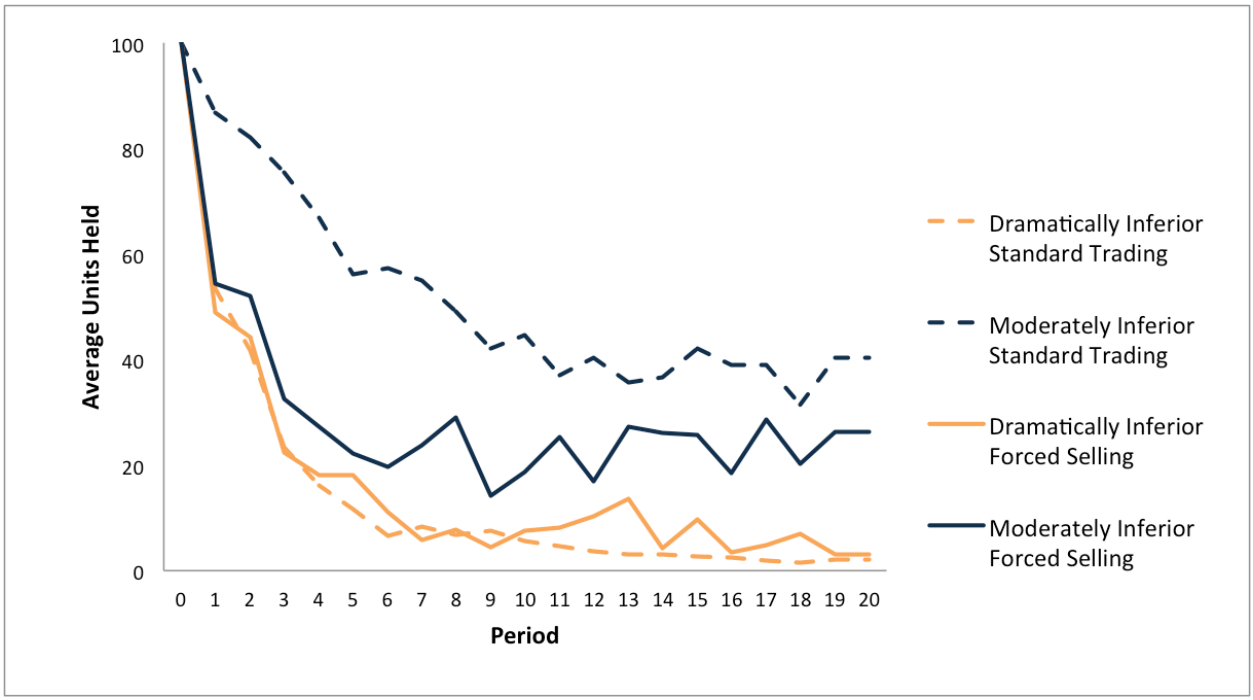


We predicted that the differences in final portfolio value would be driven by participants' decisions to sell the focal asset. To test this account, we analyzed the number of units of the focal asset that participants owned across the 20 periods. Participants' decisions with respect to the focal asset were analyzed using Generalized Estimating Equation (GEE) regression models (Horton & Lipsitz, 1999), which are appropriate for responses obtained in partial within-subject designs. The model included effects of period (linear and quadratic), gender, focal asset performance, and reinvestment protocol, as well as all possible interactions between these factors. Only the effects reported below were statistically significant. Results revealed a significant (negative) linear effect of

period, z = -8.51, $p < .0001$, indicating that participants held fewer units of the focal asset in later periods. This was qualified by a significant (positive) quadratic effect of period, z = 6.74, $p < .0001$, such that the number of units of the focal asset declined each period, but at a decreasing rate. As predicted, there was a significant interaction effect between focal asset performance and reinvestment protocol, z = 3.17, $p < .0001$. Under standard trading, participants in the dramatically inferior focal asset condition held, on average across all periods, fewer units of the focal asset ($M = 10.4$) than did those in the moderately inferior focal asset condition ($M = 49.9$), z = 6.88, $p < .0001$. Under forced selling, the difference in the number of units of the focal asset held between the dramatically inferior and moderately inferior conditions, while still significant, was substantially reduced ($M = 12.8$ vs. $M = 26.7$), z = 2.47, $p < .01$. Figure 2-3 shows the number of units of the focal asset held across all periods. Note the precipitous decline in focal asset ownership in the early periods for participants in the dramatically inferior focal asset conditions.

FIGURE 2-3:

UNITS OF FOCAL ASSET HELD BY PERIOD

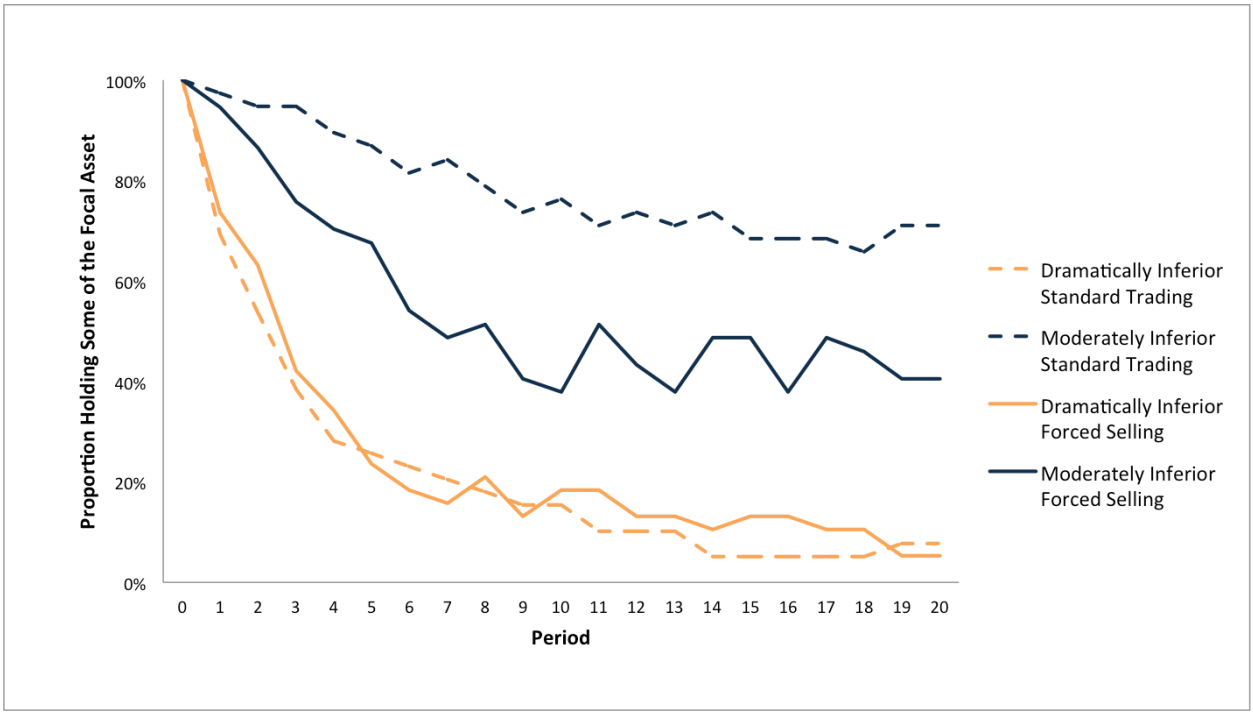


Our proposed theoretical account involves investors either selling an inferior asset quickly or holding initially, and then becoming trapped by inaction inertia. Therefore, we hypothesized that the effects would be driven by investors taking dramatic actions and selling all of the focal asset's units. To examine this, we recoded the number of units of the focal asset held as a binary variable with a value of zero if the participant held no units of the focal asset and a value of one otherwise. Using a GEE binomial logit model to analyze the recoded variable, the same pattern of results emerges. There was again a significant (negative) linear effect of period, $z = -9.29$, $p < .0001$, qualified by a significant (positive) quadratic effect of period, $z = 7.45$, $p < .0001$, such that the proportion of

participants holding units of the focal asset declined each period, but at a decreasing rate. Again, there was a significant interaction effect between focal asset performance and reinvestment protocol, $z = 1.82$, $p = .04$. Under standard trading, participants in the dramatically inferior focal asset condition were, on average across all periods, less likely to hold any units of the focal asset (23%) than those in the moderately inferior focal asset condition (79%), $z = 5.89$, $p < .0001$. Under forced selling, the difference in the proportion of participants holding units of the focal asset between the dramatically inferior and moderately inferior conditions, while still significant, was substantially reduced (26% vs. 56%), $z = 3.77$, $p < .01$. Figure 2-4 shows the proportion of participants holding units of the focal asset across all periods. The high degree of consistency between these results and those of the continuous variable analysis reported above suggests that, in line with our prediction, the paradoxically large negative effect of a moderately inferior asset is driven primarily by a reluctance to start selling (any of) this asset, rather than by the sale of too small a portion of one's holdings of the inferior asset.

FIGURE 2-4:

PROPORTION OF PARTICIPANTS HOLDING ANY UNITS OF THE FOCAL ASSET BY PERIOD



Discussion

Under standard trading, participants, on average across all periods, held on to more units of the focal asset when it was moderately inferior than when it was dramatically inferior, leading to lower portfolio values for those in the moderately inferior focal asset condition, despite the fact that these participants were choosing from an objectively superior set of assets. According to our theoretical account, the focal asset's moderately inferior performance did not send a clear negative signal about its future performance, leading participants to initially hold

on to it. Multiple periods may have passed before participants realized that the focal asset was dragging their portfolios down. By then, participants tended to already have become trapped by their prior inaction.

By contrast, in the forced-selling conditions, all participants were reluctant to keep buying an asset that appeared inferior. With a smaller difference in ownership of the focal asset, participants in the moderately inferior focal asset condition earned significantly more than those in the dramatically inferior focal asset condition. Forced selling overcomes the inaction trap because it requires investors to make an active asset allocation decision after each period. Rather than deciding whether to retain an asset that has not increased in value, investors must decide whether to again buy this poorly performing asset instead of another asset that has increased in value. Although these decisions are economically equivalent, they are very different psychologically. As a result, they lead to different behavior and, ultimately, to significant differences in wealth.

EXPERIMENT 2

The results of experiment 1 are consistent with the proposed mechanism, however additional evidence is needed. The trap investors become caught in after initially missing opportunities to sell at higher prices, is that although later opportunities to sell are available, they appear relatively less attractive. One possible intervention to address this is to emphasize the more global, long-term cumulative performance of the asset rather than the more local, short-term price

change. This emphasis should help free investors from inaction inertia for two reasons: 1. It makes the combined magnitude of these small declines more salient. 2. It provides a clear reason for selling now even though better opportunities have been missed in that when those better opportunities were missed, the cumulative decline was not as great, and therefore, holding then was reasonable. In other words, it emphasizes the *difference,* rather than the similarity, between the prior and current opportunities. For example the investor who observes a local share price decrease of 2% in each of three successive periods is more likely to devalue the opportunity to sell in period three because it is clearly similar to, but less attractive than the prior opportunities. In contrast, the investor who observes a cumulative, global decline of 2%, then 4%, then 6% in those successive periods is less likely to devalue the opportunity to sell in period 3 because the opportunity appears more distinctive from those prior opportunities.

Note that unlike the forced selling manipulation used in experiment 1, this manipulation should not affect the initial decision to sell or hold the inferior asset. In the first period of the task, cumulative and recent price histories are the same. It is only after a few periods that the two diverge. As early decisions have a large impact on final portfolio values, we predicted that this intervention would offset, but not reverse, the impact of the moderately inferior asset relative to the dramatically inferior asset on final portfolio values. We expected that participants who started with a portfolio containing a moderately inferior asset who also had cumulative price history information would earn as much money as, but not more

money than, participants who had recent price history and a dramatically inferior asset in their starting portfolio.

Also, in experiment 1 the moderately inferior asset had an average return of 0%. This asset was a slow sinker relative to the other assets but not in an absolute sense. It could be that there is something special about a return of zero that leads investors to continue to hold the asset. In experiment 2 we use a moderately inferior asset that has a negative, rather than flat, rate of return.

Method

Participants

In this experiment 179 participants (mean age = 20.5 years; 78 male, 101 female) completed a consequential investment task. Participants were members of a volunteer research panel at a major North American university who completed the experiment in exchange for a monetary payment.

Procedure

The procedure used was very similar to experiment 1 with a few critical differences. First, all participants experienced standard trading conditions. That is they continued to hold units of an asset unless they chose to sell it. Also, the average return of the focal asset was either -1% (in the moderately inferior

condition) or -5% (in the dramatically inferior condition). A small change was made to the investment interface so that instead of entering the dollar amount of an asset that they wished to buy or sell, participants selected the percentage of the asset they wished to sell and the asset they wished to buy with the proceeds. This change allowed participants to make a trade without doing any mental math. Finally, the price history information that was displayed each period varied by condition as either cumulative, in which the percentage price change from period 0 was shown, or recent, in which the percentage price change from the previous period was shown.

The design was a 2 (focal asset performance: dramatically inferior vs. moderately inferior) x 2 (price history: cumulative vs. recent) x 20 (period) mixed factorial design with focal asset performance and price history manipulated between subjects. We predicted that when given recent price history, participants would earn less with a moderately inferior asset than a dramatically inferior asset, but that there would be no difference in earnings when cumulative price history was displayed.

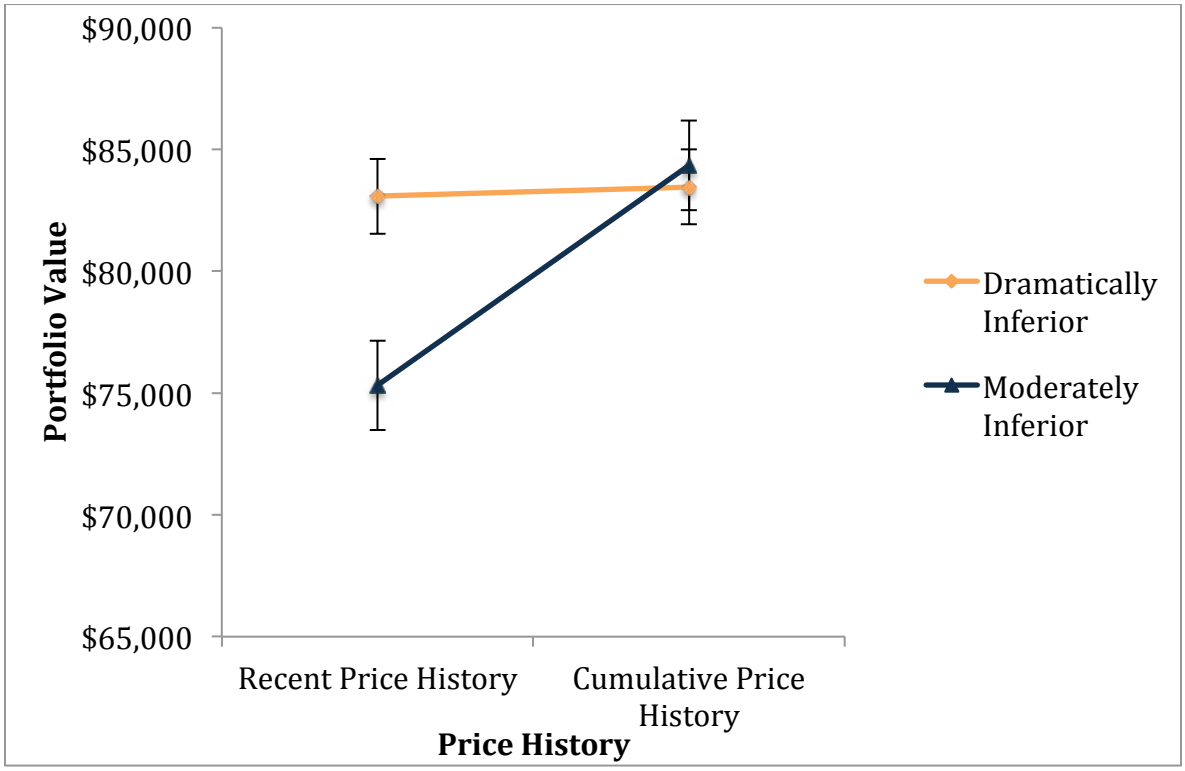
Results

First, we examine total portfolio value at the end of the 20th investment period. In this experiment, there was no significant effect of gender on final portfolio value. As predicted, there was a significant interaction effect between focal asset performance and price history, $F(3, 175) = 6.59$, $p = .01$. In figure 2-5

we see that in the recent history condition, participants earned *less* money when their portfolio initially included the moderately inferior focal asset *(M* = $75,318, *SD* = $12,314) than if it included the dramatically inferior focal asset (*M* = $83,079, *SD* = $10,343), *t*(88) = 3.24, *p* = .002. By contrast, with cumulative price history, there was no difference in final portfolio value between participants whose portfolios initially contained the moderately inferior focal asset *(M* = $84,338, *SD* = $10,997) and those whose portfolios initially included the dramatically inferior focal asset (*M* = $83,461, *SD* = $11,265), *t*(87) = 0.37, *p* = .71, *NS*.

FIGURE 2-5:

FINAL PORTFOLIO VALUE BY PRICE HISTORY AND FOCAL ASSET PERFORMANCE

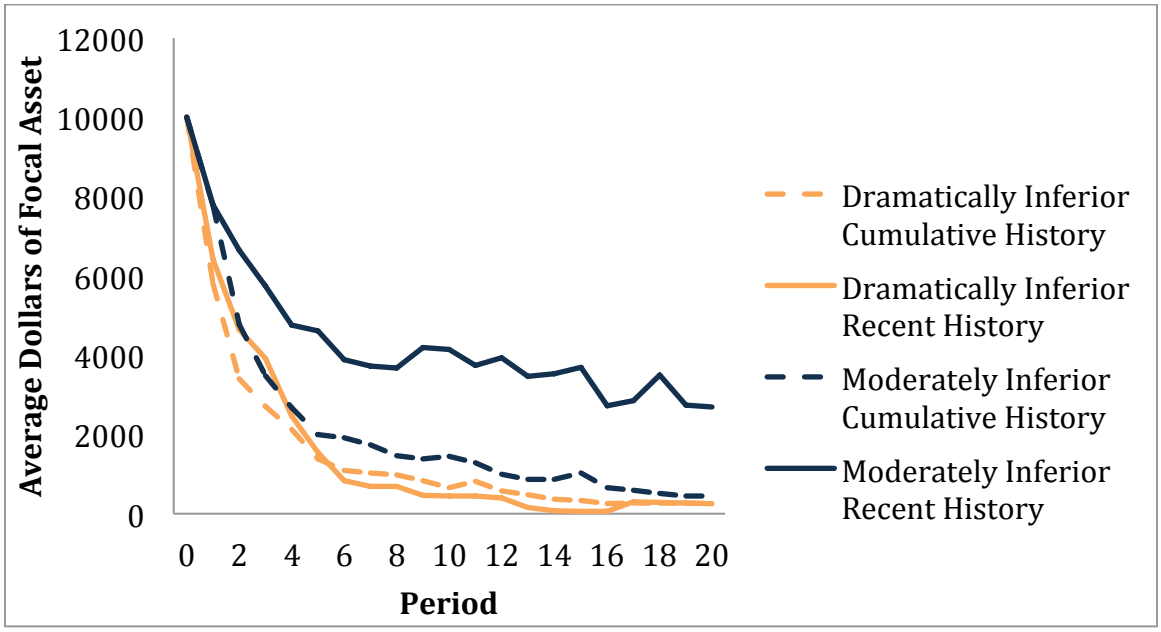


We predicted that the differences in final portfolio value would be driven by participants' decisions to sell the focal asset. To test this account, we analyzed the dollar value of units of the focal asset that participants owned across the 20 periods (see figure 6), again using Generalized Estimating Equation (GEE) regression models. The model included effects of period (linear and quadratic), gender, focal asset performance, and reinvestment protocol, as well as all possible interactions between these factors. Only the effects reported below were statistically significant. Results revealed a significant (negative) linear effect of

period, z = -16.33, $p < .0001$, indicating that participants held fewer units of the focal asset in later periods. This was qualified by a significant (positive) quadratic effect of period, z = 11.87, $p < .0001$, such that the number of units of the focal asset declined each period, but at a decreasing rate. These effects are both qualified by two significant three-way interactions. The first is between the linear effect of time, price history, and focal asset performance, z = -2.08, $p = .02$. This interaction indicates that the amount invested in the focal asset for participants in the recent history, moderately inferior focal asset condition separates from the other three conditions, becoming larger, as periods progress. The second is between the quadratic effect of time, price history, and focal asset performance, z = 1.95, $p = .03$. This interaction indicates that although the amount invested in the focal asset for participants in the recent history, moderately inferior focal asset condition separates from the other three conditions, it diverges at a decreasing rate as periods progress. Figure 2-6 shows the amount invested in the focal asset held across all periods. Initially, all participants have $10,000 invested as the focal asset. As periods pass ownership of the focal asset declines in all conditions. However, those in the recent history, moderately inferior focal asset condition end up holding a relatively larger investment in the focal asset.

FIGURE 2-6:

DOLLARS OF FOCAL ASSET HELD BY PERIOD

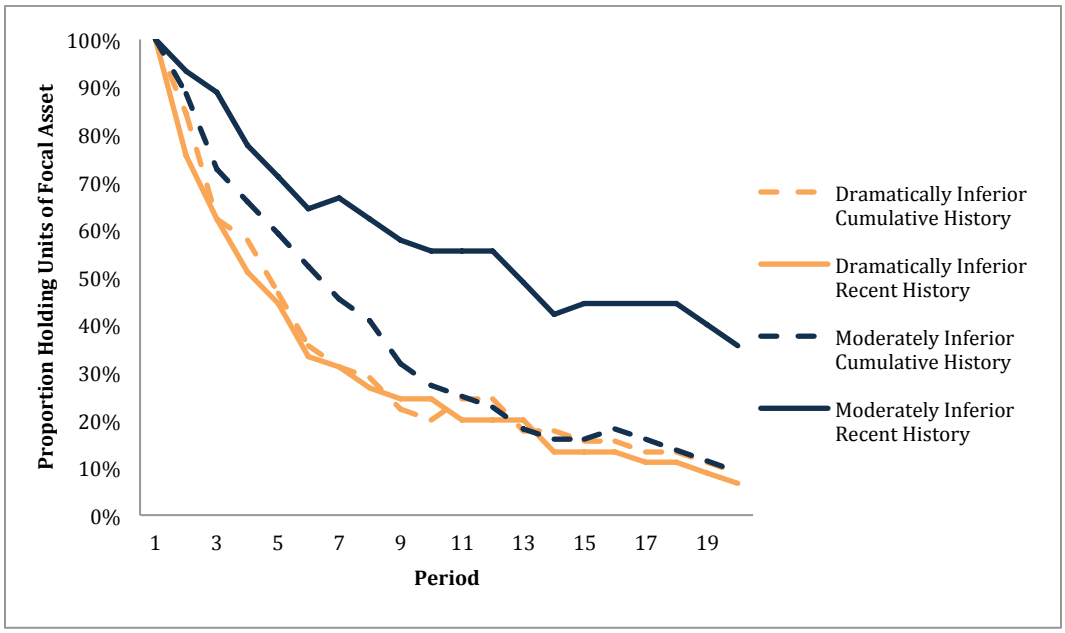


Again we examined the focal asset ownership data recoded as whether a participant held any units of the focal asset in a given period (1) or not (0). Using a GEE binomial logit model to analyze the recoded variable, we observed the same pattern of results as were found in experiment 1. There was a significant (negative) linear effect of period, $z = -10.32$, $p < .0001$, qualified by a significant (positive) quadratic effect of period, $z = 7.06$, $p < .0001$, such that the proportion of participants holding units of the focal asset declined each period, but at a decreasing rate. Critically, there was the predicted significant interaction effect between focal asset performance and price history, $z = 2.18$, $p = .01$. With recent price history, participants in the moderately inferior focal asset condition were, on average across all periods, more likely to hold any units of the focal asset (59%)

than those in the dramatically inferior focal asset condition (29%), z = 3.39, $p <$ .001. With cumulative price history, there was no difference in the proportion of participants holding units of the focal asset between the dramatically inferior and moderately inferior conditions (31% vs. 36%), z = 1.49, p = .07. Figure 2-7 shows the proportion of participants holding units of the focal asset across all periods.

FIGURE 2-7:

PROPORTION OF PARTICIPANTS HOLDING ANY UNITS OF FOCAL ASSET BY PERIOD



Discussion

As with experiment 1 we find that a moderately inferior asset in a portfolio can paradoxically do more damage to portfolio value than an asset that declines more rapidly. Here we find that making cumulative price history salient effectively overcomes the inaction trap by emphasizing the long-term impact of the decline and the difference between the current opportunity to sell and those that were missed initially. However, cumulative price history does not completely reverse the effect and this makes sense because cumulative price history takes several periods to have an impact, after which point it becomes more difficult to make up the returns that were lost to the focal asset before it was sold.

MONITORING FREQUENCY AND DECLINING ASSETS

Many investors struggle with the decision of how frequently to check on their investments and make changes to their portfolios. The range of possibilities runs from monitoring prices and making changes by the minute, to never revisiting investment decisions and selling only when the money is needed for other uses. Investors may be conflicted about this decision because although more frequent monitoring creates opportunities to respond to changes more quickly, it's not clear how much better decisions would be with more frequent monitoring and whether than improvement would justify the extra time spent. In addition,

investment advisors generally encourage individual investors to invest for the long term and not respond to short-term price fluctuations.

Normatively, more frequent monitoring should improve performance by allowing investors to respond more quickly to changes in the environment. However, prior research has found that more frequent feedback can be detrimental in noisy environments as decision makers may overreact to noise (Lurie & Swaminathan, 2009). These effects occur because decision-makers tend to perceive trends and patterns even in random data (Gilovich, Vallone, & Tversky, 1985).

Furthermore, investors may be less willing to invest in risky assets the more frequently they observe returns, earning less as a result (Benartzi & Thaler, 1995; Gneezy & Potters, 1997; Hardin & Looney, 2012; Thaler, Tversky, Kahneman, & Schwartz, 1997). This occurs because more frequent observations confront investors with losses that would likely be offset by gains, and therefore be unobserved, over a longer period. We refer to this as the smoothing effect of less frequent monitoring. An important theoretical distinction has been made between evaluation frequency, or how often returns are observed, and decision frequency, or how often changes can be made to investments (Hardin & Looney, 2012). These have also been labeled as outcome bracketing and problem bracketing respectively (Moher & Koehler, 2010). However, the question of which of these two factors drive down risk tolerance is not entirely resolved (Bellemare, Krause, Kröger, & Zhang, 2005; Looney & Hardin, 2009; Moher & Koehler, 2010). In the current work we are interested in cases where the

observation and decision co-occur, such that investors observe returns and simultaneously have the option to change their investments. We seek to control for the smoothing effect of less frequent monitoring to examine another effect in the domain of declining investments.

We propose that more frequent monitoring of investments poses an additional threat to investors in that it can lead them to hold a declining asset for a longer period. When a declining investment is monitored more frequently, the decline appears slower because it is divided across a greater number of monitoring periods. In addition, because the first observations occur earlier in the asset's decline, the amount of the decline is smaller, and therefore, the investor is less likely to sell at the first opportunities. The knowledge that there will be frequent opportunities to make trades in the future also diminishes the importance of each trading opportunity. This means that an investor monitoring more frequently is more likely to forgo one or more superior opportunities to sell a declining asset (i.e. when the price was higher) than an investor who monitors less frequently. Thus more frequent monitoring leads a declining asset to take on a slowly sinking profile where initial, and superior opportunities to sell are foregone, which in turn makes subsequent opportunities to sell appear less attractive. This inaction trap will lead those who monitor investments more frequently to hold a declining asset for a longer period and earn lower returns as a result.

In experiment 1, we demonstrated that although moderately inferior assets can lead to lower wealth than dramatically inferior assets, this effect can be

reversed with a forced selling manipulation. Similarly, while we hypothesize that more frequent monitoring can produce an inaction inertia trap leading to lower wealth, forced selling should offset the negative impact of more frequent monitoring.

Experiments 1 and 2 used simulated returns that were unique to each participant. This approach allowed broader coverage of possible returns and afforded us a high degree of control over the amount of noise. In experiment 3 we used actual returns of four stocks included in Standard and Poor's index of 500 US large market capitalization stocks (S&P 500). This allows us to test our hypotheses on actual market data.

EXPERIMENT 3

Method

Participants

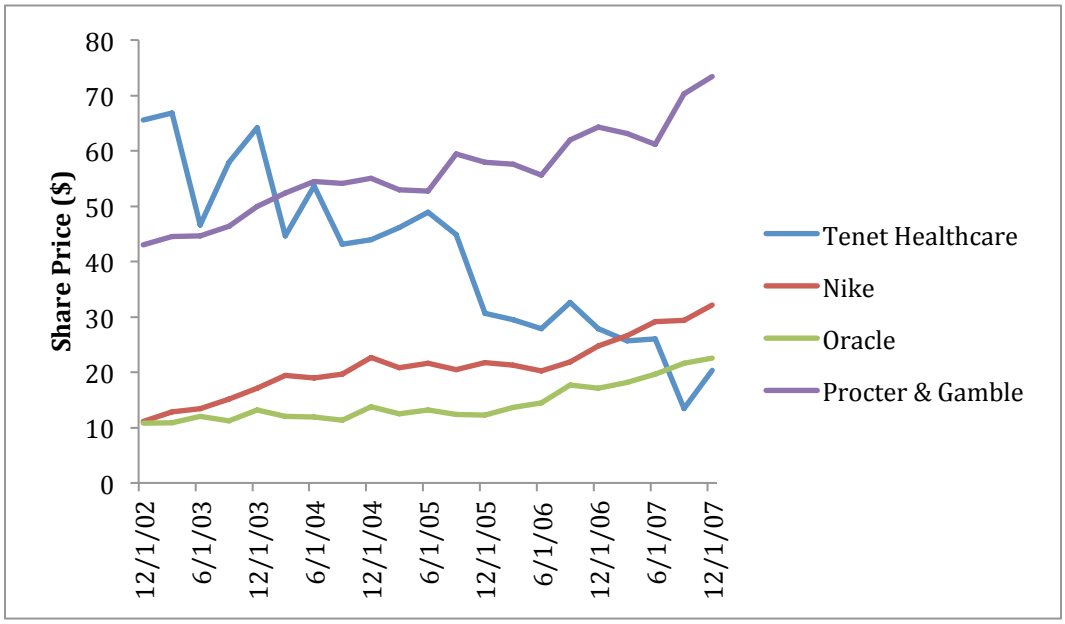
In this experiment 155 participants (mean age = 22.6 years; 77 male, 78 female) completed a consequential investment task. Participants were members of a volunteer research panel at a major North American university who completed the experiment in exchange for a monetary payment.

Procedure

The structure of the task was very similar to experiment 2 in that participants were given control of a simulated investment portfolio worth $40,000 with the portfolio initially divided evenly among the four available assets. The investments in this study reflected the actual quarterly returns of four S&P 500 stocks for the 5-year period between December 31, 2002 and December 31, 2007. This period was selected because it is largely free of major recessions. The stocks used were Tenet Healthcare, Nike, Oracle, and Procter & Gamble. During this period, Tenet Healthcare declines in value substantially while the other three stocks increase in value (see figure 2-8). Therefore, Tenet Healthcare served as the focal asset in this experiment. The stocks were randomly labeled Share A, Share B, Share C, and Share D for each participant and no mention was made of the time period that prices were drawn from.

FIGURE 2-8:

QUARTERLY SHARE PRICES



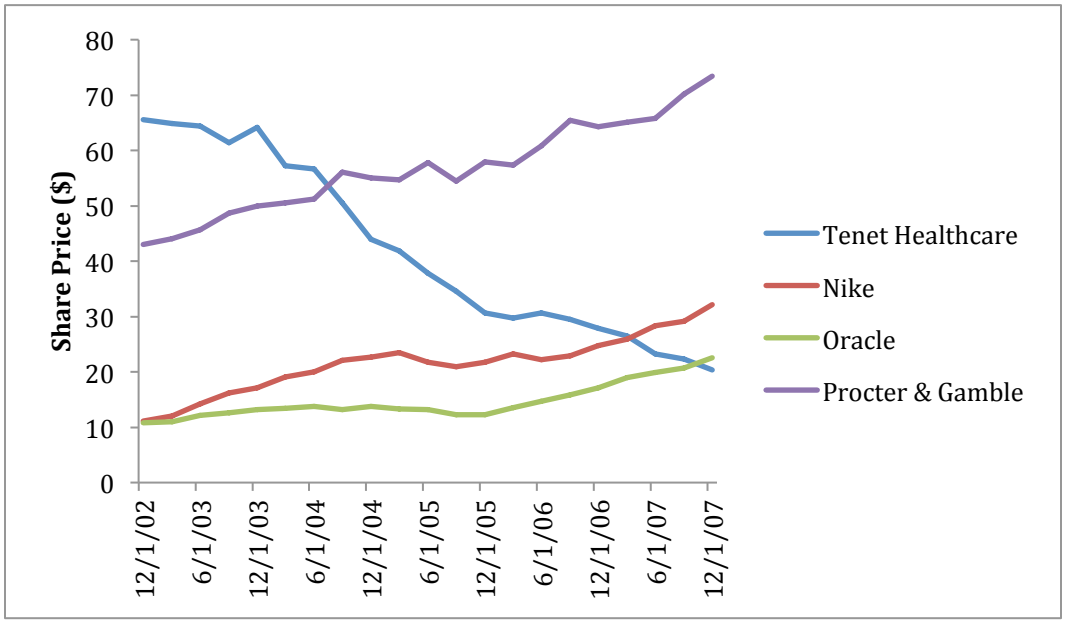
As in experiment 1, participants were randomly assigned to either a standard trading or forced selling condition. The second, and key manipulation in this experiment was the frequency with which returns were monitored and decisions could be made. In the quarterly condition, participants observed prices and could change investments each quarter while in the annual condition prices were observed and changes were made every four quarters. Time periods were labeled as quarters or years to fit with the assigned condition.

A third condition was added to help disentangle the smoothing effect of less frequent monitoring from the predicted inaction trap. In this third condition participants observed prices and could make changes quarterly, however the prices in this condition were smoothed by year. So the prices observed every

fourth quarter were the same as in the other two conditions, but the prices at the quarters in between reflected the average price change for that year see figure 2-9. A small amount of noise was added to the averaged values to make them appear more realistic.

FIGURE 2-9:

SMOOTHED QUARTERLY SHARE PRICES



The design was a 2 (reinvestment protocol: standard trading vs. forced selling) x 3 (monitoring frequency: annually vs. quarterly vs. smoothed quarterly) x 20 (period) mixed factorial design with monitoring frequency and reinvestment protocol manipulated between subjects. We predicted that with standard trading, annual monitoring would lead to lower ownership of the declining asset and greater wealth. We predicted that final portfolio value in the annual monitoring

condition would exceed that of the smoothed quarterly condition, which was expected to exceed that of the quarterly condition. Lastly, we predicted that forced selling would disarm the inaction trap, reducing the advantage of annual monitoring over quarterly monitoring.

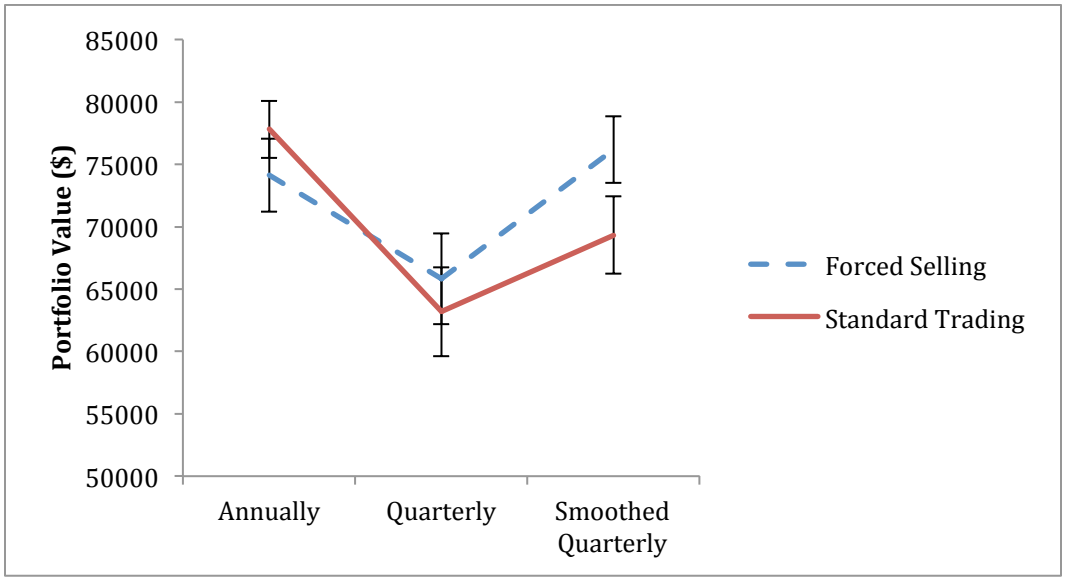
Results

First, we examine total portfolio value at the end of the 20th investment period using a linear regression model with monitoring frequency, reinvestment protocol, gender, and interest in investing, as well as all possible 2 and 3-way interactions among these variables entered as predictors. Only the significant effects are reported. There was a significant positive effect of interest in investing with participants who reported greater interest in investing earning more, $t = 2.19$, $p = .03$. There was also a marginally significant main effect of monitoring frequency with participants in the quarterly condition *(M* = $64,477) earning less than those in the smoothed quarterly *(M* = $72,818) and annual conditions *(M* = $76,010), $t = 1.89$, $p = .06$. This effect was qualified by a marginally significant interaction effect between monitoring frequency and reinvestment protocol, $t = 1.85$, $p = .066$. In figure 2-10 we see that under standard trading conditions, annual monitoring *(M* = $77,807) lead to greater wealth than quarterly *(M* = $63,180) or smoothed quarterly monitoring *(M* = $69,330). With forced selling, annual monitoring *(M* = $74,141) remained more profitable than quarterly

monitoring *(M* = $65,829), but was not different from the smoothed quarterly condition *(M* = $76,181).

FIGURE 2-10:

FINAL PORTFOLIO VALUE BY CONDITION



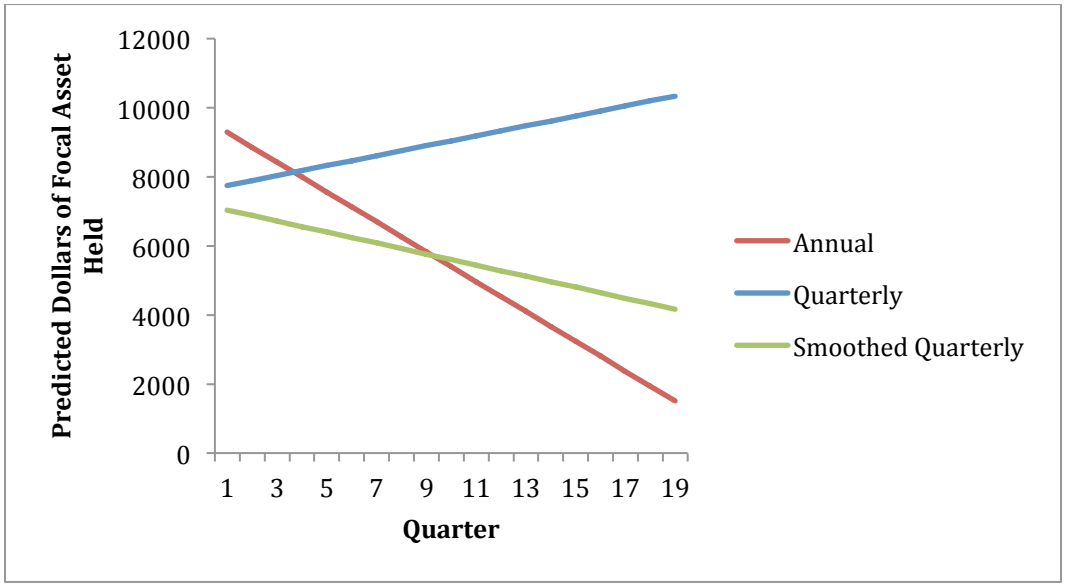
This pattern of results is slightly more nuanced than what was predicted. As expected, with standard trading, annual monitoring led to greater wealth than either the quarterly or smoothed quarterly conditions. This supports the hypothesis that less frequent monitoring can help investors who are holding a declining asset get rid of that asset, and that this effect is not merely a result of smoothing. However, the forced selling manipulation was not sufficient to reverse the effect in the quarterly condition. It is possible that without the benefit of smoothing, participants in the quarterly condition had more difficulty

differentiating between noise and trends and therefore the forced selling manipulation was not as beneficial.

As with prior experiments we analyzed participants' decisions to sell the focal asset as we predict that is the key driver of final portfolio value. To test this account, we analyzed the dollar value of units of the focal asset that participants owned across the 20 periods, again using Generalized Estimating Equation (GEE) regression models. The model included effects of period (linear and quadratic), gender, interest in investing, monitoring frequency, and reinvestment protocol, as well as all possible 2 and 3-way interactions between these factors. Only the effects reported below were statistically significant. Results revealed a significant (negative) linear effect of period, $z = -9.65$, $p < .0001$, indicating that participants held fewer units of the focal asset in later periods. This was qualified by a significant interaction between period and monitoring frequency, $z = 6.19$, $p < .0001$. The predicted values of the model are plotted in figure 2-11. In the annual and smoothed quarterly conditions, ownership of the focal asset decreases over time. However, in the quarterly condition ownership actually increases as the task progresses. Consistent with the portfolio value data, this model suggests that with quarterly monitoring and without the benefit of smoothing, participants did not rid themselves of the focal asset, even increasing their ownership of it, on average. This increased ownership was not disrupted by the forced selling manipulation and led to lower portfolio value.

FIGURE 2-11:

PREDICTED FOCAL ASSET OWNERSHIP BY MONITORING FREQUENCY



Discussion

We find that more frequent monitoring of a declining asset can lead it to take on the properties of a slow sinker. Ironically, monitoring investments more frequently and having more opportunities to sell the declining asset decreased the likelihood that it would be sold. The positive effect of less frequent monitoring, is distinct from the smoothing effect that has been demonstrated in prior research. Participants who saw smoothed returns quarterly performed worse than those who only saw annual returns. Forced selling eliminated the advantage of annual monitoring over smoothed quarterly monitoring. However, quarterly monitoring

(without smoothing) lagged both of these conditions, even when participants could not maintain asset allocations through mere inaction. The inability of the forced selling manipulation to reverse the effect in this condition is likely due to participants' reduced ability to disentangle noise and the larger price trend.

GENERAL DISCUSSION

The present research identifies a previously underappreciated threat to investors – "slow sinkers" or assets that perform moderately poorly, don't attract much attention, and tend to be held for too long, dragging down the value of people's investment portfolios. The effectiveness of the forced-selling intervention and cumulative price history pinpoints the inaction trap as the psychological mechanism leading investors to hold "slow sinkers" for too long. Moreover, these manipulations identify interventions that enhance consumer welfare by expediting the sale of investments that perform poorly without being spectacular losers.

This work enhances our understanding of the psychology of investment decisions by demonstrating the influence of prior actions on current investment choices and, in particular, the trap that moderately inferior assets can create because of this influence. Recent work on financial decision making has identified other ways in which psychological influences can affect wealth. Our findings highlight the importance of default choices in financial decisions, parallel with demonstrations of anchoring on minimum payments in credit card debt

repayment (Stewart, 2009) and current contributions in retirement savings (Thaler & Benartzi, 2004). However, the unique contribution of the present research is that it demonstrates, and provides a theoretical account for, the paradoxical phenomenon that a moderately inferior asset can be *more* detrimental to investor wealth than a dramatically inferior one, and that a declining asset monitored more frequently has an equally counterintuitive, more negative effect.

The effects on wealth observed in our experiments are both statistically significant and economically meaningful. Across the first two experiments, under standard-trading conditions, a slowly sinking asset reduced portfolio growth by approximately 11% relative to a portfolio containing a rapidly declining asset. The effects of more frequent monitoring in experiment 3 were even more dramatic, reducing final portfolio value by more than 20%. Investors need to be wary of these inconspicuous threats to their wealth.

As investors cannot possibly know in advance which assets will end up being slow sinkers, or even which assets will decline, the insights for investors relate to how investment choices should be structured in order to reduce the impact of the declining assets that are inevitably encountered. This work suggests three potential remedies for the inaction trap created by moderately inferior assets: 1. Invest capital afresh at regular intervals. 2. Focus on cumulative rather than recent price history. 3. Monitor investments relatively less frequently. Using these recommendations, investors could benefit substantially by structuring investment choices in ways that reduce the impact of inaction traps.

While monitoring investments less frequently and focusing on long-term performance are relatively easy for investors to implement, how should they obtain the benefits of forced selling, particularly without incurring transaction costs? Investors could potentially achieve similar results by reframing the decision of whether to sell a poorly performing asset by asking themselves "if I did not already own this asset, would I buy it at current prices and based on cumulative performance?" If the answer is no, then selling is in order. For the investor torn between the desire to avoid realizing losses and the expectation of even greater losses if the asset is kept, these small "nudges" (Thaler & Sunstein, 2008) could substantially increase future wealth.

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Appendix A:

Experiment 1 Screenshots

Standard-Trading Condition

Period 1 of 20.

	Previous Price	New Price	Change	Units Held	Dollars Held	Dollars to Invest next Period
Share A	$100.00	$ 99.00	-1.00%	100.00	$ 9,900.00	$ 9900.00
Share B	$100.00	$102.00	+2.00%	100.00	$ 10,200.00	$ 10200.00
Share C	$100.00	$ 99.00	-1.00%	100.00	$ 9,900.00	$ 9900.00
Share D	$100.00	$105.00	+5.00%	100.00	$ 10,500.00	$ 10500.00
				Totals:	$ 40,500.00	$ 40500
Submit Asset Allocation						

Forced-Selling Condition

Period 1 of 20.

	Previous Price	New Price	Change	Units Held	Dollars Held	Dollars to Invest next Period
Share A	$100.00	$ 99.00	-1.00%	100.00	$ 9,900.00	$
Share B	$100.00	$102.00	+2.00%	100.00	$ 10,200.00	$
Share C	$100.00	$ 99.00	-1.00%	100.00	$ 9,900.00	$
Share D	$100.00	$105.00	+5.00%	100.00	$ 10,500.00	$
				Totals:	$ 40,500.00	$ 0
Submit Asset Allocation						

CONCLUSION

In multiple experiments, across hedonic and utilitarian consumption domains, we find that consumers can suffer disproportionately from relatively small problems because of the way the decision to address these problems is made and because of the relationships among multiple opportunities for action. We find that smaller problems encourage initial decision deferral. This deferral leads to missed opportunities, which form the basis of comparison for similar opportunities in the future. When subsequent opportunities are relatively less attractive, consumers are more likely to endure problems that they might otherwise address. The prolonged duration of these smaller problems leave consumers less happy and less wealthy than they are with larger problems that are addressed more quickly.

Many important questions remain surrounding this decision process. We speculate that increased uncertainty could encourage decision deferral, but it may also decrease the comparability of opportunities, potentially reducing inaction inertia. The problems consumers encounter often change in intensity over time. Under what conditions does increasing problem severity diminish consumption experience by allowing consumers to gradually adapt to worse conditions, versus improve consumption experience by encouraging addressing of a problem that is no longer comparable to the problem that was initially unaddressed? Similarly, while a greater cost of addressing a problem should reduce the likelihood that

action is taken, consumers might also infer from the high cost that the problem is important enough to warrant action.

The decision variables identified here as contributors to inaction traps are far from exclusive to product malfunctions and investment decisions. There is reason to believe that the results obtained here could offer insight into other failures to act in a wide variety of domains. In particular, decision makers may face similar challenges in deciding whether to seek medical attention for a relatively minor health issue, potentially leading to greater suffering or the escalation of the problem into something much more serious.

In studying these inaction traps we highlight the dual nature of many aspects of the decision to take action and remedy a problem. More severe problems can cause greater harm in the moment, but are also likely to be addressed quickly. Having more opportunities for action increases the window in which to act while decreasing the importance of each opportunity. Being initially deprived of the opportunity for action prevents us from acting quickly, but may increase the chance that we act at all because we are also prevented from missing superior opportunities to act. These relationships reveal the complexity of what, on the surface, appear to be relatively straightforward choices; demonstrating the dependence of each decision to act on not only current conditions, but also the opportunities, both past and future, that the current opportunity is weighed against.

Just as we can perceive a candle as bright in darkened room or feel poorer when a colleague gets a raise, we may view a promising course of action as totally

undesirable relative to prior missed chances, or opportunities we believe are around the corner. Our minds are relatively poor judges of the absolute utility of opportunities for action, and by comparing them to absent alternatives we are better able to evaluate them. By doing so, we give context to otherwise isolated decisions. These relative evaluations may serve us well in most situations, facilitating fast and reasonably accurate choices. However, our desire for something to compare an opportunity to might contribute to decision deferral. Furthermore, these comparisons trap us when we initially miss an opportunity, and subsequent opportunities, though still attractive in an absolute sense, are somehow inferior. Under these conditions, we struggle to let go of the opportunities that are no longer available and shift our attention to the benefits that can still be gained.

Focusing on avoiding initial inaction may seem like a promising target for behavioral interventions directed at overcoming inaction traps. However, as stated in the introduction, we are constantly forgoing the vast majority of available actions. It is not possible for us to avoid initial inaction or decision deferral in a general sense. Therefore, focusing on how consumers escape the traps they are already in is an area that may offer more actionable recommendations. The most promising, general-purpose intervention examined here is to reduce the comparability between the current and previously forgone opportunities. Choosing a new and different approach to a niggling problem frees the decision maker from the comparison to foregone opportunities and opens the door to action.