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Mitigating Sunk Cost Bias for Consumers: Considering Alternatives Within High and Low Construal Levels When Costs are Sunk

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Mitigating Sunk Cost Bias for Consumers: Considering Alternatives Within High and Low Construal Levels When Costs are Sunk

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Biography

Jasmine Neelam Ahmad was born in El Paso, Texas. She graduated from Dixon High School in Illinois, received a Bachelor of Arts from Saint Mary's College in Indiana in 2009, a Master of Science in General Psychology from DePaul University in 2014, and a Master of Arts in Psychological Science from DePaul University in 2019.

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Abstract

This paper explores how sunk costs increase consumers' vulnerability to fraud and explores possible intervention strategies. Sunk cost bias occurs when individuals persist in an activity due to past investments (Arkes & Blumer, 1985). Outcome salience, framing, and alternatives can help alleviate loss aversion and persistence when costs are sunk (Stewart, Chater, Stott, & Reimers, 2003; Van Schie & Van Der Pligt, 1995). Option evaluation is influenced by an individual's construal level (Ding & Keh, 2017; Henderson, 2013; Sun, Keh, & Lee, 2019). Construal level theory (CL) describes the impact of psychological distance on thinking– with greater distance thinking is more abstract (high CL), with less distance thinking is more concrete (low CL) (Trope & Liberman, 2010). Individuals in a high construal mindset could be more likely to consider conceptual alternatives, like not purchasing a home, while individuals in a low construal mindset could be more likely to consider pursing a different loan, if they know they have preapproval from other lenders. Five studies investigated 1) sunk costs in fraudulent scenarios 2) the influence of construal level on sunk costs, 3) the influence of construal level on the evaluation of similar or general alternative options, 4) whether the presence of alternatives alleviate persistence when costs are sunk, and 5) whether the relationship between the presence of alternatives and persistence is mediated by the perceived feasibility of exploring other options. If effective, option salience can inform consumer protection efforts.

Keywords: Sunk cost, consumer fraud, option salience, alternatives, construal level theory

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Angela Stancik shared her loss with the United State Senate in 2019. Her grandmother, Marjorie Jones, was told she won a lottery and "all she needed to do was pay the fees." She sent money once, then upon request sent money several more times. She asked family members for cash, took a reverse mortgage on her house, and her family found several receipts indicating she had wired money several times (United States Senate, 2019). Individuals running this scam "… told victims that they needed to make a series of up-front payments before collecting their supposed prize, purportedly for items like insurance fees, taxes and customs duties," and they stole over $10 million from several victims (Department of Justice, 2018). Marjorie Jones ultimately committed suicide (United States Senate, 2019). This case is extreme, but not isolated. An examination of public records found that suicides do occur when individuals suffer from major financial loss, in the absence of a mental disorder (Saxby & Anil, 2012). In addition, prize scams are not unique to the United States. The Australian Competition & Consumer Commission (2023) reported over 7,000 reports of "unexpected money" fraud schemes in 2022. One Australian citizen was told he won the "Facebook Freedom Lottery" from a friend through the social media's messaging system. He paid a small "international transfer fee" and after paying that initial amount continued to pay five more fees to receive his prize, before he learned that his friend's account was hacked and there was no prize; the individual lost over $1,500 in the scam (Australian Competition & Consumer Commission, 2021). Prizes, sweepstakes, and lottery scams accounted for over 130,000 reports, annually, to the Federal Trade Commission (2022) with a median loss of $900. On an individual level, the impact ranges from the nuisance of constant phone calls to devastating losses. One convicted defrauder collected over five million

dollars from more than 70 victims; he collected anywhere from $300 to $800,000 per victim by asking them to pay a fee for taxes or insurance to receive a prize, many times (Department of Justice U.S. Attorney's Office, 2015).

How does an individual give up their life savings to a stranger to win a lottery? The defrauders almost never ask for large amounts of money at first. They start slow, asking for small amounts of money, and build up from there emphasizing the sunk costs that the victims have already made, in addition to encouraging individuals to behave consistently by continuing to pay fees. To better understand the influence tactics employed by telemarketing imposter and prize scams, an undercover phone-tapping project was conducted with AARP and law enforcement agencies (Pratkanis & Shadel, 2005). Investigators pretended to be unsuspecting victims and recorded their phone conversations with the criminals (Pratkanis & Shadel, 2005). Criminals will say they are an authority figures, emphasize the scarcity and the need to act quickly (Pratkanis & Shadel, 2005). Once victims are involved, the criminals would emphasize prior investments, inducing sunk cost bias, and to convince them to persist.

> All these other people that's taken advantage of you ma'am. That's ridiculous, that's sad. But it's ridiculous to allow them, because you spent money on these promotions- now that someone legitimate has came along and offered you the number on award ma'am, I mean it's not a million dollars, and it's not 40 or 50 thousand, like what you've spent on the promotions. But it sure would recoup a lot of your losses. 85-90% of them. Wouldn't it? (Pratkanis & Shadel, 2005, p. 144)

> You spent all these thousands of dollars and never got diddly-squat. Now I'm asking you to spend a minimum of $100 and a maximum of $250 to get $50,000. Do you want your money, ma'am? (Pratkanis & Shadel, 2005, p. 181)

The criminals are preying on the victim's aversion to loss. If they keep playing into the scheme by continually sending money, they will "recoup" their losses from spending money in other promotions and continue to make their sunk costs even higher.

Hill & Kozup (2007) interviewed subprime loan consumers on their experience with

predatory lenders. The individual attributes their compliance to the time and effort sunk into taking a loan.

> When I talked to them they told me one [interest] rate, but they gave me a higher rate at closing. I noted it but didn't press it with them. I had invested all this time and energy; I'm here so I might as well go through with it. (Hill & Kozup, 2007, p. 38)

Bait and switch lured the victim to the meeting, and the time invested in attending resulted in the individual's willingness to comply and sign a predatory loan. The statement provides additional anecdotal support for the role of sunk costs in fraud compliance (Hill & Kozup, 2007).

People also put effort into a different type of fraud scheme, one that we do not tend to think of as financial. People incur costs in relationships and then continue problematic relationships due to the amount of time and effort invested. Since anonymity is more easily maintained via the internet, some people create other personas and engage in fraudulent relationships. Using fake personas, people will "catfish" others and engage in a long-distance romantic relationships (Maysh, 2017). Emma fell in love with "Ronnie" a 34-year-old man she met through a dating app (Maysh, 2017). When she asked Ronnie to meet, he would continually make excuses (Maysh, 2017). After six months of daily conversations, her family questioned the nature of that person's identity, but she continued the relationship (Maysh, 2017). Using a reverse image search she found his photograph with a different name, Alem (Maysh, 2017). She told him what she found and believed him when he said he had his name changed and continued the relationship for another six months (Maysh, 2017). It was not until "Ronnie" accidently emailed her from an email account under his real name Alan Stanley, a 53-year-old man, that she stopped believing his lies (Maysh, 2017). She did meet Alan Stanley, but they did not continue the relationship (Maysh, 2017). In the end, she spent over a year in a long-distance relationship

with someone she had not met and pursued the relationship despite suspicions and lying. Several individuals lose more than time to catfish schemes– in 2021 $547 million dollars were lost to romance scams wherein people send money to these fake personas (Federal Trade Commission, 2022). Sunk cost bias may lead victims to overlook or dismiss red flags in catfishing schemes when individuals had already spent a significant amount of time engaged in the relationship.

Fischer and colleagues (2013) conducted an analysis on interviews with 23 self-identified fraud victims. Sunk-cost considerations, emotional cues, trust and authority, overconfidence, and regret all emerged as categories from a text mining analysis (Fischer et al., 2013). Each situation is unique and sunk-cost effect is one of several regularly occurring cognitive and social psychological factors influencing decisions (Stark & Choplin, 2009). Other factors include misplaced trust, perceived inability to negotiate, and adherence to social scripts and norms (Stark & Choplin, 2009). Several social and cognitive factors, in addition to situational factors like financial constraints, confound our understanding of fraud. Empirical studies are necessary to understand the impact of sunk costs on fraud compliance.

This dissertation will explore the role of sunk cost bias in fraud compliance and strategies for mitigating the impact. In addition to the anecdotes listed above, qualitative analysis from fraud victims and speculation by researchers suggested that sunk costs make consumers particularly vulnerable to fraud (Fischer et al., 2013; Hill & Kozup, 2007; Pratkanis & Shadel, 2005; Stark & Choplin, 2009). This paper will explore the definition and drivers of sunk cost, to inform methods to mitigate the effects. A better understanding of the psychological mechanisms will inform policy and fraud prevention strategies. After, the paper will review five empirical studies, which include an in-person fraud simulation to examine the impact of sunk costs on consumers' vulnerability to fraud, and test the relationship between construal level theory on

psychological distance, the presentation of alternative options, and sunk cost bias with the aim of deterring fraud compliance. This dissertation aims to build on our understanding of sunk cost bias, within construal level theory, to provide practical solutions.

Sunk Cost Bias

Thaler (1980) describes how consumer behavior is inconsistent with economic theory by considering sunk costs – individuals make poor decisions because they weigh past costs more heavily than future costs when economic theory defines the rational choice to be based on future gains and losses. Sunk cost bias occurs when one continues an unpopular or risky endeavor because resources were invested in the effort even though none of the resources can be recovered (Arkes & Blumer, 1985). To examine the role of sunk cost bias in decision making, Arkes and Blumer (1985) created vignettes which describe a scenario in which the participant accidently purchased two nonrefundable tickets for a ski trip on the same day, and they can only attend one trip. The cheaper trip would be more enjoyable. However, more participants selected the expensive trip, even though it would be less enjoyable. Money was unrecoverable, regardless of their choice. The researchers postulate that individuals choose the more expensive, less enjoyable, option because they do not want to appear wasteful (Arkes & Blumer, 1985).

Associated to sunk cost bias is the Concorde fallacy, a term formulated by a biologist to describe the defense of an investment even though it costs far more than abandoning the project (Arkes & Ayton, 1999; Dawkins & Carlisle, 1976). The fallacy was named after a commercial supersonic airline. British and French governments continued to fund the airliner due to irrecoverable costs.

> Concorde is a commercial disaster. It should never have been started. On 30 November, 1971, it had cost the British Government an irrecoverable £350 million. If continued, development and production will cost us at least £475 million more (£392 million present value) from 1971–75. Concorde will make little money for its manufacturers and

> precious little, if anything, for the airlines who buy it. The total liability to the United Kingdom alone could be about £550 million excluding the written off £350 million mentioned above. (Central Policy Review Staff, 1971, p.1)

The Concorde project ended in 2003; thirty-two years after this memorandum warning the British government that the project was a poor investment. This is an example of how sunk cost bias can be a driver in escalation of commitment. Moon (2001) independently manipulated the amount of resources invested and closeness to completion, and found both variables escalated commitment. For the Concorde, it was clear the project was not close to completion, but the government continued due to past investments of time, money, and effort.

Choosing between two ski trips and persisting in a costly and ill-fated project are distinct situations, however both demonstrate the influence of sunk costs on decisions. Individuals are more likely to select the option where they made the greatest investment and investments include money (Arkes & Blumer, 1985), time (Navarro & Fantino, 2009), and/or effort (Cunha & Caldieraro, 2009). Researchers distinguish these scenarios as either utilization decisions or progress decisions (Conlon & Garland, 1993; Moon, 2001; Roth, Robbert, & Straus, 2015). Utilization decisions involve using a product or choosing a trip based on cost; progress decisions involve persisting in a venture, like the Concorde airline (Garland & Conlon, 1993; Moon, 2001; Roth et al., 2015). Roth et al. (2015) conducted a meta-analysis on 98 studies on sunk cost bias. Sunk-cost bias has a moderate effect size for both progress and utilization decisions. Higher payment increases the likelihood to use a product or service in utilization decisions, and investment of time, money, and effort increases likelihood to persist in a course of action (Roth et al., 2015). However, the meta-analysis did find significant amount variability between effect sizes (Roth et al., 2015). Sunk-cost effect has a measurable impact on behavior; however, the strength varies (Roth et al., 2015). In short, sunk cost bias is a phenomenon observed when

individuals utilize pre-purchased materials, regardless of preference, and persist in costly projects (Arkes & Blumer, 1985; Cunha & Caldieraro, 2009; Garland & Conlon, 1993; Moon, 2001; Navarro & Fantino, 2009; Roth et al., 2015).

Explanations for sunk cost bias

What is driving sunk cost bias? Arkes and Blumer (1985) postulate that sunk cost bias is driven by an overextension of the "don't waste" maxim by avoiding the "appearance of wastefulness." One component of being wasteful is concern with other's perceptions and another component is our cognitive aversion to waste or loss. There is both internal and external assessments of behavior influencing individuals to honor sunk costs. Empirical examinations of sunk cost bias generally examine the role of personal responsibility and loss aversion in sunk cost bias and they are reviewed in the following section.

Individuals are more likely to escalate if personally responsible in progress decisions (Straw, 1976). Research is based on vignettes in which participants must decide if they will continue to fund a failing project, and participants are more likely to continue funding if they were responsible for the original investment (Straw, 1976). Cialdini and colleagues (1978) arrived at a similar finding: consistency by low-balling is an effective technique to invoke compliance. In other words, individuals are more likely to comply with a request for more time, effort, and/or resources if they had agreed to a similar smaller request, also known as a foot-in-the-door persuasion technique (Cialdini et al., 1978). With respect to sunk costs, the individual is driving the actions; self-justification occurs when an individual is unwilling to admit error in past judgments and explains inadvisable persistence in progress decision scenarios (Brockner, 1992). For example, Gunia and colleagues (2009) asked participants to imagine how their predecessor at a company felt and thought when they made a decision; participants asked to take their

predecessor's perspective invested more in a failing project than participants who did not engage in perspective-taking with their predecessor (Gunia et al., 2009). Self-justification applies as an explanation for valuing sunk costs in progress decision, but less so on utilization decisions, or decisions involving time. In utilization decisions, individuals are just as likely to continue an unpopular endeavor, like watching a bad movie, if someone else made a monetary investment than if the individual made the monetary investment themselves (Olivola, 2018).

Sunk cost bias is also driven by loss aversion– to discontinue investing in a failing venture would involve recognizing losses, and losses loom greater than potential gains (Kahneman & Tversky, 1979; Thaler, 1980). Sunk cost bias is alleviated when the individual shifts focus away from the loss (Molden & Hui, 2011). In other words, frame of mind can impact sunk cost bias. Specifically, inducing a promotion or growth mindset inhibits continuous investment in failing endeavors (Molden & Hui, 2011). In addition, the perception of available time shifts focus and impacts sunk costs (Strough, Schlosnagle, Karns, Lemaster, & Pichayayothin, 2014). Socioemotional selectivity theory predicts behavior when temporal contexts are shortened– individuals maximize current experiences when they perceive they have less time to live (Carstensen, Isaacowitz, & Charles, 1999). Strough et al. (2014) examined whether individuals with restricted temporal horizons would be less loss averse and less susceptible to sunk bias, since their focus is on the present, not the future or past. Older adults, with restricted temporal horizons, were less likely to attend to sunk costs than younger adults (Strough et al., 2014). In addition, practicing mindfulness, focusing on the present, and reducing negative affect minimized sunk cost bias (Hafenbrack, Kinias, & Barsade, 2014). Lastly, positive affect reduces sunk cost by optimizing cognitive flexibility (Emich & Pyone, 2018). Considering alternatives to sunk costs occurs more often in a positive state and alleviates sunk cost bias

(Emich & Pyone, 2018). Participants viewing positive mood induction clips were less likely to value sunk costs than those in a negative mood condition (Emich & Pyone, 2018). In addition, participants asked to consider alternative uses for common items like a pencil or a dictionary, to induce cognitive flexibility, were less likely to attend to sunk costs (Emich & Pyone, 2018). Collectively, these findings illustrate the importance of widening the focus from certain losses when deescalating sunk cost behaviors (Cartensen et al., 1999; Emich & Pyone, 2018; Molden & Hui, 2011; Strough et al., 2014). Changing and widening focus will be explored a mitigating factor for sunk cost bias in fraudulent scenarios.

Traditionally, sunk costs are labeled a fallacy and deemed irrational (Arkes & Ayton, 1999; Arkes & Blumer, 1985). However, it is important to note that the sunk cost options may serve an individual's motivational needs and be considered an instrumentally rational decision (Domeier, Sachse, & Schäfer, 2018). Understanding this nuance provides more depth to our understanding of sunk costs. To illustrate, Domeier and colleagues (2018) asked participants to build a structure to protect an egg for an egg drop competition, then provided participants a better pre-built structure to compete and win a prize. Participants who reported higher ratings of feeling in control and being effective in their structure solution were more likely to test the egg protection structure they had designed and built over the pre-built option provided by the researchers, even though the pre-made structure had a higher probability of winning (Domeier et al., 2018). Participants chose the sunk cost option to determine if the item they designed would be effective in protecting the egg when dropped and fulfill the psychological need for competency (Domeier et al., 2018). Doody (2020) also argues that taking the sunk cost option is not a fallacy; succumbing to sunk cost bias is a "diachronic misfortune," meaning individuals will attend to sunk cost bias in order be perceived as behaving consistently, which is socially

beneficial. Moreover, individuals are more likely to value sunk costs when they believe their core identity is similar to their current self (Schanbacher, Gurdamar-Okutur, & Faro, 2021). Participants reading that a person's core identity remain the same are more likely to attend to sunk cost bias than those reading that a person's core identity changes substantially over the years (Schanbacher, et al., 2021). Sunk cost bias can serve an individual's psychological needs and increases when an individual is more connected to their past self (Domeier et al., 2018; Schanbacher, et al., 2021). There are times when sunk cost bias is not irrational. Sunk cost bias is more likely when one's identity is confirmed by persisting in activities the define themselves by—like seeing oneself as committed to a task. Commitment and consistency is perceived by others as a positive attribute (Doody, 2020).

Sunk costs factor into fraud compliance and drivers include personal responsibility and loss aversion (Kahneman & Tversky, 1979; Thaler, 1980). Some argue that sunk cost bias may be rational in certain circumstances when an individuals' identity is tied to the action and/or fulfills a psychological need for competency (Domeier et al., 2018; Schanbacher, et al., 2021). These drivers are impacted by the individuals focus and perception of the outcome, e.g., focusing on losing money or what it would mean for one's identity to have lost this money. The next sections will explore option salience and psychological distance as outlined in construal level theory, and then propose a series of studies to examine the impact of construal level on fraud compliance in sunk cost scenarios and the effectiveness of presenting different types of options within high and low construal levels.

Alternative option salience

Sunk costs can block one's ability to envision positive outcomes from abandoning a given endeavor, as a result one can only see losses as a result of abandoning the endeavor and

not any prospects for financial or resource-related profits to be made elsewhere. Outcome salience and framing can alleviate loss aversion (Van Schie & Van Der Pligt, 1995), and the set of available options influences our perception of prospects (Stewart et al., 2003). For example, a hotel would be perceived as moderately-price if there are both higher and lower options available. Our evaluation of that same hotel at the same price would change if all other options in the set are higher than the target (Stewart et al., 2003). In sunk cost scenarios, respondents are typically given two options, to continue or discontinue. One way to mitigate this effect is to focus on the benefits of switching to another course of action. Research has provided a wide variety of ideas about how to decrease sunk cost bias by changing perspective or focus. Shifting focus by limiting perceived time (Strough et al., 2014), promoting a growth mindset (Molden & Hui, 2011), or increasing cognitive flexibility (Emich & Pyone, 2018) decrease sunk cost bias since the individual is less focused on the certain loss. To illustrate, Molden and Hui (2011) explored the relationship between sunk cost bias and two types of regulatory focuses; promotion-focus encourages growth and advancement and a prevention-focus encouraged discontinuing. Individuals in a promotion-focus mindset, focusing on gains instead of losses, were less likely to continue a failing project (Molden & Hui, 2011). Thinking beyond losses, expanding prospects, may alleviate sunk cost bias (Emich & Pyone, 2018; Molden & Hui, 2011; Stewart et al., 2003; Strough et al., 2014). Consumers considering other options may be less susceptible to sunk cost bias in fraudulent scenarios, however an individual's mindset and openness to considering alternatives will be examined.

Construal Level Theory

Sunk costs bias is informed by an individual's mindset and the proximity to their current interests and goals (Domeier et al., 2018; Doody 2020; Schanbacher et al., 2021). The impact of

an individual's perspective or construal in terms of psychological distance from an egocentric reference point is outlined in Construal Level Theory (CL) (Trope & Liberman, 2010). CL describes the impact of psychological distance on level of abstraction to our thoughts– greater distance corresponds with greater abstraction and greater emphasis on the essential features, less distance corresponds with increased concreteness and include more emphasis on peripheral features (Trope & Liberman, 2010). Mindfulness mediation, induced with an audio guide, resulted in more abstract (high CL) thinking than participants in a mind wandering condition (Chan & Wang, 2019). Construal level theory has been studied in several decision-making contexts (Borovoi, Liberman, & Trope, 2010; Liberman & Trope, 1998; Liberman & Trope, 2010; Tan & Liu, 2018). Tan and Liu (2018) examine impact time, space, social distance, and hypotheticality on risk taking in ambiguous situations, like the Ellsberg bottle-choosing task, a lottery type game where individual must choose between two bottles with varying proportions of red and blue balls with goal of drawing a blue ball. Across all four dimensions, participants were more risk averse within a lower CL, i.e., the outcome would be rewarded sooner (time), the lottery game was occurring closer to the university (space), they were making the decision for themselves instead of a stranger (social distance), there was a greater chance the prize would be awarded (hypotheticality) (Tan & Liu, 2018). Participants with higher CL rated ambiguous situations as less risky (Tan & Liu, 2018). In addition, when choosing a job or computer from sets of options, participants are less likely to attend and remember details if they were told the job or computer purchase was occurring in the future, the high CL condition (Borovoi, et al., 2010). A goal's desirability becomes a more important factor than feasibility as the construal level is higher (Liberman & Trope, 1998). In high CL, students selecting an assignment to complete in the future are more likely to choose an assignment that aligns to their interests and is

more desirable, regardless of difficulty. In low CL, students will be less likely to choose a difficult assignment if the assignment is due soon; feasibility takes precedence over desirability (Liberman & Trope, 1998). Construal level impacts individuals' decisions by influencing their assessment of risk, evaluation of options, and attention to details. Within high CL, individuals are less risk averse (Tan & Liu, 2018), less influenced by the details of alternative options (Borovoi, et al., 2010), and more concerned with the desirability of an outcome (Liberman & Trope, 1998). Within low CL, individuals are more risk averse (Tan & Liu, 2018), more influenced by the details of alternative options (Borovoi, et al., 2010) and more concerned with the feasibility achieving an outcome (Liberman & Trope, 1998). A meta-analysis found a medium effect size of psychological distance on abstraction with stable effects across authors and year of publication (Soderberg, et al., 2015). However, the studies in the meta-analysis contained small samples sizes. As of early 2023, a construal level international multi-lab replication project (CLIMR) is working with 75 labs to replicate the experiments that established Construal Level Theory and provide a better understanding of effect size and boundary conditions in the theory.

This paper will explore findings on sunk cost bias, construal level theory, and investigate an intervention strategy to mitigate sunk costs by providing alternative options designed to appeal to either a high or low construal level.

Sunk costs bias and construal level theory

A high level of psychological distance or CL (construal level), is associated with an increased focus of the primary goal and a decreased sunk cost bias (Trope, Liberman, & Wakslak, 2007). For instance, participants evaluating an airplane development scenario, such as the Concorde were less susceptible to sunk costs and more likely to end investment in the

program when location of the plane construction was on the other side of the country as opposed to their own city (Wakslak, Liberman, & Trope, 2006).

Recent research has explored the nuances of escalation of commitment scenarios with construal level theory. Benschop and colleagues (2021) conducted a study using a vignette to examine the impact of construal level on persistence in a failing project. The vignette described winning award money to develop an iPhone app; however, a working version of the app has not been achieved and the award money had already been spent. Participants were given the option to invest their own money to continue development, and they were presented with two considerations: feasibility and desirability. Feasibility concerns focused on low-level, concrete information, such as the technical obstacles in completing the app. Desirability concerns focused on high-level, abstract information, such as completing the app would be a great learning experience. Construal level was found to predict participants' willingness to continue investing. The effect was mediated by the perceived importance of feasibility over desirability (Benschop et al., 2021). In other words, participants with low construal level scores were less likely to consider sunk costs if feasibility considerations outweighed the desire to complete the app as a learning experience (Benschop et al., 2021).

It is worth noting that Benschop and colleagues (2021) were unable to induce construal level by asking participants to think of specific examples (low CL) or higher-level category (high CL) of items. For example, a participant in the low CL condition might write "Dell" as a type of computer and a participant in the high CL condition might write "electronics" as a higher order category for a computer (Fujita et al., 2006). Since the manipulation was unsuccessful, the researchers relied on responses to the Behavioral identification Form (BIF) administered as a manipulation check (Vallacher & Wegner,1989). The authors observed construal level as a trait

and used BIF scores to model the mediation relationship. Inducing construal level can be challenging if participants have had prior exposure (Maglio, Trope, & Liberman, 2013). This study sheds light on the intricate relationship between construal level as a trait and escalation of commitment scenarios. It suggests that individuals with a lower construal level mindset are less likely to value sunk costs when feasibility concerns outweighed desirability of completing the project, whereas Wakslak et al. 2006 found that high construal level decreases sunk cost bias. The inclusion of feasibility concerns helps explain these findings, as individuals with a low construal mindset are less likely to consider costs when they prioritize feasibility over desirability (Liberman & Trope, 1998).

Considering other options within different construal levels

In this paper, construal level theory will be used to examine the effectiveness of making alternative options more salient to consumers when deterring sunk costs. Promoting the consideration of other options is a practical approach for consumers to alleviate sunk cost bias and aligns with literature on sunk cost bias and loss aversion, which suggests that encouraging the exploration of alternatives is an effective means of discouraging sunk cost bias. Specifically, this paper explores two intervention strategies: manipulating the types of options available, such as providing proximal details on alternatives or making a general suggestion to consider another option outside of continuing, and examines the effectiveness of these strategies within low and high construal mindsets.

Within the framework of construal level theory, consideration of alternatives is hypothesized to be dependent on a match between the options and mindset (Liberman, Trope, & Wakslak, 2007). For example, when purchasing an insurance plan, individuals with a lower construal level, or less psychological distance, may be less inclined to consider conceptual

alternatives like not purchasing an insurance plan to save money (Liberman et al., 2007). However, individuals with lower construal levels may be more likely to consider an array of other insurance plans, as the options are more concrete (Liberman et al., 2007). Additional research suggests that individuals with a low construal mindset prefer a greater number of choices, whereas individuals with a high construal mindset found large choice sets redundant (Henderson, 2013). When evaluating cafes, individuals in low CL attend to more tangible attributes like, aroma and food, whereas those in high CL focus on more intangible elements like service and courtesy (Ding & Keh, 2017). Furthermore, individuals with high CL are more influences by nonalignable attributes when making purchasing decisions. For example, when choosing between two hotels they are more likely to consider unique and non-comparable elements, elements, like ambience, rather than directly comparable features (Sun, Keh, & Lee, 2019).

A series of studies will examine impact of construal level on sunk costs in fraudulent situations, as well as the effectiveness of proximal details on alternative options and general suggestions to take alternative actions in mitigating persistence in sunk cost scenarios. Proximal details on alternative options may have more appeal to individuals in a low construal mindset, as they are more likely to consider tangible options (Ding & Keh, 2017), prefer to compare among alignable features (Sun, Keh, & Lee, 2019), and favor a larger number of options (Henderson, 2013). On the other hand, general suggestions may be more appealing to individuals in a high construal mindset, as past research suggests that they are more attentive to intangible characteristics (Ding & Keh, 2017) and are more influenced by nonalignable features (Sun, Keh, & Lee, 2019).

Rationale

Consumer fraud is a significant issue that can have detrimental consequences. Angela Stancik testified before Congress to bring attention to the matter, as she suffered the personal loss of her grandmother. Her grandmother, Marjorie Jones, participated in a prize scam. She wired money, took a reverse mortgage on her home, and cashed out her life insurance, to pay taxes and fees to obtain a large cash prize (United States Senate, 2019). One psychological phenomenon that may influence compliance in fraudulent scenarios is sunk cost bias (Fischer et al., 2013; Stark & Choplin, 2009). To establish the foundation for a series of studies, the literature review first explored many scholars' definitions of sunk cost bias. Sunk cost bias occurs when individuals weigh past investments more heavily than future losses and is commonly observed in progress and utilization decisions (Arkes & Blumer, 1985; Roth et al., 2015). Progress decisions, which involve continued investment, are similar to the decisions made by individuals involved in prize scams, catfishing, and predatory lending scenarios. For instance, individuals who believe they won a prize but need to pay fees or taxes before receiving the prize. After paying the first fee request, these individuals could be more likely to continue making multiple payments for a fictious prize. In case of Marjorie Jones, she paid smaller fees first, which added up to larger sums, and escalated into taking a reverse mortgage on her home since she had already spent a large amount of money into obtaining this prize. In study 1, a fraud simulation study, it is predicted that students who have already invested time and effort in completing surveys for credit in their Psychology courses will be more likely to comply and pay a fraudulent fee.

Given the influence of perspective on sunk cost bias, as demonstrated in the relationships to mindfulness (Hafenbrack et al., 2014), socio-emotional selectivity theory (Strough et al., 2014), and a promotion mindset (Molden & Hui, 2011), the literature review examines Construal

Level Theory (CLT). CLT and sunk cost bias have been investigated in two studies. Wakslak, and colleagues (2006) found that higher construal level decreased sunk costs, while Benschop and colleagues (2021) explored the mediation role of feasibility in the relationship between construal level and willingness to persist in an escalation of commitment scenario. High construal level has been shown to alleviate sunk cost bias (Wakslak et al., 2006). In addition, previous research has also indicated a positive correlation between high construal level and mindfulness (Chan & Wang, 2019), which is known to reduce sunk cost bias (Hafenbrack et al., 2014). Would Angela's grandmother have continued paying the excessive fees if there was an intervention that changed her mindset? Study 2 of this dissertation aims to explore the role of high and low construal level in compliance with fraud when costs are sunk, replicating Wakslak and colleagues (2006) findings, predicting that high construal level will alleviate sunk cost bias. Furthermore, study 2 will replicate the first study using more generalizable scenarios, to determine if sunk costs increase persistence in a variety of fraudulent situations.

While consumer fraud can be an inconvenient nuisance for many, the impact can be far worse. A major financial loss can result in suicide, even in the absence of mental health disorders (Department of Justice, 2018; Saxby & Anil, 2012). Therefore, a better understanding of sunk cost bias and intervention strategies is crucial. Study 3 will investigate the effectiveness of enhancing the salience of alternatives within high and low construal mindsets. Will alternatives be more effective if they appeal to a specific construal level? Liberman and colleagues (2007) propose that individuals within a low construal level will be more likely to pursue similar alternatives. Furthermore, individuals in a low construal mindset prefer a greater number of options (Henderson, 2013), and pay more attention to tangible (Ding & Keh, 2017) and alignable (Sun, Keh, & Lee, 2019) attributes in a choice set. I predict that providing proximal details on

alternatives will deter fraud compliance. For example, participants will be less likely to sign a predatory mortgage if they were also pre-approved by other lenders. Students completing a study might be less likely to pay the fraudulent fee if they were reminded, they could also write a paper for credit. This method may be especially effective for individuals in a low construal mindset, since those in a low construal mindset attend to the details for alternatives, which will be explored in study 3.

I also predict that general suggestions will deter individuals from compliance. A general suggestion serves as a reminder to the individual that they have other options and do not need to proceed with the current course of action. For example, it can be a simple reminder to explore other options when presented with a mortgage with a different interest rate than previously stated. This method may be particularly effective for individuals in a high construal mindset, as they are better able to think abstractly, take risks (Tan & Liu, 2018), and are less likely to pursue an undesirable deal (Liberman & Trope, 1998). The impact of general suggestions on individuals with different construal levels will also be explored in study 3. Investigating option evaluations can inform future prevention efforts, would Marjorie Jones have been continued participation if alternative options, either detailed or general, had been made more explicit? Could this be an effective intervention strategy?

The second section of the literature review delved into drivers for sunk cost bias. Sunk cost bias arises when individuals feel personally responsible (Straw, 1976) and experience discomfort in recognizing the loss (Kahneman & Tversky, 1979; Thaler, 1980). However, sunk cost bias is alleviated when individuals shift perspective by considering time remaining (Strough et al., 2014), focus on growth rather than losses (Molden & Hui, 2011) and increasing cognitive flexibility (Emich & Pyone, 2018). Additionally, prospects are evaluated differently when other

options are available (Stewart et al., 2003). In study 4, this dissertation will explore whether making alternatives more salient can alleviate sunk cost bias in fraudulent scenarios. Does the presence of alternatives alleviate sunk cost bias? In addition, is the presence of alternatives effective in deterring fraud compliance when there are no sunk costs? This exploration can shed light on whether providing alternative options would be successful in deterring individuals from continuing with fraudulent activity early in a scam, as well as later in a drawn-out fraudulent situation, like the prize scam that preyed on Marjorie Jones.

Does the presence of alternatives make it easier, and more feasible, to explore other options? Feasibility concerns mediated the relationship between construal level and sunk costs (Benschop et al., 2021), and feasibility of exploring other options would be a mechanism to help explain the effectiveness of providing alternatives and deter compliance in fraudulent sunk cost scenarios. Highlighting alternatives that not feasible and impractical to explore, would be an ineffective form of fraud intervention. Studies 5A and 5B will explore whether the presence of alternatives increases the perceived feasibility of exploring other options and decrease willingness to persist. This last set of studies can provide insight into the specifics of an individual's perception of exploring other options as an effective intervention strategy.

Study 1

Several researchers have suggested that sunk costs make consumers vulnerable to fraud and the anecdotes presented in the introduction above certainly suggest that they do but this hypothesis has never been experimentally tested (Fischer et al., 2013; Hill & Kozup, 2007; Pratkanis & Shadel, 2005; Stark & Choplin, 2009). To examine the impact of sunk cost bias in an applied decision-making paradigm, the first study induced sunk costs in a lab study. From this study, we can evaluate the impact of sunk cost bias in fraud compliance. This allows researchers

to infer why individuals, like Marjorie Jones continue to pay “fees” and “taxes” in prize scam. Understanding the impact of the driver, like sunk cost bias, will provide a foundation for an additional four experiments which test the impact of sunk cost bias in various types of fraudulent scenarios and test possible intervention strategies.

Hypothesis

The first study manipulated whether participants spent time and effort (i.e., sunk costs) before discovering a hidden research fee. I hypothesized that participants who spent this time and effort would be more likely to pay the research fee than participants in the control condition who did not.

Research Question

Sunk costs have been observed in anecdotal consumer fraud cases. Do sunk costs influence compliance in fraudulent activity?

Method

Participants

The first study involved 162 undergraduate students from DePaul University’s Psychology subject pool. Participants were at least 18 years of age (M=19.24, SD=1.52), 74% were women, 49% were white, 19% were Hispanic/Latino, 9% were Black/African American, 9% were Asian, and the remaining 15% of individuals identified as other, multiple racial/ethnic categories, or did not report.

Given the monetary nature of the dependent variable, paying a fee, additional information on participant income was collected. Forty-one percent of participants reported a household income less than $50,000, 28% reported a household income between $50,000 and $99,999, 28% reported a household income $100,000 or above, and 3% did not report. In addition, participants

reported the amount of discretionary income they have per month, and they were provided the following definition, "Discretionary income is the amount of an individual's income that is left for spending, investing or saving after paying taxes and paying for personal necessities, such as food, shelter and clothing" (Kagan, 2021). Thirty-three percent of participants reported less than $100, 32% reported between $100 and $299, 32% reported more $300 or more in discretionary income a month, and 3% did not report. Participants were also asked, "Approximately, what percentage of college costs do the following cover? College costs include tuition, books, and housing/rent." Students' own money and loans, they are responsible for paying, accounted for an average of 27.02% of costs (*SD* = 27.73%). Money and loans from family friends accounted for an average of 34.61% of costs (*SD* = 30.53%). Scholarships accounted for an average of 35.72% of costs (*SD* = 26.82%). In terms of employment, 55% of participants did not work, 34% worked less than 20 hours a week, 10% worked more than 20 hours a week, and 1% did not report. In general, most of the undergraduate students in this sample received financial support from their family and did not work full-time, a common profile in the United States (Hanson, 2021).

Materials

The study used a bogus informed consent (Appendix A). The bogus informed consent predominately displayed the following statement in large, red font: "You will be charged a $50.95[1] research fee for your participation in this experiment."

[1] There was no difference between the sunk cost and control conditions with lower fees of $5 (*N*=4, 100% paid) and $35.95 ($X^2$ (1, *N* = 87) = 1.52, *p* = .22. Participants completed two surveys, the Cognitive Reflection Test (Frederick, 2005) and the Social Desirability Scale (Reynolds, 1982) in the $35.95 version of the study. These tasks were completed relatively quickly, on average 2.50 minutes (*SD* = 1.42). In addition to the increasing the research fee, additional surveys were added to increase sunk costs and to strongly differentiate the two conditions. This does increase the likelihood of a type I error found in the study, and the goal is to determine whether these effects are replicable.

Surveys and the demographic questionnaire utilized in the first study are in Appendix B. All participants completed the Cognitive Reflection Test (Frederick, 2005), the Social Desirability Scale (Reynolds, 1982), Need for Cognition Scale (Cacioppo, Petty, & Kao, 1984), Mindful Attention Awareness Scale (Brown & Ryan, 2003), and the Big Five Aspect Scales (DeYoung, Quilty, & Peterson, 2007). Participants in the sunk cost condition completed the scales before being asked to pay the fee, and participants in the control condition completed the scales after being asked to pay the fee.

Following the researcher's request for the fee, participants were asked if they believed the researcher and if they had the financial means to pay the research fee. Finally, participants reported gender, age, education, income, race/ethnicity, their college major, current employment, discretionary income, and percentage of college costs covered by themselves, scholarships, family, and loans.

Procedure

The study was titled, "Personality and Problem Solving" in the university experiment management system and the description stated that the researchers were investigating "how personality traits interact with various problem-solving strategies." Participants arrived individually at the lab during their assigned half-hour time slot.

In the **control condition**, participants entered the lab and they were directed to sit a table with the researcher. On the table, the researcher had a laptop and a mobile phone with a card reader attached. The participant was given the bogus informed consent form to read and sign, which was a standard procedure for the study. The researcher recorded the time spent reading the informed consent form and questions asked by the participants in the laptop. If the participant inquired about the fee, the researcher responded, "it's a lab fee and I am collecting today, I take

debit, credit, or cash." If the participant asked if other studies had lab fees, the researcher responded, "I'm not sure, I only work in this lab." The researcher did not pressure the participants to sign. If they were uncertain and asked, "what happens if I don't pay the fee" the researcher replied, "you can leave if you'd like, but I won't be able to give you credit without fee payment." The researcher disclosed the deception either when the participant handed over a form of payment or stood up and began walking to the door. If the participant signed the bogus informed consent form, the researcher tore it up and explained there was no fee; this was part of the study. For participants who had started to leave the lab, the researcher asked them to return the table and provided the same explanation. The participants were then given the actual informed consent and were invited to complete additional surveys, including word problems, personality and demographic questionnaires. The surveys were completed on a laptop in a cubicle, and once finished participants received a debriefing.

In the **sunk cost condition**, participants were asked to sit in the cubicle upon entering the lab and complete a series of a personality questionnaires and word problems. After completing the surveys, participants were asked to sit at a table. They were given the bogus informed consent, and the study followed the same procedure described above in the control condition. Once the participant decided to pay the fee or leave the lab, and the researcher revealed the deception, participants were asked complete one additional demographic questionnaire, which included questions about their perception of the fee.

Results

Most participants believed the research fee in the fraud simulation study was real. When asked, "Did you believe the researcher when she requested you pay a research fee?" 72% responded yes, 21% were unsure, and 6% did not. Overall, 48% of participants were going to pay

the research fee with a credit card or cash, 49% were not willing to pay the fee, and 3% of participants were going to call a parent or the bank to transfer funds. Five participants were excluded from the analysis because they were going to call a parent or the bank. It was difficult to determine if the individuals in these cases were going to pay the fee– they may have used the parent's feedback or bank fund availability as an excuse to not pay the fee. Regardless, the researcher stopped the participants before they made a phone call and revealed the deception. Participants spent an average of 8.44 minutes (SD = 2.78) completing the surveys, with a range from 3.47 to 20.56 minutes.

Analysis proceeded with the Bayes Factors R package (Gunel & Dickey, 1974). Fifty-nine percent of participants in the sunk cost condition were willing to pay the research fee, compared to 41% in the control condition, X^2 (1, N = 157) = 4.64, p = .03, φ = .19, BF_{10}=2.49. In other words, participants in the sunk cost condition were approximately two times more likely to pay when compared to the null hypothesis. A chi-square test supports rejecting the null hypothesis; however, the effect size is small. The manipulation impacted outcomes, but there are other factors influencing fee payment.

An exploratory analysis was conducted to examine the relationships between fee payment and other variables. The majority of participants, 73%, asked a question. It was more common for participants to ask a question and not pay the fee (45%) than not ask question and not pay the fee (4%), X^2 (1, N = 157) = 32.90, p < .001.

On the follow-up questionnaire, 72% of participants believed the researcher when she requested the fee and there was no significant difference by fee payment, X^2 (2, N = 157) = 4.35, p = .11.

When asked if participants had the financial means to pay the fee today, 71% of participants who paid the fee reported yes, and 29% of participants who did not pay the fee reported yes, X^2 (1, N = 157) = 39.35, p < .001. Interestingly, 12 participants reported they did not have the financial means to pay the fee but were going to pay the fee anyway.

Examining the sample of 78 participants who had the financial means to pay the fee, 79% of participants in the sunk cost condition were going to pay the fee, compared to 60% of participants in the control condition, this difference is marginal, X^2 (1, N = 157) = 3.37, p = .07. The exploratory analysis did not find differences by race, gender, age, household income, or monthly discretionary income. The amount of time spent on the survey did not relate paying the fee, and the number of days from the start of the quarter did not impact fee payment. Most personality measures, the Big Five Factors, Cognitive Reflection Test, Need for Cognition, Social Desirability, did not relate to fee payment. However, those who paid the fee (M = 56.3, SD = 10.4) had slightly higher Mindfulness scores than participants who did not pay the fee (M = 52.9, SD = 10.2). See table 1 for means and standard deviations for participants who paid the fee and those who did not pay the fee.

Table 1

Means, Standard Deviations, and Differences Between Participants Paying a Fraudulent Fee and Participants Not Paying a Fee in Study 1

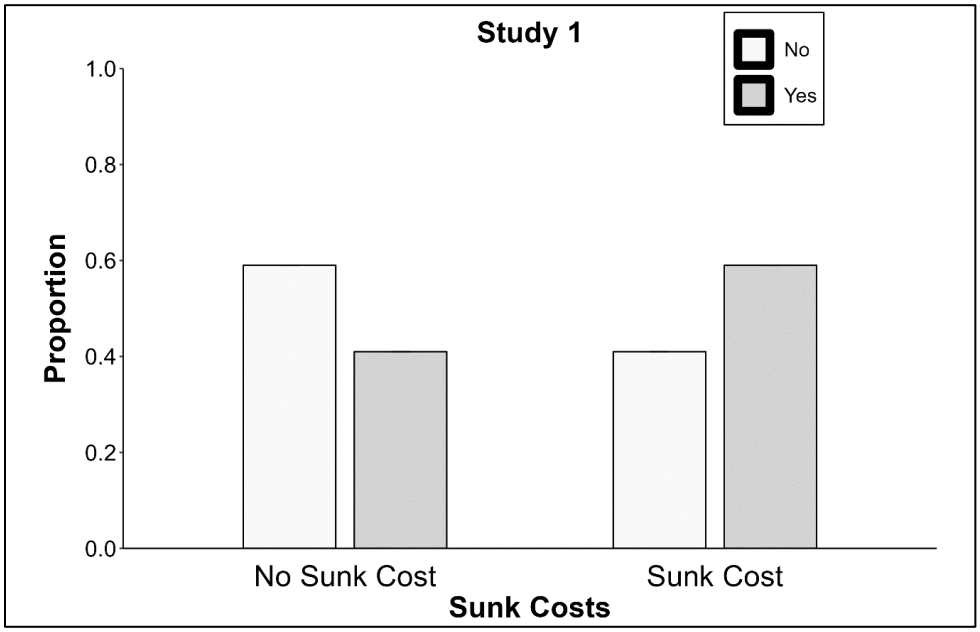
	Pay fee (n = 78)		Did not pay fee (n = 79)			
	M	*SD*	*M*	*SD*	Diff	*t*
Demographics						
Age	19.3	1.6	19.3	1.5	0.0	-0.04
Days from start of the term	51.2	18.4	48.9	18.3	2.3	0.79
Household Income	6.0	2.4	5.8	2.5	0.2	0.61

Percent of college costs covered by family and friends	35.3	30.7	33.0	30.9	2.3	0.48	
Percent of college costs covered by student loans and the student's money	27.7	29.3	27.1	26.6	0.6	0.13	
Time spent on survey	8.7	3.0	8.0	2.5	0.7	1.59	
Discretionary Income	2.3	1.6	2.6	1.9	-0.3	-1.07	
Personality and Cognitive Trait Scores							
Openness- intellect	33.4	6.0	34.6	6.2	-1.2	-1.22	
Openness- open	38.8	5.8	38.6	6.2	0.2	0.23	
Conscientiousness- industrious	29.9	6.5	30.6	6.3	-0.7	-0.69	
Conscientiousness- order	36.5	6.2	37.1	5.7	-0.6	-0.63	
Agreeableness- compassion	42.4	6.0	42.9	6.0	-0.5	-0.52	
Agreeableness- polite	39.1	5.9	38.2	5.4	0.9	1.00	
Extraversion- assertiveness	32.3	6.7	34.5	7.4	-2.2	-1.95	
Extraversion- enthusiasm	35.5	6.7	36.4	6.6	-0.9	-0.89	
Neuroticism- volatility	29.6	8.4	29.1	8.4	0.5	0.43	
Neuroticism- withdrawal	33.9	6.0	32.8	6.8	1.1	1.01	
Cognitive Reflective Test	0.7	1.0	0.7	0.9	0.0	0.14	
Mindfulness	56.3	10.4	52.9	10.2	3.4	2.11	*
Social Desirability	5.3	2.4	5.4	2.3	-0.1	-0.32	
Need for Cognition	59.3	9.6	60.3	12.2	-1.0	-0.57	

* $p < .05$

Figure 1

Proportion of Participants Choosing to Pay or Not Pay Fraudulent Fee by Condition in Study 1



Discussion

The role of sunk costs in fraud compliance has been supported by a significant amount anecdotal evidence (Fischer et al., 2013; Hill & Kozup, 2007; Pratkanis & Shadel, 2005; Stark & Choplin, 2009). Sunk costs may have been a factor in Marjorie Jones continued participation in a prize scam, which lead to her losing everything. However, empirical evidence was needed to establish a stronger foundation for this relationship.

Study 1 aimed to provide experimental evidence of the role of sunk cost effects on fraud compliance by deliberately inducing sunk costs in a fraud simulation. Despite collecting several individual difference measures, such as Big Five personality factors, Social Desirability, Cognitive Reflective Test, and Need for Cognition, no significant relationship was found between these measures and fee payment. However, it was interesting to note that individuals paying the fee did have higher scores on the Mindful Attention Awareness Scale (Brown &

Ryan, 2003). The scale assesses mindfulness with items like, “I find myself doing things without paying attention” (reverse coded) and “I find it difficult to stay focused on what’s happening the present.”(reverse coded). This finding was unexpected, as mindful individuals would be expected to be less susceptible to fraud if they were attentive to their surroundings. This result suggests the need for further exploration in future research.

The effect size of the sunk cost manipulation was observed when the fee was $50.95. Previous iterations of the study with lower fees of $5 and $39.95, and fewer filler surveys before soliciting the fee, did not exhibit sunk cost bias. These findings highlight the importance of considering contextual factors when examining the influence of sunk cost bias on fraud compliance.

Taking into account the evidence provided by the anecdotes provided in the introduction and study 1 results, it can be concluded that sunk costs render consumers vulnerable to fraud. To enhance the generalizability of these findings additional studies in this dissertation attempt to replicate the effects of study 1 using newly developed vignettes. By exploring various scenarios and contexts, these subsequent studies aimed to provide a more comprehensive understanding of the influence of sunk costs on fraud compliance and test intervention strategies.

By expanding the research to include various scenarios and contexts, I aim to shed more light on the influence of sunk costs on fraud compliance, as well as test intervention strategies to prevent tragic outcomes. Utilizing research in psychological phenomena, like sunk cost bias, to explore reasons why individuals are compliant in fraud is crucial to support consumers protection efforts.

Study 2

Angela Stancik testified to Congress that her grandmother, Marjorie, paid fraudulent fees

to scammers to try to get her prize. As Marjorie became fixated on the immediate goal of obtaining the prize, she continued to pay fee after fee in a desperate attempt to get her prize. Her story highlights the devasting consequences of succumbing to fraudulent schemes. Had she kept her focus on the bigger picture, like her financial independent in retirement, would she have been less vulnerable to the scam? Maintaining a broader perspective could have made her less susceptible to the scam, preventing the tragic end of her story– her eventual suicide. This study examined whether higher construal levels can shield consumers like Angela Stancik's grandmother, from the negative impact of sunk costs.

The literature review suggests a connection between construal level and sunk cost bias. Previous research has demonstrated that higher construal level reduces the influence of sunk costs on decision-making (Wakslak et al., 2006). Moreover, high construal level has been associated with mindfulness, a factor known to mitigate sunk cost bias (Hafenbrack et al., 2014). Based on these findings, study 2 aims to replicate the effects of construal level on sunk cost bias and explore its impact on compliance in a variety of fraudulent scenarios.

To enhance generalizability of these findings across many different types of fraud, this study utilized written scenarios that describe lab fee fraud similar to study 1, predatory lending (Hill & Kozup, 2007), catfishing (Maysh, 2017), unexpected bank fees (Curtis, 2021), prize scams (Pratkanis & Shadel, 2005), and development projects (Arkes & Blumer 1985). By encompassing a range of fraudulent contexts, the study can capture the overarching influence of construal level on fraud compliance.

By investigating the role of construal level on fraud compliance, this study aims to contribute to our understanding of how cognitive perspective influence decision-making when confronted with sunk costs. The findings of this research can shed light on how the cognitive

process involved in fraud vulnerability and provide valuable insight for developing interventions and strategies to protect consumers from falling victim to scams.

Hypotheses

Hypothesis I

Participants will be more willing to continue in fraudulent scenarios when costs were sunk.

Hypothesis II

Participants in the high construal level condition will be less likely to persist in fraudulent scenarios than participants in the low construal condition.

Research Questions

Research Question I: Are individuals more likely to comply in a fraudulent scenario when costs are sunk?

Research Question II: Are individuals more likely to comply in a fraudulent scenario when they are in a high construal level?

Method

Participants

Seventy-one participants were recruited from Prolific, an online platform connecting researchers and participants, from the United States. Participants were paid $7.88 to spend approximately 45 minutes on a survey, for an hourly rate of $10.50. A power analysis using G*Power (Faul, Erdfelder, Lang & Buchner, 2007) suggested a sample size of 68 individuals for a repeated measures ANOVA, within-between interaction. Effect size was set to 0.2, in alignment with the moderate effect size on sunk costs from Roth and colleagues (2015) meta-analysis. Power was set to 90% and correlation among measures was set to 0.5.

To ensure the validity of survey responses, several verification measures were implemented, including Captcha verification, two attention check questions, and responses to open-ended questions verified that survey participants excluded “bots” and “farmers”, which refer to computer programs automatically complete surveys (Chmielewski & Kucker, 2019).

Regarding the sample characteristics, 53% of participants identified as male, 67.6% identified as white, and ages ranged from 19 to 61, with an average age of 33.44 (*SD* = 10.93) years. See appendix G for full demographic summaries of Prolific participants. Participants in the high construal condition spent an average of 15.17 minutes (*SD* = 11.70), and participants in the low construal condition spent an average of 14.02 minutes (*SD* = 8.58) on the survey. The difference was not statistically significant $t(69) = 0.47$, $p = 0.64$.

Procedure

The study design was a 2 (Sunk cost: sunk cost, none) x 2 (Construal level: high, low) mixed ANOVA. Construal level was a between-subjects factor, and each participant was randomly assigned to either the high or low construal condition using the randomizer function in Qualtrics Survey Software. Participants reviewed six fraudulent scenarios; three scenarios included sunk costs and three scenarios did not include sunk costs.

To induce a high or low construal level, participants were randomly assigned to either condition using the randomizer function in Qualtrics. High construal level was induced by asking a series of five why questions on being a research participant, and low construal level was induced by asking a series of five how questions on being a research participant, a method developed by Freitas, et al. (2004), see Appendix D for template. After, the participants completed a manipulation check, the Behavior Identification Form (BIF) which required them to report their preferred statement about an item—one statement is an abstract, high-level

description of the item and the other statement as concrete, low-level description (Vallacher & Wegner, 1989, see Appendix E).

Next, participants read a set of six fraudulent sunk cost scenarios and reported the likelihood they would continue in the situation, how likely they would refuse to continue, and how reasonable it would be to continue. The fraudulent scenarios included a psychology lab fee, similar to the study 1 situation, predatory lending, catfishing, bank fee, prize scam, and development project scenarios and questions (see Appendix C). Participants received three scenarios with sunk costs and three scenarios without sunk costs. First, participants were randomly presented with either a sunk cost or no sunk cost version of the psychology lab scenario and the catfishing scenario, and the order of the first two was randomized to counterbalance. Depending on the results of that randomization, participants completed one of 4 other preset blocks to ensure they will view three sunk cost scenarios and three no sunk cost scenarios. Scenario presentation within the blocks is randomized to counterbalance and reduce the likelihood of order effects.

Lastly, participants completed a demographic questionnaire (Appendix F) and were provided with a debriefing statement regarding the aims of the research at the end of the study.

Results

First, a t-test investigated the impact of the manipulation. The results showed that participants in the high construal condition (M = 15.29, SD = 6.38) did not have significantly different BIF scores than participants in low construal condition, (M = 14.24, SD = 6.38), $t(69)$ = 0.78, p = .44. The analysis then proceeded to examine both construal level as a trait using the BIF scores, and examining the manipulation, similar to the technique employed by Benschop and colleagues (2021).

The dependent measure, willingness to continue, was calculated by summing responses to the three survey questions that followed each vignette. Cronbach's alpha for the three survey questions on each vignette were all above .80, indicating high internal consistency (see table 2 for a summary of Cronbach Alpha scores).

Table 2

Cronbach's Alpha Scores by Scenario Type for Studies 2, 3, 4, and 5

Scenario	Number of items	Threshold	Cronbach's alpha Study 2 (n=71)	Cronbach's alpha Study 3 (n=70)	Cronbach's alpha Study 4 (n=42)	Cronbach's alpha Study 5 (n=221)
Bank	3	0.7	0.92	0.79	0.74	0.86
Catfishing	3	0.7	0.93	0.88	0.65	0.90
Development	3	0.7	0.89	0.90	0.69	0.87
Predatory Lending	3	0.7	0.90	0.72	0.87	0.87
Prize Scam	3	0.7	0.87	0.88	0.85	0.87
Psychology Study	3	0.7	0.81	0.82	0.83	0.83

When evaluating the dependent measure, four outliers were identified. Using Tukey's method, which defines outliers as values that fall outside 1.5 times the interquartile range, three high value outliers and one low value outlier were identified. The mixed ANOVA was run with and without the outliers, the results were the same in both models.

To ensure assumptions of the analysis were met, tests were conducted. The normality of the data distribution was accessed with Shapiro-Wilk's test of normality which yielded p-values greater than .05, indicating that the data can be considered approximately normally distributed. The homogeneity of variance assumption was assessed with Levene's test, and the p value was greater than .05, indicating homogeneity of variance across groups. Lastly, Box's test of equality of covariances was performed, and the p-value was greater than .001, suggesting no violation of

the assumption of equality of covariances.

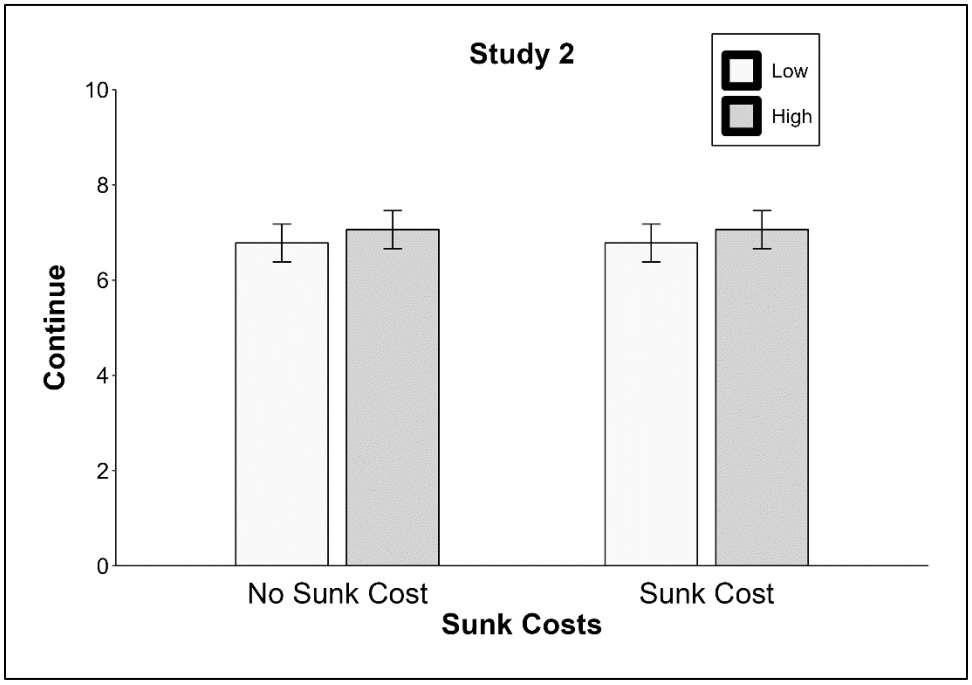
Hypothesis I: Participants will be more willing to continue in fraudulent scenarios when costs were sunk.

Hypothesis II: Participants in the high construal level condition will be less likely to persist in fraudulent scenarios than participants in the low construal condition.

A 2 (Sunk costs: sunk cost, none) x 2 (Construal level: high, low) mixed ANOVA tested the hypotheses, and it was not significant. There was no main effect of construal condition, $F(1,69) = 1.78$, $p = .19$, no main effect of sunk cost condition, $F(1,69) = 2.28$, $p = .14$, and no interaction, $F(1,69) = 0.37$, $p = .54$.

Figure 2

Scores by Sunk Cost and Construal Conditions in Study 2



Since BIF scores did not indicate an impact on the manipulation, an additional model on BIF trait tested for the impact of construal level as a trait on willingness to continue. BIF scores range from 0 to 25, with 12.5 being the mid-point. Seven participants with scores of 12 or 13, which were close to the midpoint, were excluded from the analysis. A 2 (Sunk costs: sunk cost,

none) x 2 (Construal level trait: high BIF score, low BIF score) mixed ANOVA was not significant. There was no main effect of construal trait, $F(1,62) = 0.71$, $p = .40$, no main effect of sunk cost condition, $F(1,62) = 1.76$, $p = .19$, and no interaction, $F(1,62) = 0.30$, $p = .59$.

Since the content of the scenarios varied, a linear mixed model was conducted to examine potential difference in willingness to proceed while accounting for sunk costs, construal level, and scenario type. However, fit indices of the model indicated a poor fit, RMSE or 6.59 and ICC or 0.06 (Koo & Li, 2016). The analysis revealed that neither sunk costs nor construal had a significant effect, but there was a significant effect of scenario type. Detailed information about the model is in table 3.

Table 3

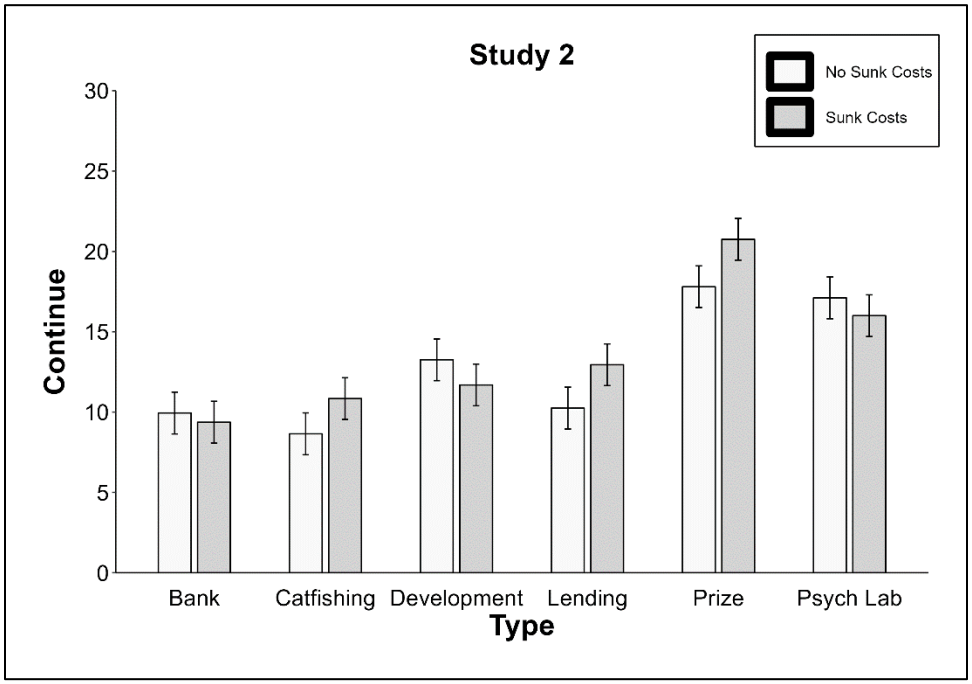
Linear Mixed Model Using Sunk Costs, Construal, and Scenario Type to Predict Willingness to Continue in Study 2

Predictor	Estimate	[95% CI]	t value	p
Intercept	13.22	[12.45, 14.00]	34.00	<.001
Sunk Costs	-0.36	[-1.08, 0.35]	-1.00	0.32
Construal Condition	-0.52	[-1.30, 0.25]	-1.35	0.18
Type 1	-3.93	[-5.43, -2.46]	-5.22	<.001
Type 2	-3.48	[-4.93, -2.05]	-4.77	<.001
Type 3	-0.15	[-1.65, 1.33]	-0.20	0.83
Type 4	-1.13	[-2.61, -0.37]	-1.50	0.14
Type 5	5.41	[3.91, 6.90]	7.12	<.001

The bank scenario had the lowest overall average of continuation ($M = 9.51$, $SD = 7.18$), followed closely by the catfishing scenario ($M = 9.79$, $SD = 6.98$). On the other hand, the prize scenario ($M = 18.47$, $SD = 7.63$) had the highest scores on continuation. Each participants rated one version of each vignette, either with sunk costs or without sunk costs Figure 3 presents the averages for each scenario by sunk cost condition. Next, study 3 methods and results will be presented, followed by a joint discussion of the results from studies 2 and 3.

Figure 3

Averages by Sunk Cost Condition and Scenario Type in Study 2



Study 3

Marjorie Jone's fell victim to a prize scam, gradually depleting her bank account down to $69 over the course of several weeks. Rather than giving up her money all at once, she made a series of choices, succumbing to the scammer's requests for additional funds under the guise of paying "taxes" and "fees" to claim the promised cash prize. She made several choices which cumulated in a large financial loss. Marjorie Jones's situation serves has a poignant reminder that individuals often have other viable options available to them when facing sunk costs. In her case, she could have contacted friends, family, or authorities for help when she began paying the prize fees. The focus of study 3 was to investigate the effectiveness of increasing the salience of alternative options by making clear statements to consider other options or a more direct statement to not pay the fee. Specifically, study 3 explores whether increasing salience of these

options would have a greater impact on individuals with different construal levels, potentially influencing their decision-making in sunk cost scenarios.

Previous research has shown that construal level manipulations influence consumer's evaluation of items in a set when asked to choose among a set of products (Ding & Keh, 2017; Henderson, 2013; Sun, Keh, & Lee, 2019). The current study builds upon this research to examine the effectiveness of making options salient within low and high construal levels when costs are sunk. Before evaluating sunk cost scenarios, participants in study 3 were assigned to either a high and low construal level. After, participants evaluated sunk cost scenarios with either proximal details on other options, a general suggestion to consider other options, or no additional suggestions.

By exploring the impact of increased salience of alternative options within different construal levels when faced with sunk costs, study 3 aimed to provide valuable insights into effective strategies to mitigate the negative influence of sunk cost bias and enhance consumer decision-making in fraudulent scenarios.

Hypotheses

Hypothesis I

Participants in the high construal level condition will be less susceptible to sunk cost bias than participants in the low construal level condition.

Hypothesis IIA

Participants will be less likely to proceed if proximal details are present.

Hypothesis IIB

Participants will be less likely to proceed if a general suggestion is present.

Hypothesis IIIA

There will be an interaction between construal level and proximal details, individuals in a lower construal level will be less likely to proceed than individuals in the lower construal level without proximal details.

Hypothesis IIIB

There will be an interaction between construal level and general suggestion, individuals in a high construal level will be less likely to proceed than individuals in a low construal level, when receiving high-level suggestions.

Research Questions

Research Question 1: Are individuals more likely to comply in a fraudulent scenario when they are in high construal level?

Research Question 2: Are individuals receiving information on alternatives, either proximal details or a general suggestion, less likely to continue in fraudulent sunk cost scenarios?

Research Question 3: Are individuals receiving information on alternatives, either proximal details (low CL) or a general suggestion (high CL), more receptive to alternatives when they are in the corresponding construal level?

Method

Participants

Like study 2, 70 participants were recruited from Prolific. The power analysis from study 2, a repeated measures ANOVA, within-between interaction suggests a sample size of 68 (Faul, et al., 2007) would be sufficient to detect a moderate effect size with 90% power, assuming correlation among measures of 0.5.

Studies 3, 4, and 5 utilized very similar materials that were very similar to those in study 2, with some variations in the manipulations. It is worth noting that 90% of participants in study

2 were able to complete the survey in under 30 minutes. Based on this observation, the pay rate was lowered from $7.88 for a 45-minute study to $5.00 for a 30-minute study for studies 3, 4, and 5. As in study 2, the survey included captcha verification and two attention check questions.

Of the participants in study 2, 54% identified as male, 74.3% identified as white, and ages ranged from 18 to 76, with an average age of 37.53 (*SD* = 13.69) years. On average, participants in the high construal condition spent 14.09 minutes (*SD* = 7.91) on the survey, while those in the low construal condition spent an average of 12.83 minutes (*SD* = 7.78) on the survey. The difference was not statistically significant $t(68) = 0.67$, $p = 0.51$.

Procedure

High and low construal level was induced using the Freitas and colleagues (2004) set of five how or why questions, like study 2. Participants were presented with the sunk cost version of the fraud vignettes. Each participant read two scenarios with a general suggestion, two scenarios with proximal details, and two scenarios with no additional suggestions or details. The first vignette focuses a lab fee. In the proximal detail condition participants saw, "You consider paying the fee and continuing or *you can consider completing a 5-page paper for credit instead*". In the general suggestion condition, participants saw "You consider paying the fee and continuing or *you can consider pursuing other options*?"

To ensure the study was counterbalanced, scenarios were randomly presented using Qualtrics block randomization. Each participant was randomly assigned to one of the six equally sized, predetermined blocks. The presentation of scenario was randomized within each block. A random number list was used to create the set scenarios in the six blocks. This guarantees that some participants reviewed the general suggestion condition of the lab fee, and some participants reviewed the lab fee with proximal details.

Lastly, participants completed a demographic questionnaire and viewed a debriefing information sheet. See appendix C for all option detail manipulations for each scenario.

Results

Study 2 hypotheses were evaluated in a 3 (Option: general suggestion, proximal details, none) x 2 (Construal level: high, low) mixed ANOVA. First, a t-test investigated the impact of the manipulation. Participants in the high construal condition (M = 16.87, SD = 5.88) had significantly different BIF scores than participants in low construal condition, (M = 10.84, SD = 6.17), $t(69) = -4.17$, $p < .001$. The effect size was large with a Cohen's d of 1.0. The manipulation was effective. Cronbach's alpha for the three survey questions on each vignette were all above .80 and the scores were collapsed for the dependent measure, see table 2 for details.

There were three outliers on scenario scores and the mixed ANOVA was run with and without the outliers, the results were similar for both models. Normality was accessed with Shapiro-Wilk's test of normality (p value greater than .05), homogeneity of variance was assessed with Levene's test (p value greater than .05), and Box's test of equality of covariances was greater than .001.

Hypothesis I

Participants in the high construal level condition will be less likely susceptible to sunk costs than participants in the low construal level condition.

Hypothesis IIA

Participants will be less likely to proceed if proximal details are present.

Hypothesis IIB

Participants will be less likely to proceed if a general suggestion is present.

Hypothesis IIIA

There will be an interaction between construal level and proximal details, individuals in a lower construal level will be less likely to proceed than individuals in the lower construal level without proximal details.

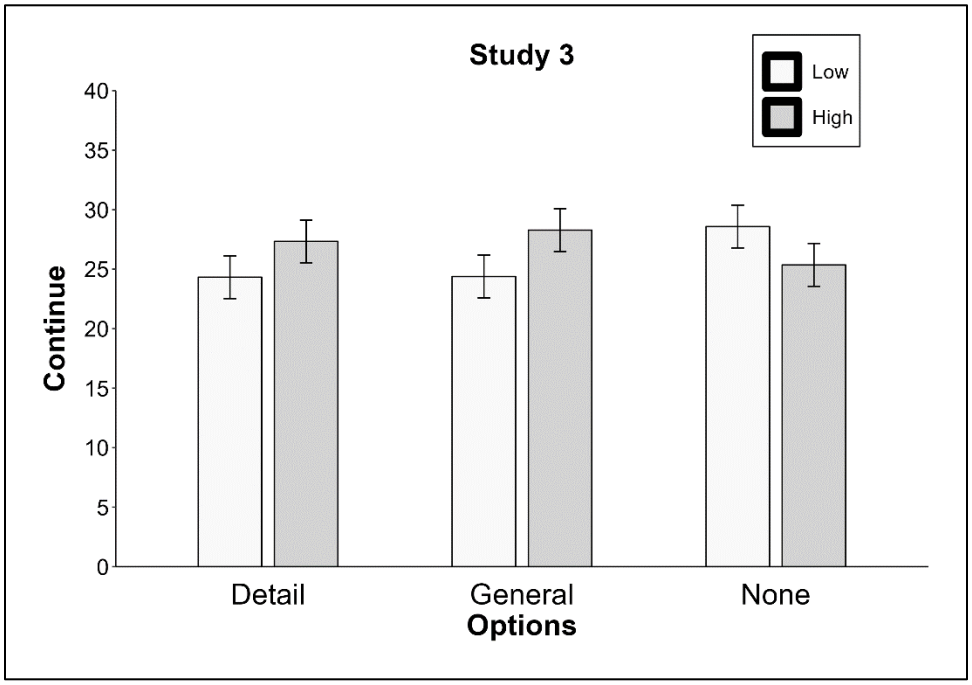
Hypothesis IIIB

There will be an interaction between construal level and general suggestion, individuals in a high construal level will be less likely to proceed than individuals in a low construal level, when receiving high-level suggestions.

A 3 (Options: details, general suggestions, none) x 2 (Construal level: high, low) mixed ANOVA was used to assess the hypotheses, and it was not significant. There was no main effect of construal condition, $F(1,68) = 0.53$, $p = .47$, no main effect of option condition, $F(2,136) = 0.22$, $p = .80$, and no interactions, $F(2,136) = 2.53$, $p = .08$. The hypotheses were not supported.

Figure 4

Scores by Option Type and Construal Conditions in Study 3



Similar to study 2, an additional linear mixed model was conducted to determine statistically significant difference between option availability and construal level on willingness to proceed controlling for scenario type. The model was a poor fit for the data, ICC = .12, RMSE = 6.04. Option type and construal were not significant, however there was a significant effect by scenario type. See table 4 for model summary.

Table 4

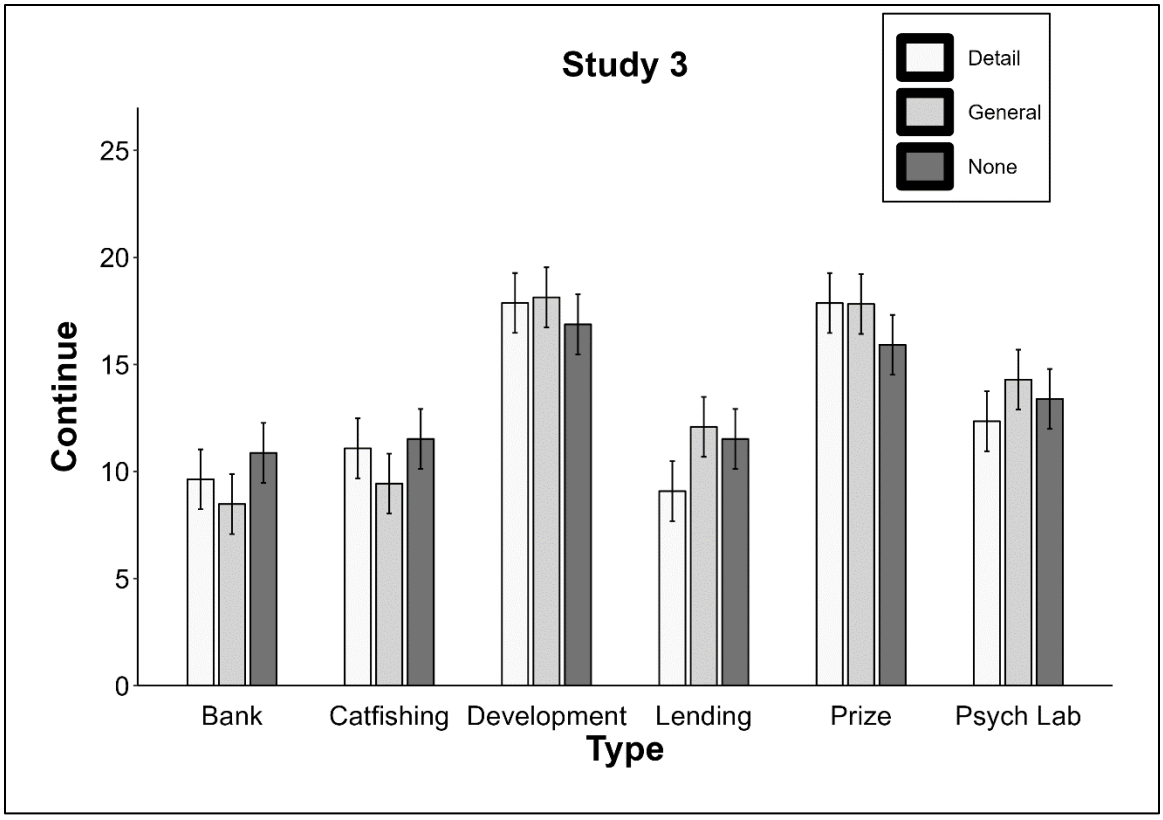
Linear Mixed Model Using Options, Construal, and Scenario Type to Predict Willingness to Continue in Study 3

Predictor	Estimate	[95% CI]	t value	p
Intercept	13.19	[12.36, 14.01]	31.75	<.001
Options 1	-0.25	[-1.10, 0.61]	-0.57	0.57
Options 2	0.14	[-0.72, 0.99]	0.32	0.75
Construal Condition	-0.30	[-1.13, 0.52]	-0.74	0.46
Scenario Type 1	-3.60	[-4.95, -2.25]	-5.25	<.001
Scenario Type 2	-2.53	[-3.88, -1.19]	-3.69	<.001
Scenario Type 3	4.39	[3.05, 5.74]	6.40	<.001
Scenario Type 4	-2.35	[-3.70, -1.00	-3.42	<.001
Scenario Type 5	3.96	[2.61, 5.31]	5.77	<.001

The bank scenario had the lowest overall average of continuation (M = 9.63, SD = 6.23), and the development (M = 17.61, SD = 6.33) and prize scenario (M = 17.19, SD = 7.69) had the highest average scores on continuation. Participants rated one version of each vignette, detailed options, general suggestion, or no options, and figure 5 displays the averages for each scenario by sunk cost condition.

Figure 5

Averages by Option Condition and Scenario Type in Study 3



Discussion- Experiments 2 and 3

The hypotheses in studies 2 and 3 were not supported. While sunk costs may have been a factor in Marjorie Jones, and others, continued participation in prize scams, the empirical evidence from studies 2 and 3 do not support construal level and increased salience for alternative options as effective mitigation strategies. In the discussion for experiments 2 and 3, I will first review the study measures and discuss potential future directions for research on construal level, sunk costs, and option availability as mitigating factors in fraud compliance.

Written scenarios and vignettes have been commonly used in sunk cost studies, following the approach of Arkes and Blumer (1985). Recent research by Benschop et al. (2021), Navarro & Fantino (2009), Schanbacher, et al. (2021) also utilized written scenarios. In studies 2 and 3, each scenario followed a general guideline: the reader finds out there is a change from their original understanding that lead to higher costs moving forward, with either sunk costs (study 2) or the

availability of other options (study 3) manipulated. Catfishing was one scenario in which financial costs were not a factor. A linear mixed effects model incorporating scenario type, did not have significant effects on construal level (studies 2 and 3), sunk costs (study 2) and options availability (study 3). However, there was variance by scenario type, which suggests refinement of the scales is needed for future research on this topic. Notably, the prize scenario, based on the scam that targeted Marjorie Jones, had the highest average continuation rate in study 2 and the second highest average rate in study 3, compared to the other scenarios. This finding may provide an interesting direction for future research on fraud within different contexts.

While the construal level manipulation was not effective in study 2, it was effective in study 3. Recently, Maier and colleagues (2022) reanalyzed most recent meta-analytic data on construal level theory reported by Soderberg and colleagues (2015). Applying robust Bayesian meta-analysis (RoMBA) and z-curve analysis on more recent CL literature, they identified evidence of publication bias (Maier, et al., 2022). Replication efforts are crucial to understanding the impact of publication bias and the "file drawer effect", wherein insignificant findings are left unpublished. The Construal Level International Multilab Replication (CLIMBR) project, involving 75 labs, aims to replicate CL studies and is expected to release their results at the end of 2023. These replication efforts will provide more insight into the reliability and effect size of construal level manipulations. Such information has practical implications for designing effective interventions to deter compliance. If construal level has a small or inconsistent impact on behavior, alternative theoretical paradigms can be leveraged to develop intervention that deter compliance.

Replication efforts and the application of new meta-analytics techniques would also contribute to our understanding of the impact of sunk cost fallacy on decision making. It has

been 8 years since Roth et al. (2015) meta-analysis on 98 papers, and found a moderate effect of sunk costs. Roth and colleagues (2015) noted variance in the strength of the effect; a reexamination, with the new analytical techniques and a z-curve analysis on more recent publications will improve our understanding of the impact. In study 2, sunk costs were not observed, but they were present in study 1, which involved in-person simulation fraud study. While measuring participants responses to written scenarios is common in sunk cost research, the field would benefit from other methods. For instance, the literature reviewed included Domeier and colleagues (2018) study where participants completed a task of designing an egg protection structure and they measured their choice to compete with the structure they created, or one provided by the researcher. In-person lab studies take more resources to run and may be limited in generalizability as they are most often completed in a university setting. However, these studies offer a higher degree of experimental realism, placing participants in a state that more closely aligns with the situations consumers may face when confronting fraud.

In addition, option presentation did not impact willingness to continue when costs are sunk in fraudulent scenarios. The hypotheses IIA and IIB, which proposed the presence of alternatives and suggestions to consider other options would decrease the willingness to continue, was not supported. The scenario methodology used in the study does not contain the same level of mundane realism found in fraud simulation study 1. The physical setting of an online survey portal does not replicate real-world conditions.

While the results do not support option availability as an effective invention strategy, there is potential for option availability to be an effective method to mitigate fraud if the study was redesigned to create a more realistic experience for the participants. Conducting another study, like the fraud simulation design employed in study 1, would provide additional insights to

support conclusions regarding the effectiveness of presenting other options. Creating interventions to stop individuals, like Marjorie Jones, from continued participation in fraudulent scams takes resources and effort, which should not be wasted on ineffective methods and empirical investigations are necessary to continue.

Study 4

Building upon the previous studies conducted, which established the influence of sunk costs increased fraudulent fee payment (study 1), examined the impact of mindset on compliance in the presence and absence of sunk costs (study 2), and explored the role of mindset and option availability (study 3), study 4 aimed to investigate the effect of option availability in the presence and absence of sunk costs.

Research has shown that factors such as outcome salience, framing, and alternatives can alleviate loss aversion and persistence when costs are sunk (Stewart, at al., 2003; Van Schie & Van Der Pligt, 1995). In the case of Marjorie Jones, for example, it is plausible to consider that she might have been less vulnerable to the fraud if she had been more aware of and had clearer access to other options. When facing the fraudulent prize scam, it is possible that Marjorie's focus became fixated on the immediate goal of obtaining the cash prize, leading her to make a series of choices that ultimately resulted in a substantial financial loss. Throughout the scam, she continued to pay "fees" and "taxes" in the hopes of winning prizes. If Marjorie had received timely advice and encouragement to cease her involvement, having alternative avenues could have provided her with different perspective, one that extends beyond the immediate lure of the prize and considers the potential risks and consequences of continuing with the scam. Thus, by having increased awareness and access to a variety of options, Marjorie could have made more informed decisions, reducing her vulnerability to fraud. Considering this case and previous

psychological research raises several questions– would individuals be more willing to stop in fraudulent situation if the alternatives been more salient? Are alternatives effective when individuals have not sunk costs? Are alternatives effective when individuals have sunk costs?

Study 4 specifically investigated the interaction between the effectiveness of a general suggestion and proximal details and the presence or absence of sunk costs on persistence in fraudulent scenarios. By examining how individuals respond to the suggestion of considering alternative options, this study sought to shed light on the potential effectiveness of such intervention. If effective, these intervention strategies could provide valuable insights into the ways to mitigate the negative effects of sunk cost bias and inform the development of intervention programs aimed at reducing fraud compliance.

Hypotheses

Hypothesis I

Participants will be more likely to proceed if they had sunk costs.

Hypothesis II

Participants will be less likely to proceed if proximal details on alternative options are available.

Hypothesis III

Participants will be less likely to proceed if a general suggestion to consider alternative options is available.

Research Questions

Research Question 1: Are individuals more likely to proceed in fraudulent scenarios if costs are sunk?

Research Question 2: Do proximal details on alternative options alleviate sunk cost bias?

Research Question 3: Does a general suggestion to consider alternative options alleviate sunk cost bias?

Method

Participants

Forty-two participants were recruited from the online platform Prolific and received a payment of $5 for their participation. To determine an appropriate sample size, a power analysis was conducted with G*Power (Faul, et al., 2007). The analysis considered an ANOVA with two repeated measures design, with a small effect size of 0.2, a correlation among repeated measures set to 0.5, and a correction for nonsphericity. The analysis indicated that a sample size of 36 participants would be needed to achieve 90% power.

Among the participants, 32% identified as male, 79.07% identified as white, and ages ranged from 21 to 74, with an average age of 43.37 (*SD* = 16.25) years. Participants spent an average 15.80 minutes (*SD* = 11.78) on the survey.

Procedure

The study employed a 2 (Sunk costs: sunk cost, none) x 3 (Options: details, general suggestions, none) repeated measures ANOVA design. Participants read and responded to six scenarios, one from each of the six conditions, in a Latin square design.

A low construal level was induced for all participants. Participants read the six fraudulent scenarios from the earlier studies and reported likelihood to continue, refusal to continue (reverse scored), and reasonableness of continuing a 10-point scale.

For each vignette, participants were randomly assigned to 1 of 6 possible versions– sunk costs with a proximal detail on alternative options, sunk costs with a general suggestion, sunk costs with no details, and no sunk costs with each of three detail types (proximal detail, general

suggestion, and none). The presentation of scenario was randomized within six blocks to which participants were randomly assigned. Catpcha verification, attention checks, and a review of the text in the construal level induction ensured respondents were attentive individuals.

Results

To examine the impact of sunk costs and the increased presence of alternatives in fraudulent scenarios, a 2 (Sunk costs: sunk cost, none) x 3 (Options: proximal detail, general suggestion, none) repeated measures ANOVA was conducted. The average BIF score was 12.83 (*SD* = 7.29). All participants completed a low construal level manipulation, and the average BIF score fell in the middle range (12.5 out of a possible 25).

There were nine outliers, which were on the high end of distribution. Both models, including the outliers and excluding them, are presented in the analysis. Normality was accessed with Shapiro-Wilk's test of normality, with p-values greater than .05 indicating normality in the data.

Hypothesis I

Participants will be more likely to proceed if they had sunk costs.

Hypothesis II

Participants will be less likely to proceed if proximal details on alternative options are available.

Hypothesis III

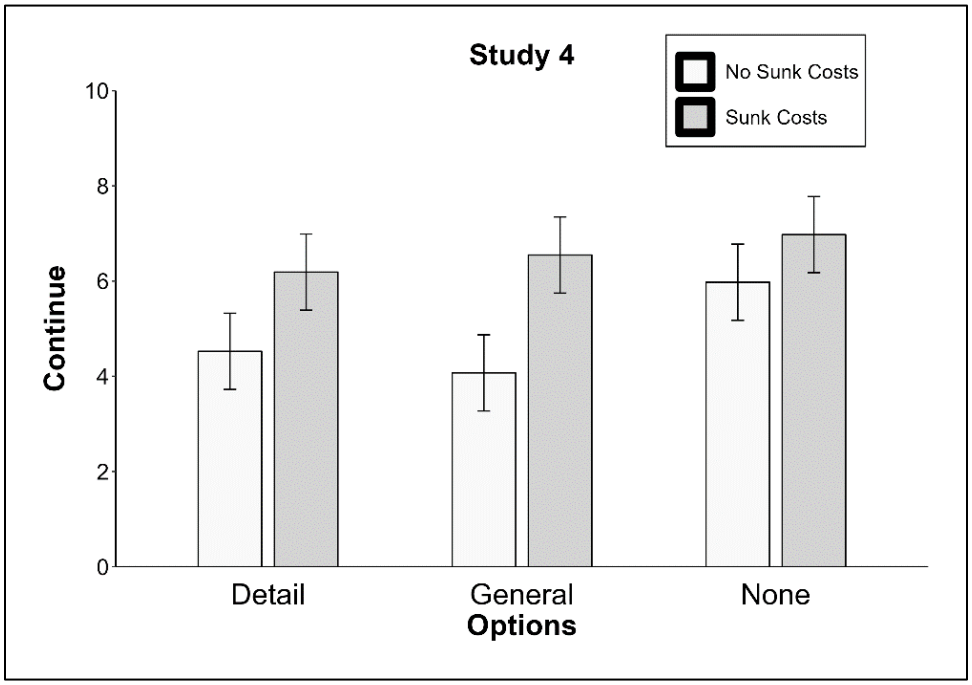
Participants will be less likely to proceed if a general suggestion to consider alternative options is available.

In a 2 (Sunk costs: sunk cost, none) x 3 (Options: proximal detail, general suggestion, none) repeated measure ANOVA had a main effect of sunk costs, $F(1,41) = 10.01$, $p = .003$.

Participants in the sunk cost condition were more likely to continue (M = 6.57, SD = 5.79) than in the no sunk cost condition (M = 4.86, SD = 5.09), $t(125) = -2.65$, $p = .01$. Providing support for hypothesis I. There was no main effect of option condition, $F(2,82) = 0.96$, $p = .39$, and no interaction, $F(2,82) = 0.37$, $p = .69$. Hypotheses II and III were not supported.

Figure 6

Averages by Available Option Types and Sunk Costs in Study



Removing the 9 outliers, from the 2 (Sunk costs: sunk cost, none) x 3 (Options: proximal detail, general suggestion, none) repeated measure ANOVA had a main effect of sunk costs and option conditions.

Sunk costs had a main effect $F(1,32) = 24.22$, $p < .001$. Participants in the sunk cost condition were more likely to continue (M = 6.65, SD = 5.97) than those in the no sunk cost condition (M = 4.06, SD = 3.92), $t(98) = -3.69$, $p < .001$.

Option had a main effect $F(2,64) = 4.31$, $p = .02$. Participants were less likely to continue when they had details on alternatives (M = 4.38, SD = 4.74) when compared to no details (M =

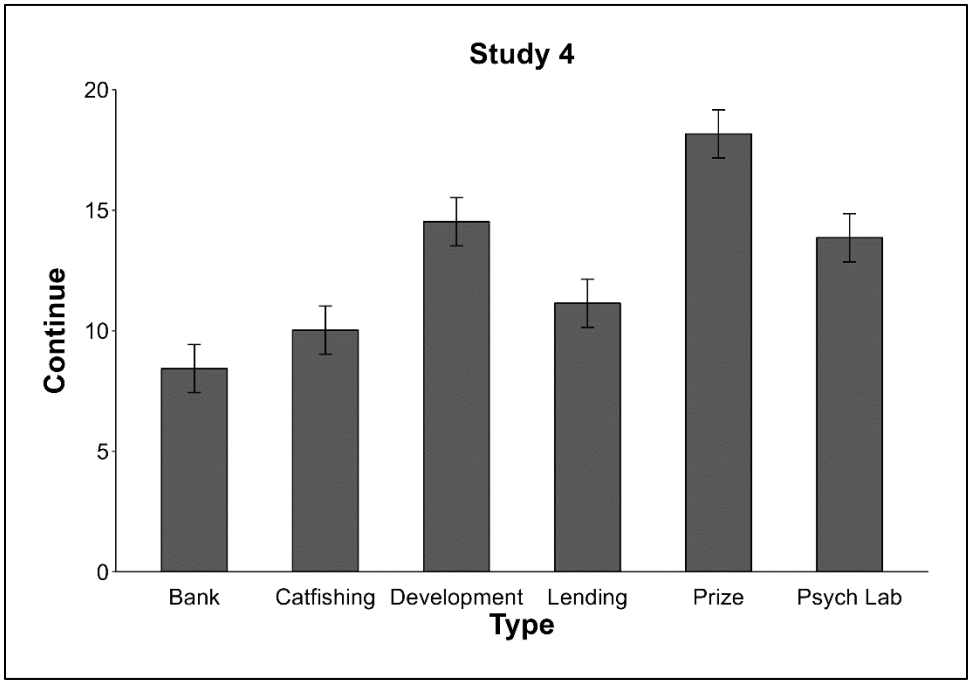
6.85, *SD* = 5.87), *t*(65) = -2.62, *p* = .01. Comparisons between general suggestions/none, and details/general suggestions were not significant.

The interaction between options and sunk costs was not significant *F*(2,64) = 0.12, *p* =.87.

Since each scenario was a different condition in this 2 x 3 repeated measures ANOVA, additional models including scenario are not feasible. Figure 7 contains a bar chart summarizing the averages by type. Consistent with studies 2 and 3, prize has a higher average (*M* = 18.17, *SD* = 6.12) and bank has a lower average (*M* = 8.43, *SD* = 5.98) in this set of scenarios.

Figure 7

Averages by Scenario Type in Study 4



Discussion- Experiments 4

Results of study 4 indicate that participants were less likely to continue when costs were sunk, which supports the hypothesis. This finding is consistent with study 1, however it contrasts with the results in study 2, where sunk costs did not have a significant impact on willingness to

proceed using the same scenario set. The variation in results between the two studies suggests the need for replication to ensure the finding is not a type I error. Type I error occurs when a study falsely identifies a significant effect of relationship when there is none. It is possible that the significant effect observed in study 4 was simply a chance occurrence and not a true representation of the underlying phenomenon. By conducting replications, we can ensure the robustness and generalizability of the findings across different samples, settings, and conditions.

There is a little support for Hypothesis II, which proposed that proximal details would be effective in reducing willingness to continue. However, when outliers were removed from the analysis, then individuals were less likely to proceed with proximal details on alternatives. This suggests that proximal details may have a subtle but meaningful impact on participants' decision-making process in the context of sunk costs.

In contrast, there is no support for Hypothesis III, general suggestions do not impact willingness to continue. These findings indicate that general suggestions did not have a significant effect on participants' decision-making.

It is worth noting that there is variation among the different types of scenarios used in the study. Despite this variability, the sunk cost manipulation had an impact on participants' decisions in this study. The scenarios provided an opportunity to simulate a wide range of real-world situations, allowing individuals to respond to sunk costs and option availability manipulation that are challenging to replicate in a lab study. Further research involving in-person lab studies would be necessary to determine if option availability is a truly ineffective intervention or it is ineffective in this context due to a lack of experimental and/or mundane realism in a scenario study design.

Overall, the results of study 4 contribute to our understanding of the impact of sunk costs and option availability on individuals' decision-making in fraudulent scenarios. There is additional evidence, in addition to the study 1 findings, that sunk cost bias is one factor that could have contributed to Marjorie Jones continued participation in the prize scam. As discussed in the literature review, there are many factors that influence compliance in fraud (Stark & Choplin, 2009), and the empirical evidence suggests the effect may be small and other factors may play a larger influence in fraud compliance. Sunk costs did not impact continuation in study 3, but it did for studies 1 and 4. While there was support for influence of sunk costs, further exploration is needed to fully understand the effectiveness of specific intervention strategies. The proposed intervention strategies of providing clear alternatives may have a weak relationship to discontinuation when the alternatives contain clear and detailed information and no impact when it was a general suggestion to consider other options. A general suggestion for Marjorie Jones or others involved in prize scams to stop continuation would most likely be ineffective. It is possible that encouragement to stop participation with clear steps on alternative options, other than paying the fees, could be effective but additional empirical studies would be necessary to make a conclusive statement.

Study 5

Studies 3 and 4 examined the impact of making alternatives more salient as a mitigating strategy in fraud compliance. To further explore this, studies 5A and 5B were conducted to examine the impact of making alternatives more salient and measure the perception of feasibility as potential mediating factor of willingness to proceed in sunk cost scenarios. The goal of these studies was to gain insight on how providing options can be effective. In other words, the options may only be effective if the individual perceives them as feasible courses of action.

According to Benschop and colleagues (2021), feasibility concerns can mitigate sunk cost bias. In the case of Marjorie Jones, her persistence in paying for the prize fees might have been influenced by her perception of *feasible* options. As she became ensnared in the prize scam, the scammers may have employed various manipulative tactics to create a sense of urgency and exclusivity around the prize, leading her to believe that this was a rare and time-sensitive opportunity she could not afford to miss. This heightened sense of urgency, combined with the costs she had already invested, could have clouded her judgement, and narrowed her focus solely on obtaining the prize. It is possible she did not perceive alternatives, like not participating, as a feasible option, which may have contributed to her persistence in paying for the prize fees. Understanding the role of feasibility in individuals' decision-making processes is essential to developing effective interventions.

Study 5A specifically focused on providing proximal details regarding alternative options. The study aimed to explore whether this approach enhances individuals' perception of feasibility and subsequently affects their willingness to continue in the face of sunk costs. Study 5B examined the impact of general suggestions, with feasibility acting as a mediator, on the individuals' willingness to continue.

The goal was to determine whether these interventions could effectively inform prevention strategies. By investigating a potential mediation relationship of feasibility between options and continuation, valuable insights can be gained on how to make the intervention effective. Such insights have the potential to contribute to the development of preventative measures that can safeguard individuals, like Marjorie Jones, from falling victim to fraudulent schemes and protect their financial well-being.

Hypotheses

Hypothesis IA

Participants will be less likely to proceed if provided proximal details on alternative options.

Hypothesis IB

Participants will be less likely to proceed if provided a general suggestion to consider alternatives.

Hypothesis IIA

Participants will find it more feasible to explore other options if provided proximal details on alternative options.

Hypothesis IIB

Participants will find it more feasible to explore other options if provided a general suggestion to consider alternatives.

Hypothesis III

Participants will be less willing to proceed if they find it feasible to explore other options.

Hypothesis IVA

The relationship between proximal details on alternatives and willingness to proceed will be mediated by the feasibility of exploring other options.

Hypothesis IVB

The relationship between general suggestions and willingness to proceed will be mediated by the feasibility of exploring other options.

Research Questions

Research Question 1: Does information on alternatives, whether proximal details on alternative options or a general suggestion, decrease individual's willingness to proceed in fraud?

Research Question 2: Does providing individuals with information on alternatives increase the perceived feasibility of exploring other options?

Research Question 3: Does perceived feasibility of other options decrease individuals' willingness to proceed?

Research Question 4: Does the feasibility of exploring other options mediate the relationship between alternatives and willingness to proceed in fraudulent scenarios when costs are sunk?

Method

Participants

A total of 221 participants were recruited from Prolific for the study. Pan, Liu, Miao, and Yuan (2018) ran several simulations to determine the sample size needed for 80% power for mediations in repeated measure studies. Anticipating a small effect between the independent variable (detail type) and the mediator (feasibility), and a medium effect size between mediator and outcome the simulation suggests a sample size ranging from 194 (using the Product method) to 226 (using the Sobel method) for the two observations (with and without details).

Fifty-eight percent of the sample identified as male, 70.59% identified as white, and ages ranged from 18 to 85, with an average age of 38.68 (SD = 13.86) years. Participants spent an average of 15.13 minutes (SD = 10.22) completing the survey materials.

Study Design

Study 5A was a 1 (sunk cost) x 2 (proximal details present or not) within-subject design. Participants reported feasibility of exploring other options and this variable was entered as a mediator between the presence of a proximal detail and the willingness to continue.

Study 5B was a 1(sunk cost) x 2 (general suggestion present or not) within-subject design. Study 5B similarly included feasibility as a mediator between the presence of a general suggestion and willingness to continue.

Figure 8

Mediation Model in Study 5A

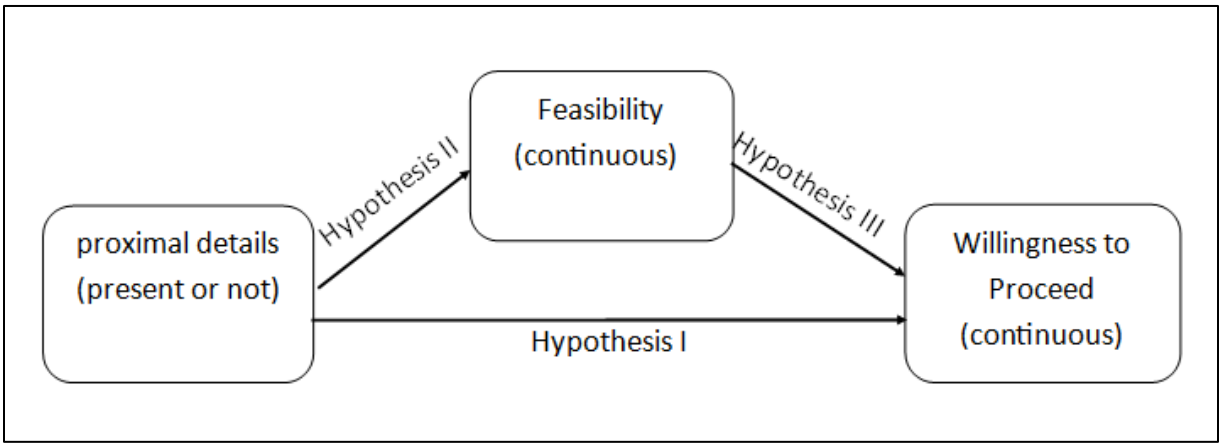
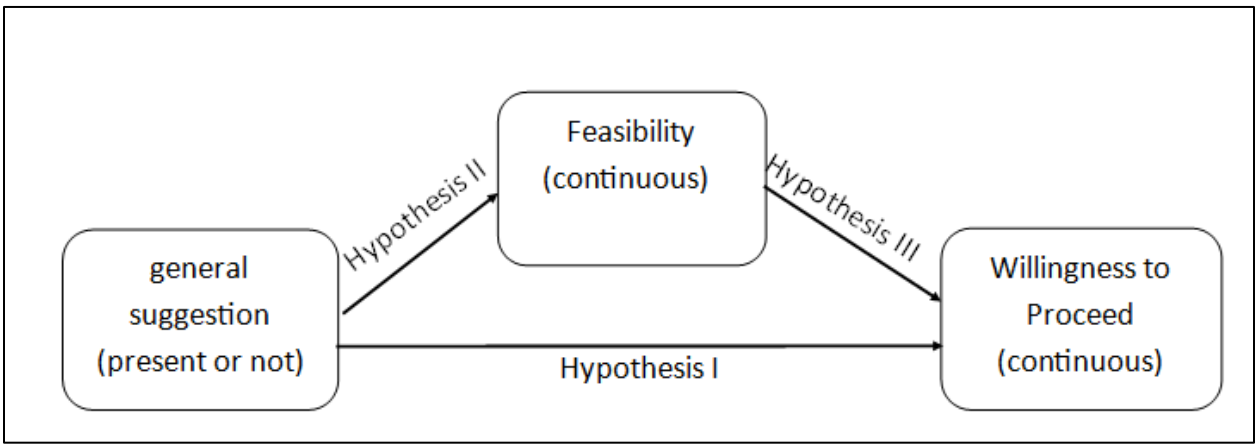


Figure 9

Mediation Model in Study 5B



Procedure

Participants read the sunk cost version of the six scenarios in study 2 and in Appendix C. They were randomly assigned one of three versions of sunk cost scenarios– proximal detail, general suggestion, or no additional information on alternatives provided. Each participant

reviewed two scenarios from each condition– e.g., two scenarios with a proximal detail, two scenarios, with a general suggestion, and two scenarios with no alternative information. Participants were randomly assigned to one of six equally sized, predetermined blocks. A random number list was used determine the scenario type in for each of the conditions. Similar to studies 2, 3, and 4, the study contained Captcha verification and two attention check questions.

Results

There were two non-extreme outliers and normality was assessed using Shapiro-Wilk's test– p values were greater than .05. Results with and without the outliers yielded the same results.

Hypothesis IA

Participants will be less likely to proceed if provided proximal details on alternative options.

A paired sample t-test on willingness to continue when provided proximal details on other options (M = 26.52, SD = 11.06) did not differ significantly without details (M= 26.98, SD = 12.37), $t(220) = -.44$, $p = .66$. The hypothesis is not supported.

Hypothesis IB

Participants will be less likely to proceed if provided a general suggestion to consider alternatives.

A paired sample t-test on willingness to continue with general suggestions (M = 26.55, SD = 12.15) did not differ significantly from without a suggestion (M= 26.98, SD = 12.37), $t(220) = -.40$, $p = .69$. The hypothesis is not supported.

Hypothesis IIA

Participants will find it more feasible to explore other options if provided proximal

details on alternative options.

A paired sample t-test between the perceived feasibility of exploring other options in fraud scenarios containing detailed options on alternatives (M = 15.72, SD = 3.64) was significantly higher than when no options were made explicit (M = 14.88, SD = 4.44), $t(220)$ = 2.85, p = .005. Cohen's d, 0.19, indicates a small effect size. The hypothesis is supported.

Hypothesis IIB

Participants will find it more feasible to explore other options if provided a general suggestion to consider alternatives.

A paired sample t-test between feasibility scores in on fraud scenarios with a general suggestion to consider other options (M = 15.45, SD = 4.08) and no suggestion (M = 14.88, SD = 4.44) was not significant $t(220)$ = 1.50, p = .13. The hypothesis is not supported.

Hypothesis III

Participants will be less willing to proceed if they find it feasible to explore other options.

There is a small negative correlation between willingness to proceed and feasibility of exploring other options, $r(219)$ = -.17, p =.01. While correlation does not indicate causality, there is some support for the hypothesis that there is a negative relationship between feasibility to explore other options and willingness to proceed.

Hypothesis IVA

The relationship between proximal details on alternatives and willingness to proceed will be mediated by the feasibility of exploring other options.

To investigate feasibility as a mediator between option availability and persistence in fraudulent scenarios, a Bayesian within-subject mediation was conducted using the "bmlm" R package for Bayesian Multi-Level Mediation (Vuorre, 2016; Vuorre & Bolger, 2017).

The X variable had two levels: proximal details on alternatives present (1) or absent (0), and the Y variable was the willingness to continue. The mediation model was estimated using Stan's Markov chain Monte Carlo algorithms. Gelman and colleagues (2013) and Vuorre and Bolger (2018) recommend Rhat is 1 and n_eff is greater than 100 for accurate posterior estimates. The model met both criteria. The results indicated weak mediation effect between the proximal details and the willingness to continue, *me* (mediation effect) = -1.08, 95% CI [-2.58–0.43]. The total effect of *c* = -0.56, 95% CI [-2.68–1.52] increased by 0.52, 95% CI [-1.46–2.45], after feasibility. When examining the path from detail to continue, the 95% confidence intervals notably overlap without feasibility and with feasibility as a mediator.

Figure 10

Mediation Model Results in Study 5A

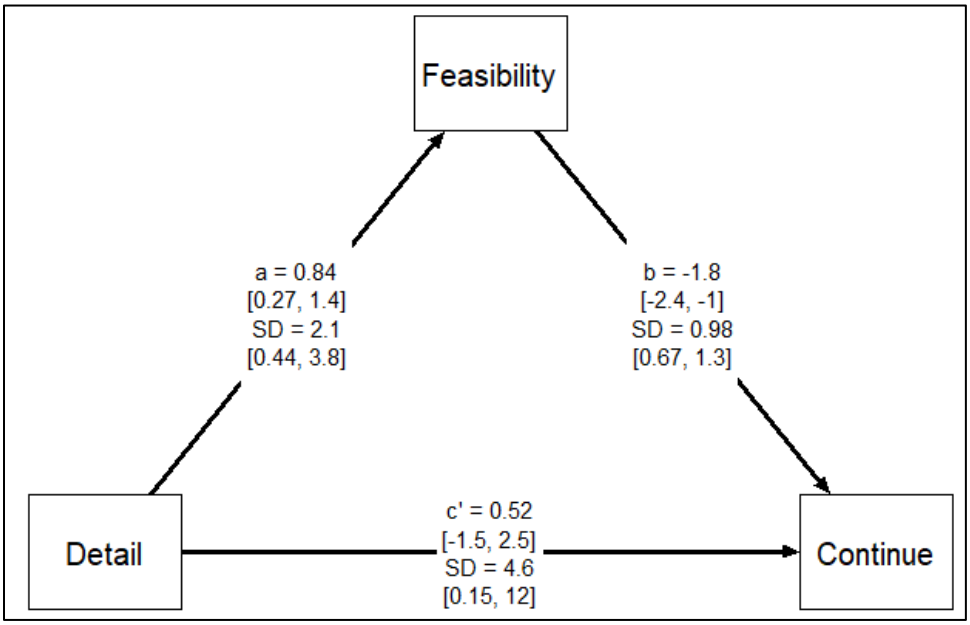


Table 5

Summary of Mediation Model in Study 5A

Parameter	Mean	SE	Median	2.50%	97.50%	n_eff	Rhat
A	0.84	0.29	0.84	0.27	1.42	14013	1
B	-1.83	0.36	-1.87	-2.43	-1.01	417	1.01
c′	0.52	1	0.54	-1.46	2.45	2657	1
Me	-1.08	0.77	-1.08	-2.58	0.43	1582	1
C	-0.56	1.08	-0.55	-2.68	1.52	14971	1
Pme	0.1	64.01	0.8	-11.28	13.74	19984	1

Table 6

Standard Deviations of the Regression Parameters, and their Covariance (and Correlation) in Study 5A

Parameter	Mean	SE	Median	2.50%	97.50%	n_eff	Rhat
tau_a	2.07	0.91	2	0.44	3.84	288	1.01
tau_b	0.98	0.15	0.97	0.67	1.28	3496	1
tau_cp	4.64	3.5	3.83	0.15	11.87	159	1.03
covab	0.45	0.46	0.43	-0.43	1.39	2065	1
corrab	0.25	0.25	0.24	-0.23	0.77	1989	1

Hypothesis IVB. The relationship between general suggestions and willingness to proceed will be mediated by the feasibility of exploring other options.

Similar to the previous analysis, a Bayesian within-subject mediation with feasibility as a mediator between general suggestion to consider other options and persistence in fraudulent scenarios was conducted using the "bmlm" R package (Vuorre & Bolger, 2017).

General suggestions to consider other options was the X variable, with two level--- either present (1) or absent (0), and the Y variable was the willingness to continue. The mediation model was estimated using Stan's Markov chain Monte Carlo algorithms. Rhat is 1 and n_eff is greater than or near 100 for accurate posterior estimates. The results indicated that feasibility did not mediate between the general suggestion and the willingness to continue, *me* (mediation effect) = -0.99,

95% CI [-2.55–0.57]. The total effect of c = -0.53, 95% CI [-2.64–1.57] increased slightly, to c' = .45, 95% CI [-1.24–2.15], after adding feasibility. Similar to study 5A, there is overlap in the 95% confidence intervals in the paths between c (no mediator) and c' (with mediator).

Figure 11

Mediation Model Results in Study 5B

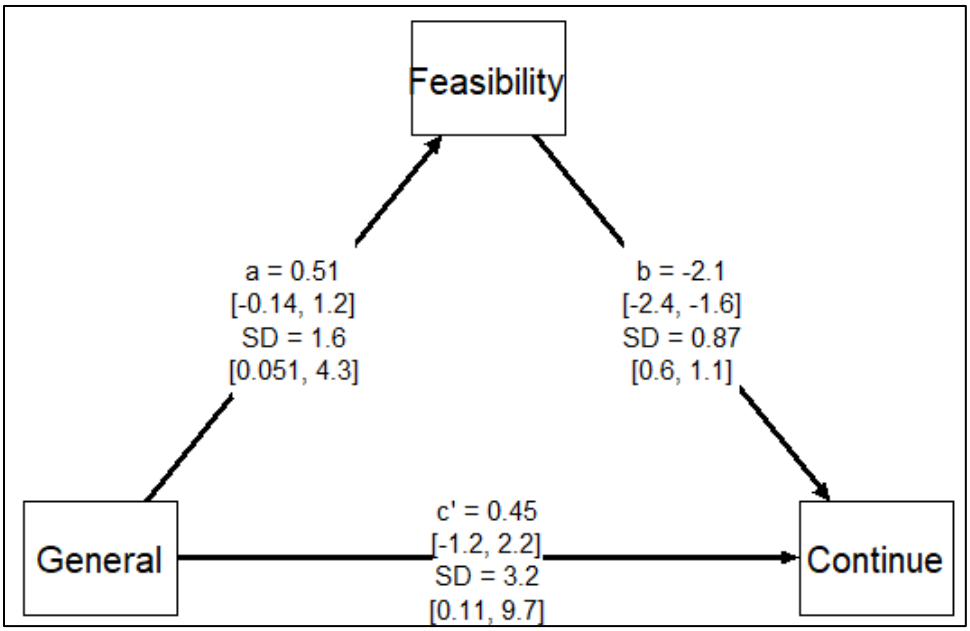


Table 7

Summary of Mediation Model in Study 5B

Parameter	Mean	SE	Median	2.50%	97.50%	n_eff	Rhat
a	0.51	0.33	0.51	-0.14	1.17	5533	1
b	-2.05	0.21	-2.06	-2.45	-1.63	1657	1
c′	0.45	0.86	0.45	-1.24	2.15	10033	1
me	-0.99	0.8	-0.98	-2.55	0.57	3678	1
c	-0.53	1.07	-0.54	-2.64	1.57	9916	1
pme	0.93	141.85	0.82	-9.86	11.12	20010	1

Table 8

Standard Deviations of the Regression Parameters, and their Covariance (and Correlation) in Study 5B

Parameter	Mean	SE	Median	2.50%	97.50%	n_eff	Rhat
tau_a	1.56	1.23	1.23	0.05	4.34	99	1.07
tau_b	0.87	0.14	0.87	0.6	1.15	1639	1
tau_cp	3.17	2.73	2.29	0.11	9.69	103	1.03
covab	0.06	0.39	0.03	-0.74	0.9	3890	1
corrab	0.05	0.33	0.05	-0.62	0.69	1469	1

Like studies 2 and 3, an additional linear mixed model was conducted to determine statistically significant difference between option availability on willingness to proceed controlling for scenario type. The model was a poor fit for the data, ICC = .14, RMSE = 6.14. Option type was not significant, however there was a significant effect by scenario type. See table 9 for model summary.

Table 9

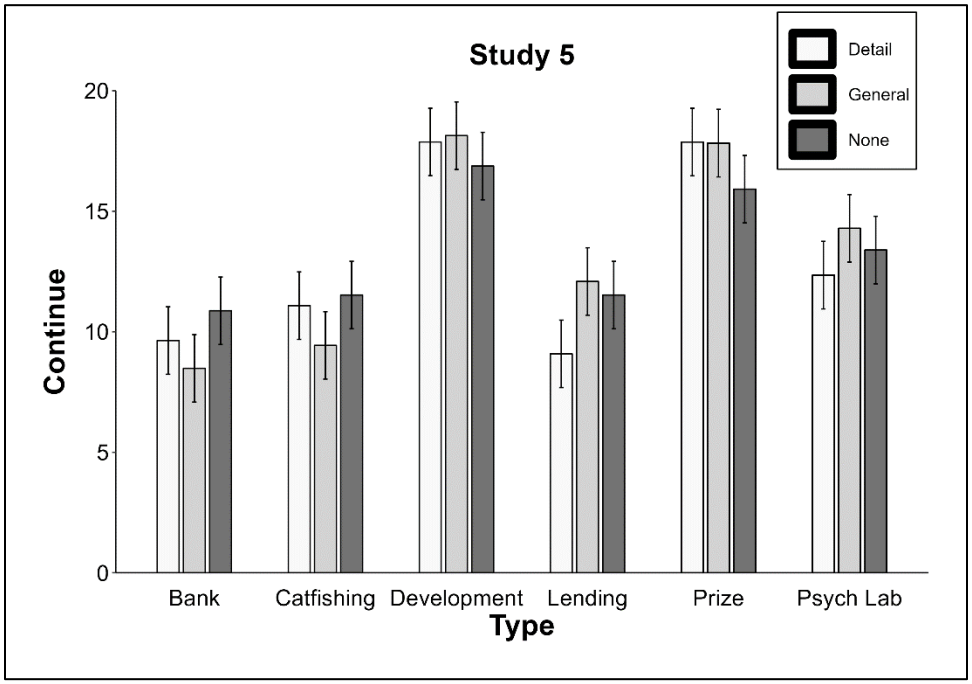
Linear Mixed Model Using Options and Scenario Type to Predict Willingness to Continue in Study 5B

Predictor	Estimate	[95% CI]	t value	p
Intercept	9.24	[8.18, 10.25]	17.48	<.001
Options 1	-0.12	[-0.96, 0.73]	-0.27	0.78
Options 2	0.18	[-0.66, 1.03]	0.42	0.67
Scenario Type 1	0.83	[-0.36, -2.03]	1.37	0.17
Scenario Type 2	7.38	[6.18, 8.58]	12.11	<.001
Scenario Type 3	2.12	[0.93, 3.32]	3.49	<.001
Scenario Type 4	8.74	[7.54, 9.94]	14.33	<.001
Scenario Type 5	5.55	[4.35, 6.74]	9.10	<.001

Consistent with studies 2, 3, and 4 the prize scenario had higher average continuation ratings (M = 17.98, SD = 7.35). Development also had a high average (M = 16.62, SD = 6.56). Bank has the lowest average (M = 9.24, SD = 6.28) in this set of scenarios.

Figure 12

Averages by Scenario Type in Study 5



Discussion- Experiment 5

Studies 3 and 4 investigated the influence of alternatives on compliance, and empirical evidence did not support that method as an effective intervention. Feasibility concerns can mitigate sunk cost bias (Benschop et al, 2021). It is possible that the intervention was not effective because the alternative presented did not seem feasible. Study 5 investigated feasibility the relationship between the option availability and fraud compliance.

The results of study 5 provide insights into the effectiveness of proximal details and general suggestions on participants' perception and decision-making in sunk cost scenarios. Findings indicated that inclusion of proximal details on alternative options had a small effect on perceived feasibility of exploring other options, providing support for Hypothesis IIA. However, it did not impact willingness to continue, contradicting Hypothesis IA.

General suggestions did not impact perceptions of feasibility (Hypothesis IIB) or willingness to continue (Hypothesis IB). Therefore, the study suggests that general suggestions may not be effective in alternating participants' decision-making when costs in fraudulent scenarios are sunk.

Findings also supported Hypothesis III, indicating that the more feasible it was to explore other options, participants were less likely to continue. This suggests that the perceived feasibility of exploring alternative options plays a role in individuals' willingness to continue.

However, the Bayesian within-subjects mediation model did not find a strong mediation effect of feasibility on available options and willingness to proceed for both proximal details on alternatives, and a general suggestion to continue other options. This indicates that feasibility may not be the primary mechanism though which options influence participants' decision-making.

Similar to study 3, a linear model using options and scenario type to predict willingness to continue did have significant effects of scenario type. This suggests that the specific characteristics and context of the scenarios used in the study had an influence on willingness to continue. Option type was not a significant predictor in the linear model.

Overall, the results indicate that the inclusion of proximal details and general suggestions did not significantly influence participants' willingness to continue, and the feasibility of exploring other options did not have an impact on their decision-making. These findings provide valuable insights and suggest other intervention strategies, which may have stronger and more robust effects, should be explored to support consumers, like Marjorie Jones. A general statement or specific details on not participating would likely not have deterred her continued participation in a prize scam.

General Discussion

Consumer fraud poses significant challenges, with sunk cost bias being a psychological phenomenon that renders individuals vulnerable to continued investment in fraudulent schemes. This dissertation seeks to shed light on the relationship between sunk cost bias, construal level theory, and the effectiveness of mindset and option availability intervention strategies to mitigate compliance in fraudulent scenarios. Inspired by real-life cases like Marjorie Jones, a victim of a prize scam, who persisted in paying fraudulent fees and suffered substantial financial loss, this research aimed to explore effective ways to prevent such tragic outcomes.

Five studies each contributed unique insights to the understanding of fraud compliance and the potential for intervention strategies. In study 1, participants demonstrated increased vulnerability when the participants sunk costs and spent time completing survey work before being solicited a fraudulent fee, providing empirical evidence of sunk cost effects on fraud compliance. After establishing the role of sunk costs in fraud compliance, studies 2, 3, 4, and 5 were driven by the question of whether individuals like Marjorie Jones, who became victims of sunk cost effects, could potentially find ways to evade them. Sunk cost bias is influenced by factors related to perspective and mindset like mindfulness (Hafenbrack et al., 2014), cognitive flexibility (Emich & Pyone, 2018), and construal level (Benschop et al., 2021; Wakslak et al., 2006). Study 2 specifically investigated mindset, operationalized by construal level, a measure of the level of concrete (low construal) and abstract thought (high construal), and how sunk cost bias influenced fraud compliance in a series of hypothetical scenarios. Neither sunk cost bias nor construal level had a significant impact on compliance. Study 3 explored the effectiveness of increasing the salience of alternative options to fraud compliance for individuals with either a high or low construal level. Unfortunately, neither variable decreased compliance. Study 4

examined the interaction of option availability with and without sunk costs. Alternative courses of action with more concrete details on additional options were approaching significance if outliers were removed. General suggestions did not have an impact on willingness to continue in fraudulent schemes. Lastly, study 5 explored the feasibility of exploring other options as a mediator between option availability and willingness to continue. The mediation model was not significant. However, there was a significant relationship between feasibility and willingness to continue. Participants were less willing to proceed if they found it feasible to explore other options. In addition, participants were more likely to find it feasible to explore other options if they were provided details on alternative options. A relationship did not exist between general suggestions and feasibility.

Results of these studies indicate that mindset, as operationalized with construal level theory, and general suggestions may not prevent fraud victimization of Marjorie Jones and others trapped in a cycle of fraud victimization. Provided the approaching significance of detailed options on alternatives in study 4 and the relationship between feasibility and detailed options in study 5, detailed options warrant further investigation as potential strategies to empower individuals and reduce susceptibility to fraudulent schemes. In the following discussion, we will review the limitations of the studies, discuss their policy implications, and outline potential directions for future research in consumer protection and fraud prevention.

Limitations

The present research has several limitations that should be considered when interpreting the findings. First, the use of an undergraduate student sample in study 1 limits the generalizability of the findings to other populations. It is possible that the effects of authority and trust in the institution influenced compliance, however, this would have influenced participants'

decision-making for both the sunk cost and control conditions equally. The study found individuals in the sunk cost condition were more likely to pay a fraudulent fee than the control condition. Additionally, there could be selection bias for participants in studies 2, 3, 4, and 5, as the samples consisted of individuals registered to participate in studies on Prolific, and these individuals may possess characteristics that differ from those of the general population.

Another limitation is that studies 2, 3, 4, and 5 relied on written scenarios and gathered participants' responses to these hypothetical situations. It is important to note that hypothetical situations may not fully capture the experimental realism experienced by participants in study 1. In study 1, students physically visited the lab, encountered an experimenter with a card reader attached to their phone and were directly asked to pay a fee. Reading about a hypothetical situation may not elicit the same level of emotional and psychological responses as standing face-to-face with the experimenter requesting the fraudulent fee. However, it should be acknowledged that study 1 was very specific to a university setting, wherein there are additional elements like trust in the institution and possible perceptions of the older graduate student experimenter as an authority figure. This situation does not generalize to other types of fraud, such as those experienced in prize scams.

Furthermore, studies 2, 3, 4, and 5 exhibited additional variance due to scenario type, indicating a need for revision if these scenarios are to be used in future studies. Ensuring consistency and refining the scenarios would be beneficial to enhance the validity and reliability of the results in subsequent research.

Despite these limitations, the present research contributes valuable insights into the role of sunk costs, construal level, and options available in fraudulent scenarios. By addressing these

limitations in future studies and further exploring effective intervention strategies, this research can better inform policy and consumer protection efforts in the prevention of fraud victimization.

Policy Implications

The findings of this dissertation have policy implications for consumer protection and fraud prevention efforts. Understanding the influence of sunk costs on fraud compliance and the effectiveness of intervention strategies can inform policies aimed at safeguarding consumers from falling victim to fraudulent schemes.

The results of study 1 highlight the impact of sunk costs on fraudulent fee payment. This finding underscores the need for consumer education and awareness campaigns that emphasize the importance of recognizing sunk costs and making rational decisions based on future costs and benefits rather than past investments. Sunk costs are often used in educational materials for accountancy and management in accessible web platforms, like Lumen Learning (Lumen Learning, 2023). Providing a wider audience of general consumers with information about sunk cost bias and how it can influence decision-making in fraudulent scenarios can help individuals become more vigilant and cautious when faced with such situations.

Studies 4 and 5 indicate that providing detailed information on other options could be an effective intervention. Given the limitations of those studies, additional empirical research would be necessary before amending policy. Provided more additional empirical research, policies can be designed to ensure that consumers have easy access to information about their options, such as reporting fraudulent activities, seeking help from authorities, or contacting family and friends. Public awareness campaigns can play a crucial role in disseminating information about available options, making it more feasible for consumers to consider and pursue alternative courses of action.

To further enhance consumer protection, agencies could focus on specific types of fraud and adapt their practices accordingly. For instance, the Consumer Financial Protection Bureau (CFPB) explore interest rates tool provides consumers with the distribution of mortgage interest rates in their state for homes in their price ranges with a similar down payment (CFPB, 2023). Businesses working with home buyers could direct consumers to this tool to support them and prevent individuals from taking a predatory loan by highlighting realistic alternatives other individuals received from other lenders. This is one example of how specific practices can support consumers. Detailed alternatives, not general suggestions, could be a more effective intervention strategy and the necessary details are going to vary in different situations. Specific policies would need to be designed, in conjunction with agencies, to support consumers. Marjorie Jones did have correspondence with several individuals when taking out a reverse mortgage and utilized wire transfer agencies (United States Senate, 2019). Empirical evidence can support policy within these companies that could include training for employees who believe a customer may be victimized by fraud.

Future Directions

Moving forward, it is crucial for studies to strive for greater external validity by incorporating real-world examples and contexts. Studies like Domeier and colleagues' (2018) egg drop study investigating the influence of sunk costs in a practical scenario, and the fraudulent scam communication study by Fischer and colleagues (2013) which explored the relationships between personality type and those who responded to mail scams, provide valuable insights. These types of simulations or in-person studies, akin to study 1 in this dissertation, can offer better information on decision-making in fraud-related situations moving forward.

In addition to replicating real-world scenarios, it is important for future scenario-based studies to consider the context in which the fraud occurs. Understanding the influence of situational factors on decision-making can contribute to the development of more effective interventions and prevention strategies. For example, the data collected for this paper suggests individuals are more susceptible to prize scams and development in escalation-of-commitment type scenarios and would highlight potential avenues for future research. A prize scam was the type of fraud activity that left Marjorie Jones with $69 in her bank account at the time of her tragic death.

Moreover, large-scale replications are crucial for addressing publication bias and obtaining a more accurate estimate of effect sizes. To find solutions that would prevent tragic suicides like, Marjorie Jones, the field of psychology needs to continue replication studies to know the true effect size of commonly cited phenomena. Weak theoretical underpinnings hinder the design of effective frameworks for intervention, and replication studies are essential for building a robust evidence base. The replication crisis has been widely recognized since Maxell and colleagues (2015) article advocating for the incorporation of Bayesian statistics and replication studies. Encouragingly, there has been progress with more large-scale replication projects, like CLIMBR, replicating construal level theory on a large scale.

By addressing these limitations and pursuing future directions, the field of research on sunk costs and decision-making in fraud scenarios can advance our understanding and contribute to the development of evidence-based interventions and prevention strategies.

Conclusion

The set of studies conducted in this dissertation has contributed to the existing research on sunk costs, construal level, and fraud compliance. By examining the impact of variance

factors of compliance in fraudulent scenarios, these studies shed light on the complex nature of decision-making in such contexts.

The findings from these studies, summarized in table 10, indicate that the influence of sunk costs on compliance is weak and inconsistent. Contrary to expectations, mindset, as investigated through construal level theory, did not demonstrate a significant impact on compliance, as measured by willingness to continue. Furthermore, the effectiveness of alternative options on compliance was not strongly supported by the data. These results highlight the influence of sunk cost bias on behavior and the need for further exploration of intervention strategies to mitigate compliance in fraud-related situations.

One notable observation from the studies is the presence of situation factors. There was evidence of variance by situational type. This suggests that different types of fraudulent scenarios may elicit varying responses. Future research should investigate the specific situational characteristics that contribute to these differences in compliance. Exploring the effectiveness of in-person simulations, tailored to specific situation contexts could offer promising avenues for protecting consumers by reducing willingness to continue in fraudulent scenarios. In addition, further specified empirical research can directly inform policies that protect consumers.

In conclusion, this dissertation contributes to our understanding of the complexities involved in decision-making related to sunk costs and compliance in fraudulent scenarios. By identifying the limitation of existing theories and highlighting avenues for future research, this work provides a foundation for the development of more effective intervention and prevention strategies. Ultimately, but advancing our understanding of fraud compliance, we can work towards protecting consumers and reducing the occurrence of fraudulent activities in society.

Table 10

Summary of Manipulated Variables and Findings by Study

		Manipulations			
Study	Analysis	Sunk costs	Construal level	Options	Results
1	Chi square	$p < .05$	-	-	Significant effect of sunk costs
2	Mixed ANOVA	ns	Ns	-	No significant effects
3	Mixed ANOVA	-	Ns	ns	No significant effects
4	Repeated Measures ANOVA	$p < .05$	-	ns*	Significant effect of sunk costs *Significant without outliers
5	Within-Subject Mediation	-	-	ns	Significant effect of options on feasibility, and between feasibility and willingness to continue

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Appendix A: Bogus Informed Consent

ADULT CONSENT TO PARTICIPATE IN RESEARCH

PERSONALITY AND PROBLEM SOLVING- SURVEY STUDY

Principal Investigator: Jasmine Ahmad, Graduate Student

Institution: DePaul University, Chicago, Illinois, USA

Department (School, College): Psychology Department, College of Science and Health

Faculty Advisor: Jessica Choplin, PhD, Psychology Department

What is the purpose of this research?

We are asking you to be in a research study because we are trying to learn more about how personality traits interact with various problem-solving strategies. This study is being conducted by Jasmine Ahmad at DePaul University, a graduate student at DePaul University as a requirement to obtain her PhD. This research is being supervised by her faculty advisor, Jessica Choplin, PhD.

We hope to include about 250 people in the research.

Why are you being asked to be in the research?

You are invited to participate in this study because you are a healthy adult aged 18 years or older. You must be age 18 or older to be in this study. This study is not approved for the enrollment of people under the age of 18.

What is involved in being in the research study?

If you agree to be in this study, you will be randomly assigned to one of two groups. Each group will complete computerized tasks which involve answering survey questions. You will also be asked to provide some basic demographic information.

How much time will this take?

This study will take a total of 30 minutes of your time.

How much is the research fee?

You will be charged a $50.95 research fee for your participation in this experiment.

Are there any risks involved in participating in this study?

Being in this study does not involve any risks other than what you would encounter in daily life.

Are there any benefits to participating in this study?

The results of this study will not directly benefit participants. However, the knowledge gained could produce a benefit to society by informing future research and interventions to improve problem solving.

Is there any kind of payment, reimbursement or credit for being in this study?

You will also be given 1 psychology subject pool credit for participation in the research. You must provide your subject pool number in order to be given credit.

Can you decide not to participate?

Your participation is voluntary, which means you can choose not to participate. There will be no negative consequences, penalties, or loss of benefits if you decide not to participate or change your mind later and withdraw from the research after you begin participating.
Your decision whether or not to participate in the research study will not affect your grades at DePaul University.

Who will see my study information and how will the confidentiality of the information collected for the research be protected?
The research records will be kept and stored securely. Your information will be combined with information from other people taking part in the study. When we write about the study or publish a paper to share the research with other researchers, we will write about the combined information we have gathered. We will not include your name or any information that will directly identify you.

Your SONA participant number will be collected and logged in a separate file and not be combined with the other data collected from you. This SONA participant file is necessary to ensure you receive credit in the SONA system for participating.

We will make every effort to prevent anyone who is not on the research team from knowing that you gave us information, or what that information is. However, some people might review or copy our records that may identify you in order to make sure we are following the required rules, laws, and regulations. For example, the DePaul University Institutional Review Board may review your information. If they look at our records, they will keep your information confidential.

Who should be contacted for more information about the research?
Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions, suggestions, concerns, or complaints about the study or you want to get additional information or provide input about this research, you can contact the researcher, Jasmine Ahmad, 312-362-7500, jahmad2@depaul.edu or Faculty Sponsor: Jessica Choplin, 773-325-2052, jchoplin@depaul.edu.

This research has been reviewed and approved by the DePaul Institutional Review Board (IRB). If you have questions about your rights as a research subject you may contact Susan Loess-Perez, DePaul University's Director of Research Compliance, in the Office of Research Services at 312-362-7593 or by email at sloesspe@depaul.edu.
You may also contact DePaul's Office of Research Services if:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.

You will be given a copy of this information to keep for your records.

Statement of Consent from the Subject:

I have read the above information. I have had all my questions and concerns answered. Please check below and sign.
Signature: _____
Printed name: _____
Date: _____

Appendix B: Study 1 Questionnaires

Sunk Cost Questionnaire

Did you believe the researcher when she requested you pay a research fee? Yes/No/Unsure
Why or why not?

Did you have the financial means to pay the research fee today? Yes/No/Unsure

Costs are considered "sunk" if they are unrecoverable hence the term "sunk cost effect". Costs include money and/or time invested in a project or activity. Can you think of a time you persisted in a project or activity because you had already "sunk costs"? Yes/No/Unsure

If so, please describe.

Demographic Questionnaire
What is your gender identity? Female/Male/Non-Conforming

What is your age?

What is the highest level of education you have completed?

- High school graduate (or equivalent)
- Some college (1-4 years, no degree or in process)
- Associate degree (including occupational or academic degrees)
- Bachelor's degree (BA, BS, etc...)
- Master's degree (MA, MS, etc...)
- Doctoral or Professional degree (JD, MD, PhD, etc...)

What was your total household income before taxes during the past 12 months?
Household income as reported to FAFSA

- Less than $10,000
- $10,000 to $14,999
- $15,000 to $24,999
- $25,000 to $34,999
- $35,000 to $49,999
- $50,000 to $74,999
- $75,000 to $99,999
- $100,000 to $149,999
- $150,000 to $199,999
- $200,000 or more

What is your race and ethnicity (Check all that apply)

- African American
- American Indian/Alaskan Native
- Asian
- Hispanic/Latino
- Native Hawaiian/Other Pacific Islander
- White
- Other (please specify)

What's your major(s)?
Open-ended

Are you currently employed?
Employment includes student worker positions, part-time jobs, and gig economy work
Yes/No

- On average, how many hours do you currently work a week?
- 1-10
- 11-20
- 21-30
- 31-40
- 40+

Approximately, how much discretionary income do you have a month?
Discretionary income is the amount of an individual's income that is left for spending, investing or saving after paying taxes and paying for personal necessities, such as food, shelter and clothing. Discretionary income includes money spent on parties, vacations, luxury items, and nonessential goods and services.

- Less than $100
- $100 to $299
- $300 to $499
- $500 to $699
- $700 to $899
- $900 to $1,099
- $1,100 to $1,299
- $1,300 to $1,499
- More than $1,500

Approximately, what percentage of college costs do the following cover?
College costs include tuition, books, and housing/rent. Total should add up to 100%.

My money (0-100% scale)
Scholarships (0-100% scale)
Loans I am responsible for paying (0-100% scale)
Money from family and/or friend(s) (0-100% scale)
Loans family and/or friend(s) are responsible for paying (0-100% scale)
Other (please specify) (0-100% scale)

Cognitive Reflection Test (Frederick, 2005)

(1) A bat and a ball cost $1.10 in total. The bat costs $1.00 more than the ball. How much does the ball cost? _____ cents

(2) If it takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets? _____ minutes

(3) In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half of the lake? _____ days

Social Desirability Scale (Reynolds, 1982)

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to you personally.

It is sometimes hard for me to go on with my work if I am not encouraged.
I sometimes feel resentful when I don't get my way.
No matter who I'm talking to, I'm always a good listener.
There have been occasions when I took advantage of someone.
I'm always willing to admit it when I make a mistake.
I sometimes try to get even rather than forgive and forget.
I am always courteous, even to people who are disagreeable.
I have never been irked when people expressed ideas very different from my own.
There have been times when I was quite jealous of the good fortune of others.
I am sometimes irritated by people who ask favors of me.
I have never deliberately said something that hurt someone’s feelings.

Need for Cognition Scale (Cacioppo, Petty, & Kao, 1984)

For each of the statements below, please indicate whether or not the statement is characteristic of you or of what you believe. For example, if the statement is extremely uncharacteristic of you or

of what you believe about yourself (not at all like you). You should use the following scale as you rate each of the statements below.

Extremely uncharacteristic of me (1)
Somewhat uncharacteristic of me (2)
Uncertain (3)
Somewhat characteristic of me (4)
Extremely uncharacteristic of me (5)

I prefer complex to simple problems.
I like to have the responsibility of handling a situation that requires a lot of thinking.
Thinking is not my idea of fun.
I would rather do something that requires little thought than something that is sure to challenge my thinking abilities.
I try to anticipate and avoid situations where there is a likely chance I will have to think in depth about something.
I find satisfaction in deliberating hard and for long hours.
I only think as hard as I have to.
I prefer to think about small daily projects to long term ones.
I like tasks that require little thought once I've learned them.
The idea of relying on thought to make my way to the top appeals to me.
I really enjoy a task that involves coming up with new solutions to problems.
Learning new ways to think doesn't excite me very much.
I prefer my life to be filled with puzzles I must solve.
The notion of thinking abstractly is appealing to me.
I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.
I feel relief rather than satisfaction after completing a task that requires a lot of mental effort.
It's enough for me that something gets the job done; I don't care how or why it works.
I usually end up deliberating about issues even when they do not affect me personally.

Mindful Attention Awareness Scale (Brown & Ryan, 2003)

Below is a collection of statements about your everyday experience. Using the 1–6 scale below, please indicate how frequently or infrequently you currently have each experience. Please answer according to what really reflects your experience rather than what you think your experience should be.

1 almost always
2 very frequently
3 somewhat frequently
4 somewhat infrequently
5 very infrequently
6 almost never

I could be experiencing some emotion and not be conscious of it until some time later.
I break or spill things because of carelessness, not paying attention, or thinking of something else.
I find it difficult to stay focused on what's happening in the present.
I tend to walk quickly to get where I'm going without paying attention to what I experience along the way
I tend not to notice feelings of physical tension or discomfort until they really grab my attention.
I forget a person's name almost as soon as I've been told it for the first time.
It seems I am "running on automatic" without much awareness of what I'm doing.
I rush through activities without being really attentive to them.
I get so focused on the goal I want to achieve that I lose touch with what I am doing right now to get there.
I do jobs or tasks automatically, without being aware of what I'm doing
I find myself listening to someone with one ear, doing something else at the same time.
I drive places on "automatic pilot" and then wonder why I went there.
I find myself preoccupied with the future or the past.
I find myself doing things without paying attention.

I snack without being aware that I'm eating

Big Five Aspect Scales (DeYoung et al., 2007)

Here are a number of characteristics that may or may not apply to you. Please indicate the extent to which you agree or disagree with that statement.

Disagree strong (1)
Disagree a little (2)
Neither disagree or agree (3)
Agree a little (4)
Agree strongly (5)

Neuroticism

Volatility

Get angry easily.
Rarely get irritated. (R)
Get upset easily.
Keep my emotions under control. (R)
Change my mood a lot.
Rarely lose my composure. (R)
Am a person whose moods go up and down easily.
Am not easily annoyed. (R)
Get easily agitated.
Can be stirred up easily.
Seldom feel blue. (R)
Am filled with doubts about things.
Feel comfortable with myself. (R)
Feel threatened easily.
Rarely feel depressed. (R)
Worry about things.
Am easily discouraged.
Am not embarrassed easily. (R)
Become overwhelmed by events.
Am afraid of many things.

Withdrawal

Am not interested in other people's problems. (R)
Feel others' emotions.
Inquire about others' well-being.
Can't be bothered with other's needs. (R)
Sympathize with others' feelings.
Am indifferent to the feelings of others. (R)
Take no time for others. (R)

Take an interest in other people's lives.
Don't have a soft side. (R)
Like to do things for others.
Respect authority.
Insult people. (R)
Hate to seem pushy.
Believe that I am better than others. (R)
Avoid imposing my will on others.[a]
Rarely put people under pressure.[a]
Take advantage of others. (R)
Seek conflict. (R)
Love a good fight. (R)
Am out for my own personal gain. (R)

Conscientiousness

Politeness

Carry out my plans.
Waste my time. (R)
Find it difficult to get down to work. (R)
Mess things up. (R)
Finish what I start.
Don't put my mind on the task at hand. (R)
Get things done quickly.
Always know what I am doing.
Postpone decisions. (R)
Am easily distracted. (R)

Orderliness

Leave my belongings around. (R)
Like order.
Keep things tidy.
Follow a schedule.
Am not bothered by messy people. (R)
Want everything to be "just right."
Am not bothered by disorder. (R)
Dislike routine. (R)
See that rules are observed.
Want every detail taken care of.

Extraversion

Enthusiasm

Make friends easily.
Am hard to get to know. (R)
Keep others at a distance. (R)
Reveal little about myself. (R)
Warm up quickly to others.

Rarely get caught up in the excitement. (R)
Am not a very enthusiastic person.[b] (R)
Show my feelings when I'm happy.
Have a lot of fun.
Laugh a lot.

Assertiveness
Take charge.
Have a strong personality.
Lack the talent for influencing people. (R)
Know how to captivate people.
Wait for others to lead the way. (R)
See myself as a good leader.
Can talk others into doing things.
Hold back my opinions. (R)
Am the first to act.
Do not have an assertive personality.[a] (R)

Openness/Intellect

Intellect
Am quick to understand things.
Have difficulty understanding abstract ideas. (R)
Can handle a lot of information.
Like to solve complex problems.
Avoid philosophical discussions. (R)
Avoid difficult reading material. (R)
Have a rich vocabulary.
Think quickly.
Learn things slowly. (R)
Formulate ideas clearly.

Openness
Enjoy the beauty of nature.
Believe in the importance of art.
Love to reflect on things.
Get deeply immersed in music.
Do not like poetry. (R)
See beauty in things that others might not notice.
Need a creative outlet.
Seldom get lost in thought. (R)
Seldom daydream. (R)
Seldom notice the emotional aspects of paintings and pictures. (R)

Appendix C: Fraudulent Sunk Cost Scenarios with Alternative Options

Sunk costs
Proximal alternative(s)*
General suggestion is italicized

1. **Lab Fee**

   You are participating in a research study for class credit in an Introduction Psychology course. The course requires you participate in research studies as part of the course. In the lab, **[you spend 30 minutes completing questionnaires/you see questionnaires on the table]** The researcher provides you the informed consent form that states the study has a $50.95 fee, which you were not told about in advance. You consider paying the fee and continuing. **[or you can consider completing a 5-page paper for credit instead*/ *or you can consider pursuing other options].***

How likely would you be to pay the fee to receive course credit? (1 extremely unlikely– 10 extremely likely)

How likely would you be to refuse to pay the fee and leave without receiving course credit? (1 extremely unlikely– 10 extremely likely)

How reasonable would it be for you to pay the fee and proceed? (1 extremely unreasonable– 10 extremely reasonable)

How feasible is it to explore other options? (1 not feasible – 10 very feasible)

Attention check: How much was the research fee?

a. $15.95
b. $30.35
c. $50.95

2. **Predatory Lending**

You are purchasing a home in your favorite neighborhood, and you see mortgage rates advertised at 5.350%. **[Before you start/After spending a year]** obtaining pre-approval, house hunting, submitting offers, and meeting with the appraiser, you notice that contrary to the advertisement the interest rate on the legal form states is 7.350%. You consider

continuing with this lender. **[or you can consider going with one of the three other lenders*/*or you can consider pursuing other options.]***

How likely would you be to proceed with this lender? (1 extremely unlikely– 10 extremely likely)

How likely would you be to refuse to proceed with this lender? (1 extremely unlikely– 10 extremely likely)

How reasonable would it be for you to proceed with this lender? (1 extremely unreasonable – 10 extremely reasonable)

How feasible is it to explore other options? (1 not feasible – 10 very feasible)

Attention check: The interest rate stated on the form was ____ than the previously stated interest rate?

a. higher
b. lower
c. not relevant, no interest rate was stated

3. Catfishing

You see an attractive person on an online dating app who has similar interests and hobbies as you. **[<u>Before you start/After you spend 6 months enjoyably</u>]** corresponding with the individual, you show a friend their photograph. Your friend says those photographs are from a set of stock photos and appear in google search for "model photo". You consider corresponding with the individual, anyway, because you like their personality. **[or you can consider responding to messages from other individuals within the app*/*or you can consider pursuing other options].***

How likely are you to correspond with this person? (1 extremely unlikely– 10 extremely likely)

How likely are to not correspond with this person? (1 extremely unlikely– 10 extremely likely)

How reasonable would it be for you to correspond with this person? (1 extremely unreasonable – 10 extremely reasonable)

How feasible is it to explore other relationships? (1 not feasible – 10 very feasible)

Attention check: What action did your friend take when you told them about your relationship?

a. google search "model photo"
b. took you to lunch

c. ignore you

4. Bank Fee

You are going to open a bank account. You select a bank that offers free checking and no fees. **[Before you meet/After you meet for an hour]** with a banker at your local branch to start an account with $1,000. You spot a monthly fee of $15, which is waived if you maintain a balance of $5,000. You were not informed of this fee in advance. Your account will not meet the threshold and you will be charged the fee. You consider continuing opening this account anyway. **[or you can consider other banks in your neighborhood*/** ***or you can consider pursuing other options.]***

How likely would you be to open the bank account? (1 extremely unlikely– 10 extremely likely)

How likely are you to leave without opening the account? (1 extremely unlikely– 10 extremely likely)

How reasonable would it be for you to open the bank account? (1 extremely unreasonable – 10 extremely reasonable)

How feasible is it to explore other banks? (1 not feasible – 10 very feasible)

Attention check: What is the minimum balance for opening an account without a fee?

a. $500
b. $5,000
c. $10,000

5. Prize Scam

You won a cruise vacation. **[Before you pay the required $200 in taxes/After you pay the required $200 in taxes]** you learn that there will be an additional processing fee of $100 before they send you the tickets. You consider paying the extra processing fee. **[or you can consider dropping out of the vacation*/or you can consider pursuing other options].**

How likely would you be to pay the processing fee? (1 extremely unlikely– 10 extremely likely)

How likely would you be to refuse to pay the processing fee? (1 extremely unlikely– 10 extremely likely)

How reasonable would it be for you to pay the processing fee and proceed? (1 extremely unreasonable– 10 extremely reasonable)

How feasible is it to explore other options? (1 not feasible – 10 very feasible)

6. **Development project**

You are the manager of an investment planning department. **[Before you spend the initial investment/After you spend an initial investment]** of 40 million dollars of the budgeted 100 million dollars, the head engineer mentions concerns about the ability to complete the project within the budget, as they found a major flaw in the design. You consider continuing to pursue the project**. [or you can consider stopping investment in this project and pursuing other projects*/or you can consider pursuing other options].**

How likely would you be to consider to further pursue this project? (1 extremely unlikely– 10 extremely likely)

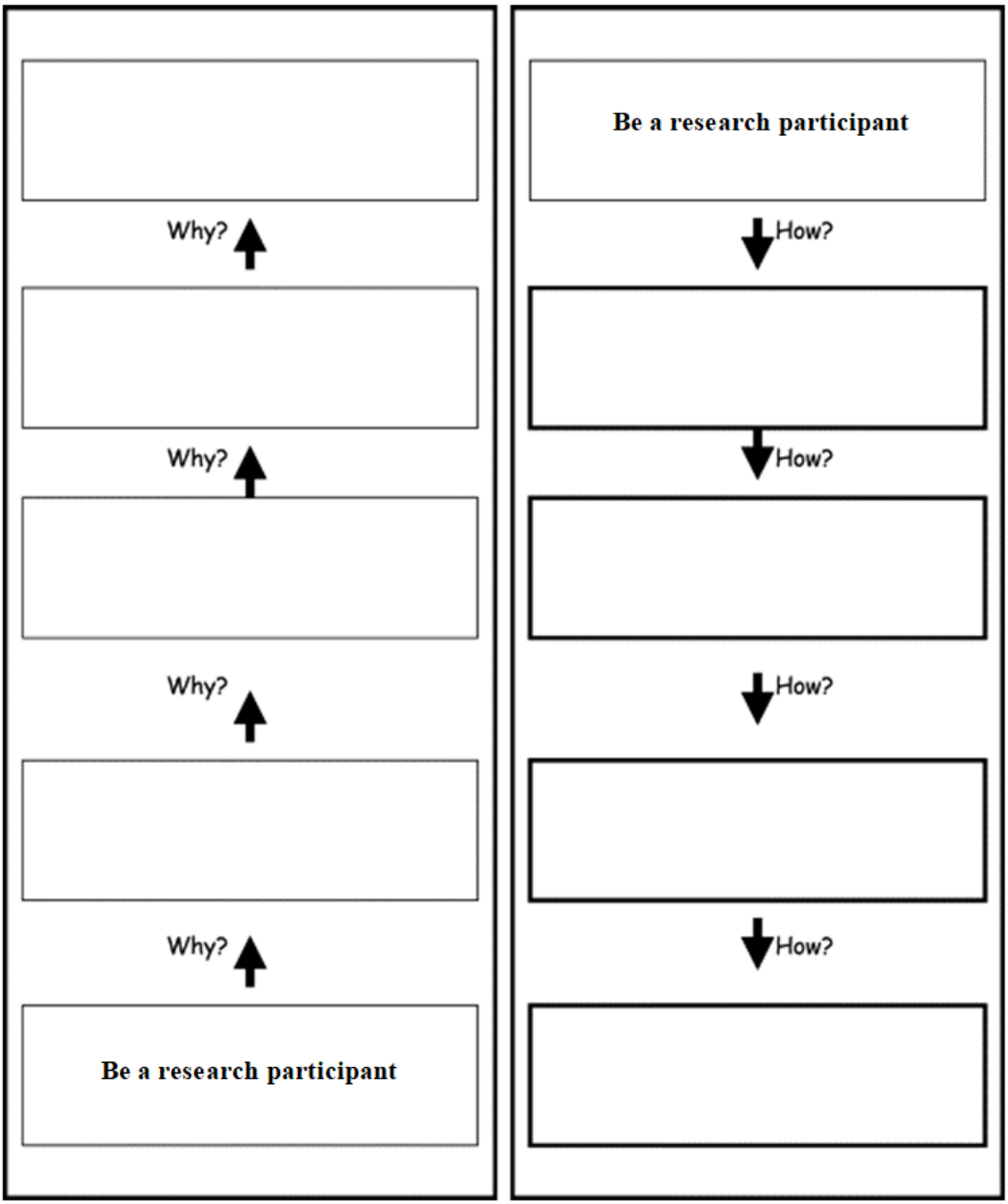
How likely would you be to refuse to further pursue this project? (1 extremely unlikely– 10 extremely likely)

How reasonable would it be for you to further pursue this project? (1 extremely unreasonable– 10 extremely reasonable)

How feasible is it to explore other options? (1 not feasible – 10 very feasible)

Appendix D: Construal Level Manipulation

Freitas et al., 2004



Appendix E: The Behavior Identification Form

Vallacher & Wegner, 1989

Any behavior can be identified in many ways. For example, one person might describe a behavior as "typing a paper," while another might describe the behavior as "pushing keys." Yet another person might describe the behavior as "expressing thoughts." We are interested in your personal preferences for how a number of different behaviors should be described. On the following pages you will find several different behaviors listed. After each behavior will be two choices of different ways in which the behavior might be identified. Here is an example:

Attending class
a. sitting in a chair
b. looking at the blackboard

Your task is to choose the identification, a or b, that best describes the behavior for you. Please mark only one alternative for each pair. Of course, there are no right or wrong answers. People simply differ in their preferences for the different behavior descriptions, and we are interested in your personal preferences. Remember, choose the description that you personally believe is more appropriate in each pair.

*Higher-level alternative

1. Making a list
    a. Getting organized*
    b. Writing things down
2. Reading
    a. Following lines of print
    b. Gaining knowledge*
3. Joining the Army
    a. Helping the Nation's defense*
    b. Signing up
4. Washing clothes
    a. Removing odors from clothes*
    b. Putting clothes into the machine
5. Picking an apple
    a. Getting something to eat*
    b. Pulling an apple off a branch
6. Chopping down a tree

a. Wielding an axe
b. Getting firewood*

7. Measuring a room for carpeting
   a. Getting ready to remodel*
   b. Using a yardstick
8. Cleaning the house
   a. Showing one's cleanliness*
   b. Vacuuming the floor
9. Painting a room
   a. Applying brush strokes
   b. Making the room look fresh*
10. Paying the rent
   a. Maintaining a place to live*
   b. Writing a check
11. Caring for houseplants
   a. Watering plants
   b. Making the room look nice*
12. Locking a door
   a. Putting a key in the lock
   b. Securing the house*
13. Voting
   a. Influencing the election*
   b. Marking a ballot
14. Climbing a tree
   a. Getting a good view*
   b. Holding on to branches
15. Filling out a personality test
   a. Answering questions
   b. Revealing what you're like*
16. Tooth brushing
   a. Preventing tooth decay *
   b. Moving a brush around in one's mouth
17. Taking a test
   a. Answering questions
   b. Showing one's knowledge*
18. Greeting someone
   a. Saying hello
   b. Showing friendliness*
19. Resisting temptation
   a. Saying "no"

b. Showing moral courage*

20. Eating
    a. Getting nutrition*
    b. Chewing and swallowing
21. Growing a garden
    a. Planting seeds
    b. Getting fresh vegetables*
22. Traveling by car
    a. Following a map
    b. Seeing countryside*
23. Having a cavity filled
    a. Protecting your teeth*
    b. Going to the dentist
24. Talking to a child
    a. Teaching a child something*
    b. Using simple words
25. Pushing a doorbell
    a. Moving a finger
    b. Seeing if someone's home*

Appendix F: Demographic Questionnaire

Demographic Questionnaire

What is your gender identity? Female/Male/Non-Binary

What is your age?

What is the highest level of education you have completed?

- High school graduate (or equivalent)
- Some college (1-4 years, no degree, or in process)
- Associate degree (including occupational or academic degrees)
- Bachelor's degree (BA, BS, etc...)
- Master's degree (MA, MS, etc...)
- Doctoral or Professional degree (JD, MD, PhD, etc...)

What was your total household income before taxes during the past 12 months?

- Less than $10,000
- $10,000 to $14,999
- $15,000 to $24,999
- $25,000 to $34,999
- $35,000 to $49,999
- $50,000 to $74,999
- $75,000 to $99,999
- $100,000 to $149,999
- $150,000 to $199,999
- $200,000 or more

What is your race and ethnicity (Check all that apply)

- African American
- American Indian/Alaskan Native
- Asian
- Hispanic/Latino
- Native Hawaiian/Other Pacific Islander
- White
- Other (please specify)

Appendix G: Prolific Participant Demographic Summary

	Study 2 n = 71		Study 3 n = 70		Study 4 n = 43		Study 5 n = 221	
	n	%	*n*	%	*n*	%	*n*	%
Gender								
Male	25	35.2%	38	54.3%	14	32.6%	129	58.4%
Female	38	53.5%	30	42.9%	27	62.8%	83	37.6%
Non-binary/third gender	6	8.5%	0	0.0%	1	2.3%	8	3.6%
Prefer not to say	2	2.8%	2	2.9%	1	2.3%	1	0.5%
Race/Ethnicity								
African American	8	11.3%	6	8.6%	3	7.0%	12	5.4%
American Indian/Alaskan Native	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Asian	4	5.6%	5	7.1%	0	0.0%	15	6.8%
Hispanic/Latino	5	7.0%	5	7.1%	3	7.0%	13	5.9%
Native Hawaiian/Other Pacific Islander	0	0.0%	0	0.0%	0	0.0%	1	0.5%
White	48	67.6%	52	74.3%	34	79.1%	156	70.6%
Selected Multiple	5	7.0%	2	2.9%	3	7.0%	22	10.0%
Other	1	1.4%	0	0.0%	0	0.0%	1	0.5%
Not reported	0	0.0%	0	0.0%	0	0.0%	1	0.5%
Age								
Min	19		18		21		18	
Median	31		34		38		34.5	
Max	61		76		74		85	
Mean	33.4		37.5		43.4		38.7	
Std Dev	10.9		13.7		16.3		13.9	

	Study 2 n = 71		Study 3 n = 70		Study 4 n = 43		Study 5 n = 221	
	n	%	*n*	%	*n*	%	*n*	%
Highest Level of Education Completed								
High school graduate (or equivalent)	12	16.9%	10	14.3%	6	14.0%	43	19.5%
Some college (1-4 years, no degree, or in process)	20	28.2%	20	28.6%	5	11.6%	42	19.0%
Associate degree (including occupational or academic degrees	8	11.3%	6	8.6%	6	14.0%	23	10.4%
Bachelor's degrees	24	33.8%	23	32.9%	21	48.8%	92	41.6%
Master's degrees	6	8.5%	7	10.0%	4	9.3%	17	7.7%
Doctoral or Professional degree (JD, MD, PhD, etc..)		0.0%	4	5.7%	1	2.3%	3	1.4%
Not reported	1	1.4%	0	0.0%	0	0.0%	1	0.5%
What was your total house income before taxes during the past 12 months?								
Less than $10,000	9	12.7%	9	12.9%	5	11.6%	14	6.3%
$10,000 to $14,999	3	4.2%	3	4.3%	3	7.0%	10	4.5%
$15,000 to $24,999	8	11.3%	10	14.3%	6	14.0%	24	10.9%
$25,000 to $34,999	7	9.9%	5	7.1%	2	4.7%	22	10.0%
$35,000 to $49,999	8	11.3%	10	14.3%	4	9.3%	30	13.6%
$50,000 to $74,999	14	19.7%	14	20.0%	9	20.9%	52	23.5%
$75,000 to $99,999	11	15.5%	8	11.4%	6	14.0%	25	11.3%
$100,000 to $149,999	9	12.7%	7	10.0%	4	9.3%	29	13.1%
$150,000 to $199,999	0	0.0%	3	4.3%	2	4.7%	6	2.7%
$200,000 or more	1	1.4%	1	1.4%	2	4.7%	8	3.6%
Not reported	1	1.4%	0	0.0%	0	0.0%	1	0.5%