

# **Sunk Cost Effects of Time and Effort: Enjoyment of Effort as a Moderator**

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### **Abstract**

Sunk cost errors occur when a decision maker allows a previous investment of time, effort, or money to impact a current decision. The findings regarding sunk cost of money have been fairly robust, as decision makers often allow past monetary investments to impact decisions about future investments (Arkes & Blumer, 1985; Roth, Robbert, & Straus, 2015). However, the literature regarding sunk costs involving an investment of time or effort has been mixed. It appears that time and effort are not tracked in the same way as money, and that mental accounting may not be the main mechanism behind sunk cost effects for investments of time or effort. Instead, it appears that sunk costs of time or effort may create decision making errors through an effort justification mechanism (Cunha & Caldieraro, 2009, 2010). This current study examined whether enjoyment of effort would have an effect on this effort justification mechanism. Effort that is enjoyable may not need to be justified in the same way as unenjoyable effort. We utilized an online reading task to manipulate enjoyment and sunk cost to determine if participants would stay with their initial choice or switch. No significant differences were found for sunk cost or for enjoyment of the task. These results suggest that enjoyment of effort may not affect effort justification, but more work is needed to fully understand if and when sunk costs occur for time and effort.

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## Chapter 1: Introduction

A family of five spends their morning packing up their car, buying tickets, and preparing to head out on a 2-hour drive to the nearest water park. When they leave their house, it is a beautiful sunny day, but when they arrive at the park the weather has turned and it is clear that it will be rainy for most of the day. The family knows that they will most likely not have an enjoyable day in a rainy water park, but they decide to stay anyways. They reason that they have already spent their own time, effort, and money to get into the park, and that they might as well see it through. This scenario provides an example of a sunk cost fallacy in decision making. A sunk cost effect occurs when previous investments irrationally influence the outcome of a current decision. Sunk costs create an error in decision making because they deviate from the traditional normative economic models of decision making that past costs and benefits should be irrelevant to current decisions, and that the decision maker will make their decision based only on the current and future costs and benefits of their decision options (Simon, 1955).

Early work on sunk cost effects postulated that the error would occur if a decision maker had previously invested money, time, or effort (Arkes & Blumer, 1985). Most research on sunk cost has examined monetary investments, with far less attention to investments of time or effort. Research on sunk costs of time and effort has generally not differentiated these two factors given the difficulty in isolating them, as greater investments of time typically involve more effort. The findings in regard to sunk cost of money have been fairly robust. In a meta-analytic review of sunk cost effects for monetary investment researchers found a moderate effect size of  $d=0.496$  across 100 sampled studies (Roth, Robbert, & Straus, 2015). However, the literature regarding sunk costs involving an

investment of time or effort has been mixed (Cunha & Caldieraro, 2009; Navarro & Fantino, 2009; Soman, 2001). Soman (2001) found no sunk cost effects for time unless participants were prompted to consider the monetary value of their invested time. However, in another series of studies researchers were able to find sunk cost effects in a scenario where participants imagined investing time and effort and in a task involving actual investments of time and effort (Navarro & Fantino, 2009).

The mixed results regarding sunk costs of time and effort suggest the need for more work examining under what conditions sunk cost effects will occur. It is possible that the psychological mechanisms underlying sunk costs of time and effort differ from sunk costs of money. For example, Soman (2001) demonstrated that we do not mentally account for investments of time in the same way that we do for investments of money. Soman (2001) presented participants with a scenario in which they had spent five hours (low sunk cost) or 10 hours (high sunk) entering data for a professor in exchange for a ticket to an NFL game. Half of the participants were provided information about the standard wage rate for research assistants (\$7 per hour) and half were not informed of the wage rate. Participants were asked to imagine that there was a blizzard on the day of the game and the roads were dangerous. Participants were asked whether they would stay home or attend the game. When there was no information about the wage rate, there was no sunk cost effect. Participants did not differ on their willingness to attend the game between high and low sunk cost conditions. When the wage rate was provided, participants in the high sunk cost condition was significantly more likely to attend the game than those in the low sunk cost condition. These results suggest that we do not mentally account for time as we do with money unless we are prompted to think about time in terms of money.

Alternatively, some studies that have found support for a sunk cost of time and effort have utilized an effort justification framework (Cunha & Caldieraro, 2009, 2010; Navarro & Fantino, 2009). Effort justification has typically been examined in the context of escalation of commitment, where participants are more likely to escalate their commitment to a failing project when they are personally responsible for that decision. Escalation of commitment is hypothesized to occur because the decision maker feels the need to justify his or her previous decisions (Staw, 1976). Researchers found that participants in a voluntary condition, who had spent 50 minutes working on a puzzle task they had chosen over a different task option, were more likely to continue working on that puzzle for 15 minutes compared to other participants in the voluntary condition who had only spent only 10 minutes working on the puzzle. There were no sunk cost effects for participants in an obligatory condition who were asked to work on the first puzzle without being offered another task option. Thus, there were sunk cost effects in conditions which participants voluntarily chose the puzzle task over another task, and no sunk cost effects in conditions where participants were given no other task option. This sunk cost effect for the voluntary conditions was likely due to the need to justify the greater time and effort investment in the high sunk cost condition (50 minutes) compared to the low sunk cost condition (10 minutes) (Navarro & Fantino, 2009).

Effort justification was also examined as the reason behind sunk cost effects found by Cunha and Caldieraro (2009, 2010). In their study participants were told that they could select a pen reward to take home after adding up ratings on four dimensions for five different pens. In the lesser-effort condition, all the ratings for each pen were presented on one page and were thus easy to find and sum. In the greater-effort condition, the pen ratings

were placed on separate pages of an experimental booklet. Participants needed to search through the pages to find and sum the ratings pertaining to each pen. After computing the overall value of each pen participants chose which pen they would like to receive. Following this the participants were asked if they would like to switch their choice to a new pen that had become available with a better overall value, manipulated as only slightly better (small opportunity cost) or significantly better (large opportunity cost). Researchers found that when the opportunity cost of switching to a new pen was small participants in the greater-effort condition were significantly more likely to keep their original pen (and thus commit a sunk cost error) than participants in the lesser-effort condition. There was no difference between the effort conditions on percentage of participants switching to the new pen when opportunity costs were large. The researchers believed that this difference came from participants in the greater-effort condition adding incremental value to their original pen choice that offset the small opportunity cost of switching to the new pen in order to justify their effort (Cunha & Caldieraro, 2009).

The purpose of the present study is to add to the sparse literature regarding sunk costs of time and effort by examining the circumstances in which an effort justification mechanism works as the driving force behind a sunk cost of time and effort effect. This study examines sunk costs of time and effort but does not attempt to separate the two from each other. In addition, many of the previous studies on sunk cost effect of time or effort have utilized scenario studies where participants are told to imagine that they have exerted time and effort on a task. Behavioral studies, where participants invest real time and effort, are needed to better reflect the psychological processes that occur in real-life situations.

## Chapter 2: Literature Review

Numerous studies have documented sunk cost effects for money (Arkes & Blumer, 1985; Garland 1990; Thaler 1999). The seminal study by Arkes and Blumer (1985) outlined sunk cost effects using several study designs that would become important to the field. One study design being a ski trip scenario in which participants were told that they had spent money for two ski trips that happened to be at different places (Michigan and Wisconsin) on the same weekend. The ski trip to Michigan was more expensive and estimated to be less enjoyable than the ski trip to Wisconsin, which was cheaper and predicted to be more enjoyable. In this scenario participants have already invested in both ski trips, and thus should make their decisions based off the future enjoyment or utility of the trip, but instead 33 of the 61 participants chose the more expensive and less enjoyable trip to Michigan.

Another famous study design is the “radar blank plane scenario” (Arkes & Blumer, 1985), which illustrates sunk cost effects in an escalation of commitment scenario. Participants are told that they are the president of an airline company trying to develop a plane that cannot be detected by radar. In the high sunk cost condition participants are told that they have invested \$10 million into the project already and are 90% done with the plane, and in the no sunk cost condition, participants are told of the radar-blank plane project but have no prior investments in the project. Both conditions are then told that another company has begun marketing a plane that cannot be detected by radar and is faster and more economical than theirs. They are then asked if they would like to invest in the project moving forward. A significantly higher proportion of participants continued to invest in the project in the high sunk cost condition compared to the no sunk cost condition (Arkes & Blumer 1985).

Mental accounting is one of several explanations for sunk cost effects. Mental accounting refers to the process in which mental budgets are set, evaluated, budgeted, and assigned to specific uses or accounts (Thaler, 1999). In this framework, sunk costs may occur if a decision maker has set a mental budget for their expected investment and then exceeded that budget. They may make a sunk cost decision if they believe that they can recoup their losses and thus break even or make a gain on that “mental account”. For example, participants told to imagine that they had purchased tickets to see their favorite football team were more likely than participants told they had received free tickets to attend the game even though there was freezing rain on the day of the game (Klein et al., 2014). Purchasing the tickets opened a mental account with a negative balance. Attending the event will close the account and require no further evaluation but failing to attend the event will close the account with a loss of the purchase price of the tickets (Thaler, 1999).

Another possible explanation is based on prospect theory (Kahneman & Tversky, 1979). Choices are framed as a gain or loss compared to a reference point. If the outcomes are perceived as gains than we will be risk averse, and if the previous outcomes are perceived as losses, we will become risk seeking (Kahneman & Tversky, 1979). A sunk cost, where we have invested resources in a failing endeavor, is likely to be perceived as a loss so we will become risk seeking. If we abandon the decision, we will incur a sure loss, but if we keep investing resources in the project, there is a chance that the project may be successful (Whyte, 1986).

A third theoretical mechanism is the overgeneralization of the “don’t waste” rule. In this framework decision makers will continue with a course of action in order to avoid “wasting” the previously invested resources and adhere to a general principle to reduce or

avoid waste. (Arkes & Blumer, 1985). According to Arkes and Ayton (1999), we learn to avoid waste as a general rule and overgeneralize the rule. For example, Arkes (1996) gave participants a scenario in which they were the head of a company that had invested \$40,000 to develop a type of plastic cloth that could be used for making camping tents. They were then told that after the project was 90% complete they discover that another company has already begun marketing a superior plastic cloth. Participants were asked if they would like to continue and spend the final 10% of the research funds to develop the cloth, or if they would like to abandon the project. In one condition participants were told that if they abandoned the project that a roofer would buy the cloth they had developed thus far for \$5,000 and repurpose it for help in his work (no waste condition), and in another condition participants were told that if they abandoned the project they would sell the cloth for scrap and make \$5,000 (waste condition). Researchers found significantly more participants continued with the project when they were told the material would be wasted (sold for scrap). Researchers believed this difference in sunk cost rates between groups was due to participants in the “sell for scrap” groups seeking to avoid waste.

Finally, a fourth mechanism involves self-justification in which decision makers will seek to rationalize their previous behavior, and thus will escalate commitment to a previous course of action (Staw, 1976). Staw (1976) gave participants a scenario in which they were to imagine that they were the Financial Vice President of a tech company that wanted to make decisions about how much money and in which department to invest research and design funding. Participants made the initial investment decision (high responsibility) or were told that someone else made the initial investment decision (low responsibility). Prior consequences were also manipulated so that the previous investment was positive



(performed well) or negative (performed poorly). The results showed that participants invested a greater amount of funding when they were personally responsible for the negative outcomes of a prior decision. The results appeared to be due to self-justification in which decision makers will escalate commitment to a previous decision with negative outcomes in order to maintain a belief of self-rationality and quell cognitive dissonance (Staw, 1976).

### **Perceptions of Time vs Money**

One proposed mechanism behind sunk cost effects for behavioral investments (i.e., time and effort) suggests that these effects occur through mental accounting or budgeting of time in the same way that we mentally account for sunk costs of money (Soman, 2001). Certainly, there are similarities between the two. Both can be “spent” and “wasted,” they can be valued equivalently to each other, and both can be exchanged for goods and services. However, research outside of the sunk cost literature that investigates perceptions of time, and comparisons between our mental accounting of time and money suggest that there may be some fundamental differences in the ways that we account for time versus money.

Time, unlike money, is not fungible. For example, a series of 8 studies comparing our decision making between investments of time and money found that behaviors and choices differed between the two in situations involving risk, and that differences in behavior between the domains may be related to uncertainty (Leclerc, Schmitt, & Dube 1995). The researchers postulated that decision makers attempt to avoid uncertainty in time-based decisions more than monetary decisions because time is not as fungible as money, and as a result planning is more important. Losses of money can be recouped to some extent by modulating future spending habits, and monetary gains can be saved. However, losses of time are more difficult to make up for, and gains of time cannot be saved in the same way

money can and are thus less valuable unless there is a way to make use of the gained time. Because of this there is a premium on planning in the domain of time, and uncertainty about future gains/losses of time is avoided to a greater extent than with money (Leclerc, Schmitt, & Dube, 1995).

Another important difference between the mental accounting of time versus money has to do with the flexibility in the valuation of time especially when valuing time spent versus money spent. One series of studies presented a group of participants with scenarios in which they had spent a certain number of hours to earn either dinner for two at a restaurant or a new pair of shoes. They told another group of participants that they had spent money (equivalent to the wage rate expected for the hours worked in the first group) to earn the dinner or shoes. Participants in each group were then given a scenario in which they either had a decidedly positive or negative experience with the dinner/shoe outcome that they had received and were asked what their level of satisfaction would be if this had occurred. Researchers found that the difference in satisfaction between the positive and negative outcome scenarios was greater when the participants “paid” with money than with time. A positive dining experience led to more satisfaction when participants paid with money than with time. Likewise, a negative dining experience led to greater dissatisfaction when participants paid with money than with time. These results showed that the difference in satisfaction between positive and negative outcomes is greater when paying with money than with time. (Okada & Hoch, 2004). Participants in the time condition were also asked what they thought the monetary equivalent of their time expenditure would be. Researchers found that participants in the time group valued their time at \$20 an hour when their time expenditure had been spent for the positive outcome, and that they valued it at \$15 an hour

when they had received the negative outcome. The differences in time valuation, and the differences in satisfaction level between the time and money groups suggests that the value of time spent can be modified to help modulate current satisfaction levels (Okada & Hoch 2004). In several follow up experiments within the same study researchers found that participants preferred to choose options with riskier outcomes when paying with time compared to money. They hypothesized that this is because the flexible valuation of time would allow a psychological buffer for potential losses (Okada & Hoch, 2004).

This flexibility in valuation of time may lead to other differences in decision making between time and money as well. Researchers found that decision makers rely on heuristics more in situations in which they are spending time compared to money, but that this reliance on heuristics was diminished when they were primed to account for time through an exercise that asked them to specifically detail the value of time (Saina & Monga, 2008). Not only does time lead to more heuristic processing during decision making, but it may also lead to more affective versus analytical processing as well. Researchers have shown that consideration of money prompts more analytical processing than considerations of time and that this difference in processing can lead to more preference consistency when considering time than money (Lee, Lee, Bertini, Zauberman & Ariely, 2015). Because spending time is experiential in nature it prompts decision makers to think more affectively than money (Lee et al., 2015).

These studies highlight the many differences between decisions involving time and money. Time is non-fungible, cannot be saved, and is difficult to recoup if lost. Time appears to be highly contextual compared to money. Its value can be altered depending on what it is spent on, or what it will be spent on. Time that is spent doing an enjoyable task

may not be tracked, felt, or remembered in the same way as time that is spent doing an unenjoyable task. The opportunity costs of spending time are often not as salient as for spending money, and decisions involving time expenditure can be altered depending on how salient the opportunity costs are made to the decision maker (Zhao, Jiang, Zhou, Li, Rao, & Zheng, 2015). In certain scenarios we may become more risk averse when spending time due to an inability to recoup it, and in other scenarios we may prefer to risk time over money if we can mentally modulate the value of our time investment. Decisions involving time may also prime decision makers to use a heuristic or affective decision-making strategy unless we are primed to explicitly consider the value of the time to be spent. Clearly there are several fundamental differences in decisions involving time compared to money, and it is possible that these differences influence sunk cost decisions involving investment of time and effort. While there are certainly similarities between time and money it is the differences between them that appear to factor into sunk cost decisions as previous research has found that sunk costs of time are not tracked in the same way as sunk costs of money unless we are specifically prompted to do so (Soman 2001).

Given that time and effort do not appear to be always tracked and accounted for like money previous research has examined if and how investments of time factor into sunk cost scenarios (Soman, 2001). Soman (2001) told participants that they had acquired tickets to a rock concert and a theatre performance either through monetary expenditure or through expenditure of time and effort by working for a professor. They were told that they had spent more money or time on the theatre performance but believed they would enjoy the rock concert more. Finally, they were told that these two shows occurred on the same night and that they must choose one to attend. When presented with sunk costs in terms of money

spent, the majority of participants committed a sunk cost error and chose to attend the theatre performance. However, when given temporal expenditures participants did not commit the sunk cost error with 95.2% of participants favoring their original preference of the rock concert (Soman, 2001). These results suggest a difference in the mental accounting of time versus money.

### **Effort Justification**

Expending effort is costly, but several studies have demonstrated that effort can increase perceptions of value (Inzlicht, Shenhav, & Olivola, 2018). Effort has been shown to raise the value of task outcomes where expending effort to build a product leads to increased valuation of that product above its base value (the IKEA Effect; Norton, 2012). Norton, Mochon, and Ariely (2012) asked participants to either build or inspect a plain black storage box. This product was strictly utilitarian and did not offer opportunity for customization or design and was meant to be used for private consumption and thus did not offer any social value. These factors meant that the box conferred little to no additional sources of value other than the input of labor and effort. After either building a box or inspecting a premade box, participants were asked how much they would be willing to bid to purchase the box, and how much they liked the box. Researchers found that participants in the group who had built the box were willing to pay significantly more and rated their liking of the box significantly higher than participants who had simply observed or inspected the box (Norton et al., 2012).

Effort spent searching for a product can also increase the value assigned to a product (Lala & Chakraborty, 2015). Lala and Chakraborty (2015) found that consumers who invested more effort while evaluating brands of desktop computers were willing to pay more for their favorite computer than participants who spent less effort during the evaluation process. They argued that consumers felt the need to justify the effort in search for a product, so they increased their valuation of the product.

Cognitive dissonance is believed to be the driving force behind increased valuation of task outcomes following effort expenditure (Festinger, 1957). In this framework, effort is viewed as undesirable and dissonance arises when we undertake effortful tasks. To reduce this dissonance, we will justify our effort by increasing the desirability of the outcome we are working towards (Aronson & Mills, 1959; Norton et al., 2012). For example, Aronson and Mills (1959) had participants go through an initiation into a group that varied on the severity of the initiation process. Participants who had a severe initiation rated the group as more attractive than participants who had a mild initiation or no initiation. The increased effort spent during the severe initiation created dissonance that was then quelled by exaggerating the value of the group. It appears that cognitive dissonance arising from effort expenditure can lead to higher valuation of the effort's product.

Several studies have examined how sunk costs of time and effort may occur through an effort justification mechanism (Cunha & Caldieraro, 2009; Navarro & Fantino, 2009). Using an imagined scenario about time spent on a dig, Navarro and Fantino (2009) found that investment of time was a significant factor in creating sunk cost effects, but the quality of effort, whether the dig was easy or difficult, was not. However, when the researchers asked participants to invest real effort in either a puzzle task or a card sorting task, they

found invested effort to be a significant factor in creating sunk cost effects (Navarro & Fantino, 2009). These results suggest that the quality of effort invested may be accounted for differently in a behavioral study compared to an imagined scenario.

A formal model of the role of effort justification in sunk cost effects was provided by Cunha and Caldieraro (2009). In this model, sunk cost effects can occur when decision makers add incremental utility to a task outcome through an effort justification mechanism. This added utility will raise the value of a task outcome above its inherent value. If asked to spend time selecting a product the decision maker will value the chosen product more to justify the effort expended. If, they are then presented with a superior option that they can select a sunk cost may occur if they stick with their initial choice. In this scenario the decision to switch to a new option is dependent upon the opportunity cost of switching, or the difference in utility between the initial product and the new option. We would expect to see sunk cost effects occur in situations which the incremental utility added to the initial product is large enough to offset the opportunity cost of switching to a new product. Researchers call this added utility through effort justification a Behavioral Investment Sunk Cost (BISC) (Cunha & Caldieraro, 2009).

Researchers have demonstrated this BISC effect across two studies in which they asked participants to add up attribute ratings of various pens and then select which pen they would like to keep based on the ratings (Cunha & Caldieraro, 2009). In one study the pen ratings in a low effort group were presented in simple integer form, and in a high effort group were presented as fractions. After adding the attribute ratings participants were asked to select which hypothetical pen they would like to choose. Almost all the participants (91.3%) chose the pen with the highest overall rating. After selecting their pen, they were

told that another pen had become available that was either 1 point better (low opportunity cost) or 6 points better (high opportunity cost) than their current pen and were asked if they would like to switch from their original pen choice. Participants in the low opportunity cost condition were more likely to stay with their original pen choice compared to the higher rated pen when they had expended more effort. These results suggest that the extra effort of adding fractions activated a behavioral sunk cost in which an incremental or BISC value was added to the rating of the initial pen choice that made it more valuable to the decision maker than the second pen option. In the high opportunity cost group, participants' decision to switch to the new pen option was unaffected by the amount of effort invested. This suggests that the BISC value added due to effort was large enough to value the initial pen more than a low opportunity cost option, but not large enough to value the initial pen more than a high opportunity cost option (Cunha & Calideraro, 2009). Researchers found similar results in another study using the same methods except for changing the effort manipulations to all pen ratings being on one-page versus pen ratings being scattered across a packet of papers that participants needed to sort through in order to add together (Cunha & Caldieraro, 2009). Through varying the difficulty of effort put forth in a task, the researchers were able to show that effort justification can be the main psychological mechanism at play in a behavioral sunk cost scenario.

Follow-up studies of the behavioral sunk cost effect produced mixed effects. Cunha and Caldieraro (2010) found support for their model in two studies, with different effort manipulations. Study 1 manipulated effort as the adding up of ratings that were integers (low effort) versus words (high effort). Study 2 manipulated effort through the number of products to be rated (4 versus 12). Although both studies in Cunha and Caldieraro (2010)



found evidence for a sunk cost effect under conditions of greater effort, a series of three replication studies by Otto (2010) failed to find any significant behavioral sunk cost effects. One important aspect of these three experiments is that they were unable to create a significant difference on initial satisfaction with the decision maker's first pen choice (Otto, 2010). This is counter to the results of Cunha and Caldieraro (2009, 2010) that were all able to create significantly more satisfaction with the initial choice in the high effort conditions compared to the low effort conditions. Effort justification may depend on commitment to a previous or initial choice, and this may be reflected in participant's satisfaction ratings for their initial pen choice. These differences suggest that the failure to find any significant behavioral sunk costs may have been due to a difference in method or procedure that failed to activate the effort justification mechanism.

The need to justify effort has traditionally been thought to occur in situations in where effort is either difficult or unpleasant (Aronson & Mills, 1959). Previous research on effort justification has often varied the amount of effort put forth in the task (Cunha & Caldieraro, 2009; Lala & Chakraborty, 2015), but few studies have varied the type of effort. In Study 2 of Navarro and Fantino (2009), they found no difference in sunk cost effects when participants were told that the time spent had been enjoyable compared to participants told that the time spent had been boring and dull. However, there have not been any behavioral studies which examined whether the effort put forth in a task must be unenjoyable in order to activate a justification mechanism. It is possible that effort which is enjoyable does not give rise to dissonance and thus does not create a need for justification.

## Current Study

Previous research into behavioral sunk costs has proposed an effort justification mechanism for sunk costs of time and effort in which the expenditure of undesirable effort towards a goal creates cognitive dissonance that is remedied by inflating the desirability or the valuation of the outcome (Cunha & Caldieraro, 2009). In the BISC model, the more undesirable effort expended in achieving an outcome then the more dissonance is created and thus the more incremental utility added to the outcome. The mechanism of this model relies on the fact that dissonance arises when we put forth effort in a task that is difficult or in some way undesirable (Cunha & Caldieraro, 2009). None of the previous studies regarding behavioral sunk costs have investigated the role of effort enjoyment. In theory, situations in which we enjoy the effort that we put towards an outcome will not cause any dissonance, and thus no need for effort justification. Our current study proposes to add onto previous work on BISC by assessing whether enjoyment of effort will reduce the likelihood of a sunk cost effect. We predict that greater investments of time and effort (i.e., higher sunk costs) will lead to less willingness to switch to a better option, but only when the task is boring. When the task is enjoyable, there will be no sunk cost effect of time and effort.

## **Chapter 3: Pilot Studies**

Our original methodology planned to have participants play a driving video game on the computer for the experimental task. Participants were going to play one of two versions of the game, either an enjoyable version or an unenjoyable version. However, due to Covid-19 restrictions we were forced to drop our in-person driving video game task and move the study online. In the process of moving our study from in-person to online data collection we ran two pilot studies to find an experimental task that would pass our manipulation checks for creating differences in levels of enjoyment and sunk cost between groups.

### **Pilot Study 1**

#### **Participants and Design**

Students from the University of Idaho with majors in psychology and communication were emailed a link to participate in an online survey for the chance to win one of five \$50 gift cards. Of the 451 students who were emailed, complete responses were received from 35 students for a response rate of 7.8%.

Participants were randomly assigned to one condition in a 2 (sunk cost: low vs. high) X 2 (enjoyment: low vs. high) between subject's design. Sunk cost was manipulated as the amount of time and effort expended by participants while proofreading several passages of writing, which varied from low sunk cost (6 passages) to high sunk cost (12 passages). Level of enjoyment was manipulated by which passages participants were asked to read. In the enjoyable condition, participants were asked to read "The Night the Bed Fell" by James Thurber (Appendix 1). Participants in the unenjoyable condition were asked to read an excerpt from an economics textbook (Appendix 2).

## **Procedure**

Participants were directed to an online Qualtrics survey and completed a consent form. Participants were informed that they would be asked to proofread some passages of text, and that their performance on this task may qualify them to receive a pen that they could receive through the mail should they choose to provide their address at the end of the experiment. Pens were selected as the reward for completing the task to remain consistent with previous studies (Cunha & Caldieraro 2009, 2010) After reading the study instructions participants continued into the experimental portion of the survey. Participants were presented with 6 or 12 passages (depending on whether they were in the low or high sunk cost condition). Their goal was to proofread for as many spelling errors as they could find. Each passage consisted of approximately 150 words and 4 to 8 spelling errors. Participants were instructed on how to proofread these passages by clicking and dragging on a word to highlight it as a spelling error. They were told that they may proceed to the next page of text after identifying all the proofreading errors in the passage of text on their current page, or that they may be automatically forced to move to the next passage of text after a certain amount of time (each passage of text was presented on screen for a minimum of 30 seconds and they were automatically moved to the next page if they took more than 60 seconds for any individual passage). Participants were reminded that their performance on the proofreading task would help them to earn a pen reward.

After completing the proofreading task participants were informed that their performance had earned them the pen reward, and that they could select which pen they would like to have mailed to them from a table showing five pens that had previously been scored and rated by four judges. In the table the target pen with the highest rating had a total

rating of 31 (the pen ratings were the same values used in Cunha & Caldieraro, 2009). After selecting a pen, participants were informed that there was another pen available that had an overall rating of 32 and were asked if they would like to stay with their original pen choice, or if they would like to change to this new pen. After making their choice participants were shown a series of questionnaires asking how enjoyable the task was, how much effort they believed they put forth while completing the task, how long they thought they had spent completing the task, and how difficult they found the proofreading task to be. Participants were then asked demographic questions regarding their age and gender and were redirected to a separate survey in order to input their address if they chose to have their pen reward sent through the mail, and to enter their email if they chose to enter the gift card drawing. If participants provided their address, they were mailed a pen with a value around \$1-\$2.

### **Results and Discussion**

When analyzing the data from this pilot study we were primarily focused on determining whether we had successfully manipulated enjoyment. To assess whether our enjoyment manipulation effective, we conducted a 2 (Sunk Cost: Low/High) X 2 (Enjoyment: enjoyable/unenjoyable) factorial ANOVA on perceived enjoyment of the task. We found no statistically significant main effect for enjoyment,  $F(1,28) = 2.095, p = 0.908, \eta_p^2 = 0.00$ . The mean enjoyment rating for both the unenjoyable groups ( $M = 4.24, SD = 1.38$ ) and the enjoyable groups ( $M = 4.38, SD = 1.63$ ) were both near the survey midpoint. The results of this pilot study suggested that the proofreading task did not sufficiently manipulate levels of enjoyment.

## Pilot Study 2

Because the proofreading task in our first pilot study was unsuccessful at manipulating enjoyment, we ran a second pilot study to test two new tasks. In the second pilot study we had participants complete either a reading comprehension task or complete a writing task.

### Participants and Design

Participants ( $N = 21$ ) were recruited through the psychology participant pool at the University of Idaho. Participants received class credit for participation.

Participants were randomly assigned to one condition in a 2 (sunk cost: low vs. high) X 2 (enjoyment: low vs. high) X 2 (Task: Reading vs Writing) between subject's design. The task condition was manipulated by whether participants were asked to read several passages and answer a comprehension question, or whether they were asked to respond to a set of writing prompts. In the reading condition, sunk cost was manipulated as the amount of time expended by participants while reading several 400–500-word passages of writing. This varied between low sunk cost where participants were asked to read 3 passages, and high sunk cost where participants read 6 passages. We believed that this difference in passages would be sufficiently large while ensuring that the high sunk cost/enjoyment condition did not become arduous and unenjoyable. In the writing task condition, sunk cost was manipulated by the amount of time expended by participants while responding to several writing prompts. In the low sunk cost condition, participants responded to 3 writing prompts and in the high sunk cost condition participants responded to 6 prompts. In the reading condition, level of enjoyment was manipulated by which of two writings participants were

asked to read. In the enjoyable condition, participants were asked to read excerpts from “Don’t Eat Before Reading This” by Anthony Bourdain (Appendix 3). Participants in the unenjoyable condition were asked to read an excerpt from an economics textbook (Appendix 4). In the writing task condition, enjoyment was manipulated by the type of prompt students responded to. An example of an enjoyable prompt used is “Describe what an ideal day would be like for you” and an example of an unenjoyable condition prompt is “Describe the chores and responsibilities that you have at home.”

### **Procedure**

Participants were directed to an online Qualtrics survey and completed a consent form (see Appendix 5). Participants were informed either that they would be asked to read some passages of text and answer a comprehension question at the end of their reading, or that they would be asked to respond to a series of writing prompts. They were told that their performance on the task may qualify them to win or earn a pen that they could receive through the mail should they choose to provide their address at the end of the experiment. Participants were then presented with 3 or 6 passages to read, or with 3 or 6 writing prompts to respond to. After completing the task participants were informed that their performance had earned them the pen reward, and that they could select which pen they would like to have mailed to them from a table showing 5 pens that had previously been scored and rated by four judges. In the table, the target pen with the highest rating had a total rating of 31. After selecting a pen, participants were informed that there was another pen available that had an overall rating of 32 and were asked if they would like to stay with their original pen choice, or if they would like to change to this new pen. Participants were asked to choose a pen from several options instead of simply being rewarded a pen because effort justification

is dependent upon free choice and a feeling of personal responsibility. After making their choice participants were shown a series of questionnaires asking how enjoyable the task was, how much effort they believed they put forth while completing the task, their current mood, how much time they believe they spent on the task, and how difficult the task was (Appendix 7). Following these questionnaires, the participants were asked if they would like to provide their address for their pen reward.

### **Results and Discussion**

Our main analysis focused on assessing whether either of the tasks was successful in manipulating enjoyment. We did not analyze for significant differences given the low power of our small sample ( $N=21$ ), but instead examined the difference in means between the enjoyable and unenjoyable conditions. For the writing task, participants in the unenjoyable condition rated their enjoyment ( $M = 4.25$ ,  $SD = 1.71$ ) lower than participants in the enjoyable condition ( $M = 6.00$ ,  $SD = 1.09$ ). The same pattern was found for the reading task, with participants in the unenjoyable condition rated their enjoyment ( $M = 2.33$ ,  $SD = 1.51$ ) lower than participants in the enjoyable condition ( $M = 5.00$ ,  $SD = 1.87$ ). The standardized mean difference between the enjoyable and unenjoyable condition was greater in the reading conditions ( $d = 1.60$ ) than in the writing conditions ( $d = 1.31$ ). In addition, participants in the unenjoyable conditions for the writing task rated their enjoyment at the midpoint of the enjoyment rating scale (see Chapter 4 “Measures”). This indicated that participants did not perceive the writing task as definitively unenjoyable. We did not assess other variables such as perceived time spent and effort because we were primarily interested in finding a task where enjoyment could be successfully manipulated. We chose to test both a reading and writing task each with an enjoyable and unenjoyable condition. these results suggested that



the reading task would more likely lead to a successful manipulation of enjoyment, so we chose the reading task for our main study.

## Chapter 4: Method

### Participants and Design

Participants ( $N=169$ ) were recruited through the psychology participant pool at the University of Idaho. Participants received class credit for participation. There were 109 participants that identified as female, 55 that identified as male, and 5 participants that responded “other/prefer not to say.” The mean participant age was 20.0 years old ( $SD = 3.55$ ).

Participants were randomly assigned to one condition in a 2 (sunk cost: low vs. high) X 2 (enjoyment: enjoyable vs unenjoyable) between subject's design. Sunk cost was manipulated as the amount of time expended by participants while reading several 400–500-word passages of writing. This varied between low sunk cost where participants were asked to read 3 passages, and high sunk cost where participants read 6 passages. Level of enjoyment was manipulated by which of two writings participants were asked to read. In the enjoyable condition, participants were asked to read excerpts from “Don’t Eat Before Reading This” by Anthony Bourdain (Appendix 3). Participants in the unenjoyable condition were asked to read an excerpt from an economics textbook (Appendix 4).

### Procedure:

Participants were directed to an online Qualtrics survey and completed a consent form (see Appendix 5). Participants were informed that they would be asked to read some passages of text and answer a comprehension question at the end of their reading. They were told that their performance on the comprehension question may qualify them to win or earn

a pen that they could receive through the mail should they choose to provide their address at the end of the experiment. Participants were then presented with 3 or 6 passages to read, and afterwards asked the reading comprehension question (Appendix 3/4). After completing the reading task participants were informed that their performance had earned them the pen reward, and that they could select which pen they would like to have mailed to them from a table showing 5 pens that had previously been scored and rated by four judges. In the table, the target pen with the highest rating had a total rating of 31 (Appendix 6). After selecting a pen, participants were informed that there was another pen available that had an overall rating of 32 and were asked if they would like to stay with their original pen choice, or if they would like to change to this new pen. After making their choice participants were shown a series of questionnaires asking how enjoyable the task was, how much effort they believed they put forth while completing the task, their current mood, how much time they believe they spent on the task, and how difficult the task was. Following these questionnaires, the participants were asked if they would like to provide their address for their pen reward.

## **Measures**

***Choice of pen.*** Participants were asked to choose one of the five pens after completing the task. Participants chose a pen based off a pen rating scale used previously by Cunha and Caldieraro (2009). After making their initial selection, participants were told that a better pen was available and whether they would like switch to that pen.

***Task enjoyment.*** Participants rated their enjoyment of the passage by the enjoyment subscale of the Intrinsic Motivation Inventory (Ryan, 1982). Participants were asked to rate

statements such as “I thought this activity was quite enjoyable” on a 7-point scale of how true that statement was for them from not true at all (1) to very true (7).

***Task difficulty.*** Participants rated how difficult they believed the passage was by answering the question “How difficult did you find the task?” using an 11-point scale, ranging from 0 (not at all) to 10 (extremely difficult) modeled after Yeo and Neal (2004).

***Perceived effort.*** Participants rated their perceived effort on a 9-point scale which asks participants to rate how much mental effort they invested in the task, ranging from (1) very very low mental effort, to (9) very, very high mental effort (Pass, 1982)

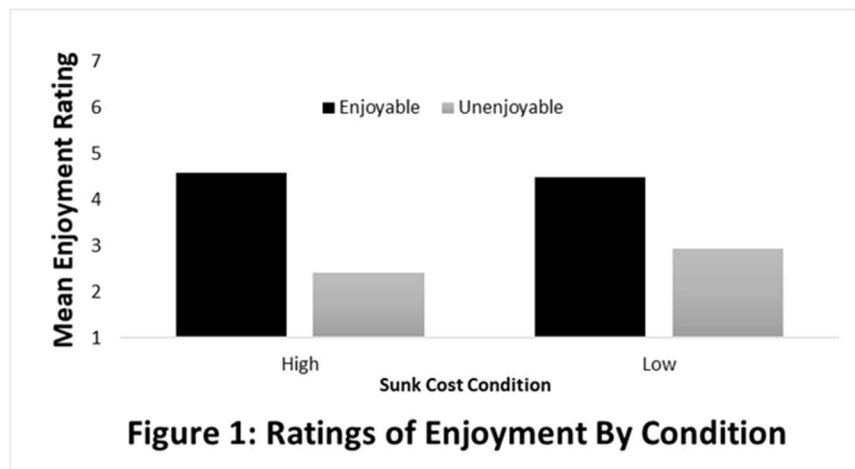
***Perceived time spent.*** Participants estimated the amount of time they spent reading the passages by answering the question: “How much time do you believe you spent completing the activity? Please enter your response numerically.”

***Mood.*** Participants rated their mood following the task by answering the question: “Overall my current mood is?” using a 21-point scale, ranging from -10 (Very Unpleasant) to 10 (very pleasant)

## Chapter 5: Results

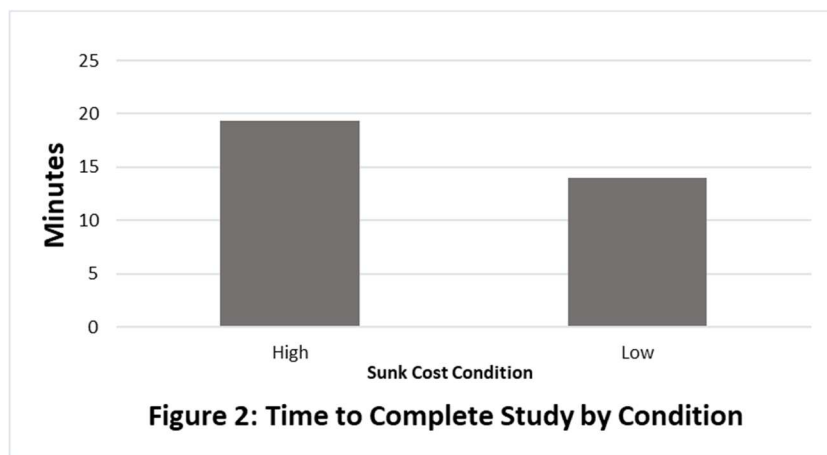
### Manipulation Checks

To demonstrate that our enjoyment manipulation was effective, we conducted a 2 (Sunk Cost: Low/High) X 2 (Enjoyment: enjoyable/unenjoyable) factorial ANOVA on perceived enjoyment of the task. We found a statistically significant main effect for enjoyment,  $F(1,165) = 83.19, p < 0.001, \eta_p^2 = 0.36$ . As demonstrated in Figure 1, the enjoyment condition rated the task as more enjoyable than the unenjoyable condition. Means and standard deviations are in Table 1. No significant difference in enjoyment was found between the high and low sunk cost conditions,  $F(1,165) = 0.99, p = 0.32, \eta_p^2 = 0.01$ , and there was no significant interaction effect,  $F(1,165) = 2.46, p = 0.12, \eta_p^2 = 0.02$ . Thus, the enjoyment manipulation was effective.



To assess whether our sunk cost manipulation was effective we conducted a 2 (Sunk Cost: Low/High) X 2 (Enjoyment: enjoyable/unenjoyable) factorial ANOVA on perceived time spent. We found a main effect of Sunk Cost for perceptions of time spent,  $F(1,165) = 8.97, p$

= 0.01,  $\eta_p^2 = 0.05$ . Participants in the high sunk cost condition reported spending more time in minutes ( $M = 17.95$ ,  $SD = 8.1$ ) completing the task than participants in the low sunk cost condition ( $M = 14.18$ ,  $SD = 7.72$ ). Analysis of the time spent in the survey (note this includes every survey item and is not limited to the reading task) by participants was also consistent with the differences in perceived time spent. Participants in the high sunk cost conditions spent more time completing the study ( $M = 19.31$ ,  $SD = 5.71$ ) than participants in the low sunk cost conditions ( $M = 14.04$ ,  $SD = 7.21$ ),  $t(153) = 5.02$ ,  $p < .01$ ,  $d = 0.81$ .



### Potential Covariates

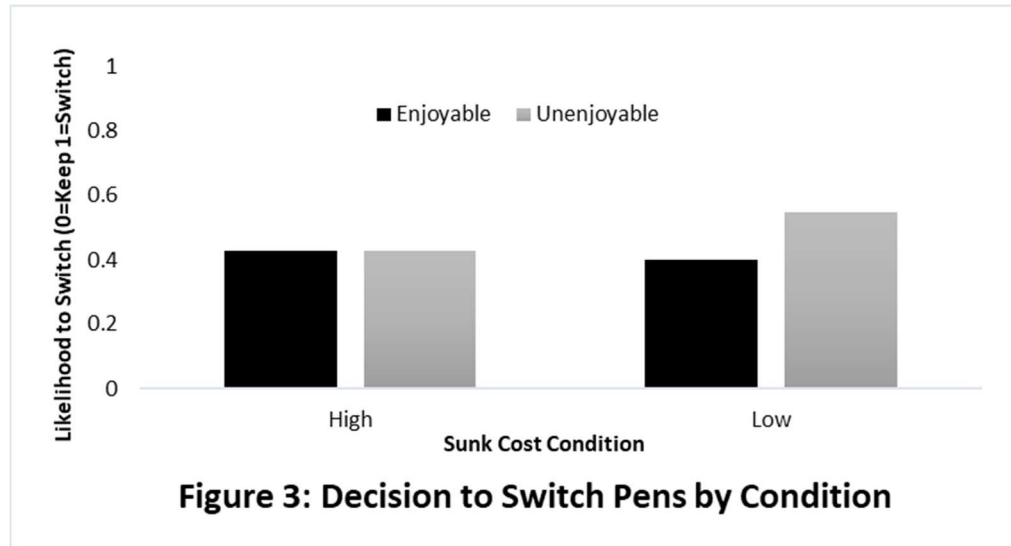
We also assessed perceived effort, difficulty, and mood to determine if our manipulations of enjoyment and sunk cost affected other variables. We found a statistically significant main effect of enjoyment for perceived difficulty,  $F(1,165) = 109.19$ ,  $p < 0.001$ ,  $\eta_p^2 = 0.36$ . Participants in the enjoyable condition rated the task as being easier than participants in the unenjoyable condition (Table 2). We also found a significant difference in mood due to the enjoyment manipulation,  $F(1,165) = 9.74$ ,  $p = 0.02$ ,  $\eta_p^2 = 0.40$ . Participants in the enjoyable condition reported a better mood ( $M = 4.69$ ,  $SD = 3.60$ ) than participants in the unenjoyable condition ( $M = 1.01$ ,  $SD = 4.73$ ),  $t(167) = -5.72$ ,  $p < 0.01$ ,  $d = -0.88$ . We

found no significant main or interaction effects between conditions for perception of effort (Table 3).

### **Decision to Keep or Change Pens**

For our main analyses we examined the rates at which participants chose to keep or change their original pen choice, with keep coded as 0 and change coded as 1. We found that 116 out of 169 chose the target pen, the pen with the highest rating from the table, as their reward for completing the task. This was lower than expected. In previous studies researchers have found participants to choose the target pen choice at 91.3% and 90.8% (Cunha & Caldieraro 2009). Because of this conducted two analyses, one with the complete data ( $N = 169$ ) and one that focused only on participants who answered the comprehension question correctly and selected the target pen ( $N = 109$ ).

We conducted a 2 x 2 factorial ANOVA to determine if there were differences in the rates at which participants chose to keep or change from their original pen choice. The ANOVA can be used to analyze dichotomous outcomes (D'Agostino, 1971; Lunney, 1970), so we chose ANOVA over logistic regression for ease of presentation but have provided the results from logistic regression in Appendix 8. We predicted that participants in the high sunk cost and unenjoyable condition would exhibit the highest rate of sunk costs and the least likelihood to switch, and that the rate of switching in this group would be significantly different compared to participants in the high sunk cost-enjoyable condition. Contrary to our prediction, we found no significant main or interaction effects on participants' decision, and thus no significant sunk cost differences in participants' decisions to switch pens (Table 4/Figure 3).



The same result was found when we focused on participants who chose the target pen and answered the reading comprehension question correctly. We found no significant main effects or interaction effects of sunk cost or enjoyment on participants' decision to switch pens (Table 5).



## Chapter 6: Discussion

The results from our study suggest that enjoyment of effort does not moderate sunk cost effects for behavioral investment sunk cost decisions. Our results showed no differences in the rates of participants' keeping or changing from their original pen choice between groups. Previous studies have identified behavioral sunk cost effects in situations in which participants are asked to expend effort to earn a reward (Cunha & Caldieraro, 2009, 2010). In our current study we found no evidence for behavioral sunk costs whether the effort invested was enjoyable or unenjoyable.

Our results have several implications for effort justification as a role in sunk costs of time and effort. First, they call into question the robustness of the behavioral investment sunk cost model, and previous research finding sunk cost effects for purely behavioral investments (Cunha & Caldieraro, 2009, 2010). Our current study can be added to previous research that has failed to find evidence for sunk cost effects due to an effort justification mechanism (Otto, 2010). These results suggest that sunk costs involving investment of time and effort may be due to another mechanism.

Another possible interpretation of our results suggests that the effort justification mechanism may only create sunk costs if the reward is salient throughout the effort investment or if the effort invested goes directly into development of the outcome. In previous studies demonstrating an effort justification mechanism, participants completed math problems to directly "unlock" ratings for the reward they were to receive (Cunha & Caldieraro, 2009, 2010), read descriptions about a product and then immediately rated that product (Lala & Chakraborty, 2015), and physically built a product (Norton, 2011). In each of these scenarios the effort invested was the main task in creating or producing the final

product and had a direct effect on the outcome. In our study, participants were reminded that their effort and performance on the reading task would earn them a reward, but the reading task itself did not directly create or produce the reward. The effort invested may not have been as saliently linked to the outcome as in the other scenarios. For an effort justification mechanism to be effective in creating sunk costs, it may be that the effort must be invested in the process of creating an outcome, and not as the reward for completing a separate task.

### **Limitations**

We found no difference in perceived effort between the high and low sunk cost conditions. Although there was an objective difference in the amount of time needed to read the passages between the sunk cost conditions which should also entail differences in effort, we found no subjective difference in our participants' perception of effort. It is possible that there was not a large enough difference between the sunk cost conditions to create a difference in perceived effort, or perhaps perceived effort is based on an evaluation of how much effort the specific task (reading) demands and is not based on how much effort is invested throughout the entire process.

Although there was a significant difference in perceived time spent between high and low sunk cost conditions the actual time difference between conditions may not have been large enough to create sunk cost effects. The mean difference in perceived time spent between high and low sunk cost conditions was only 3 minutes, and the real difference in mean time spent between groups was only 5 minutes. It is possible that a real difference of 5 minutes and a perceived difference of 3 minutes is not large enough to create a sunk cost effect. Another potential factor in our inability to find sunk cost effects for the unenjoyable conditions may be due to administering the study online instead of in person. Online

participants may not have been as interested in or invested in receiving the pen reward through the mail as they would have been receiving the pen in person. A relatively high number, 46 of the 169 participants, elected not to have a pen shipped to them, which suggests that many participants were not invested in the reward.

Finally, our study did not include a question asking participants their initial satisfaction with their first pen choice. In their initial studies Cunha and Caldieraro (2009, 2010) included an initial satisfaction question and found that participants in the high sunk cost conditions reported greater initial satisfaction with their first pen choice than participants in the low sunk cost condition. A series of three studies that failed to replicate the results of Cunha and Caldieraro also included an initial satisfaction question but failed to find a difference in initial satisfaction between groups (Otto 2010). Otto pointed to a difference in initial satisfaction of participants between the original studies and his attempted replication as a possible reason for the failure to replicate. Requiring participants to rate their initial pen satisfaction may commit participants to their evaluation and may be an important component of the effect.

### **Future Directions**

The focus of this study was to determine if enjoyment of effort is a moderator of sunk cost effects in decisions involving investments of time or effort. Given that we failed to find sunk cost effects for enjoyable or unenjoyable effort there are several future directions that would be beneficial for better understanding behavioral sunk cost effects. First, a stronger manipulation of time and effort is needed. A larger difference in time between the low and high sunk cost conditions may also yield a larger difference in effort expended. The manipulation could be strengthened by adding to the number of passages that participants

read in the high sunk cost condition and decreasing the number of passages that participants read in the low sunk cost condition. This would lead to a greater differentiation of both objective time spent and effort invested between the high and low sunk cost conditions and could help to create stronger sunk cost effects.

Another potential alteration to our current study would be to have participants “unlock” ratings for the pens as they read each passage and answer multiple comprehension questions. This may lead to invested effort feeling more directly tied to the outcome and may potentially lead to greater effort justification. In previous studies participants’ effort was rewarded as they completed tasks to earn the pen ratings (Cunha & Caldieraro, 2009). Another possible avenue of research would be to design an experiment to test this hypothesis and create a task where the investment of effort can be manipulated between directly creating an outcome or earning it through effort of a separate task.

We also believe that different tasks need to be utilized to better understand enjoyment’s potential as a moderator in BISC scenarios. It is possible that reading is not the appropriate task for understanding this paradigm. Perhaps reading does not require an effort investment that is great enough to create cognitive dissonance and thus require effort justification. It is possible that other tasks which are more immersive, involving, or that require greater investment of effort would be better suited to creating behavioral investment sunk costs through the effort justification mechanism. Given that there are not currently a robust set of tasks from which this effect has been studied we believe that future studies utilizing different tasks would increase our understanding of behavioral investment sunk costs.

Looking more broadly we believe that more studies involving investments of time and effort are needed to help determine under what conditions each of them may create sunk cost errors. Given the current study, and the variation in previous research, it is unclear whether effort justification is the main driver in sunk costs through investments of time and effort. Currently, we do not fully understand how investments of time or effort are tracked in sunk cost scenarios, and when we become aware of these investments. Monetary investments appear to be readily and saliently tracked, but this does not appear to be the same for investments of effort or time. Investments of money appear to be tracked nearly regardless of circumstance, but there may need to be specific criteria to cause us to track investments of time or effort such as when a goal is not met, when we experience unexpected delays for budgeted time, or when more effort is required than we had initially expected.

Finally, there are not yet any studies that have tried to separate time and effort in the same experiment. We believe that future studies should begin to focus on trying to parse out the differences between time and effort to better understand if behavioral investment sunk costs occur mostly through mental accounting of time or indeed if they occur through an effort justification mechanism. One potential way to separate time and effort would be to assess this effort justification mechanism using a dual task methodology. An example of this would be to have participants read a passage while also responding to a sound by pressing a button. A dual task paradigm like this would allow researchers to vary both the time of the tasks, and potentially the effort of the task by modulating which task participants believe they are earning their reward for successfully completing.

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Table 1

*Overall means and standard deviations for task enjoyment (Main Study)*

Task Enjoyment Survey Results				
Sunk Cost	Enjoyable		Unenjoyable	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
High	4.58	1.45	2.41	1.64
Low	4.47	1.32	2.94	1.27

Table 2

*Overall means and standard deviations for perceived effort (Main Study)*

Perceived Difficulty Survey Results				
Sunk Cost	Enjoyable		Unenjoyable	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
High	1.43	1.53	4.96	2.30
Low	1.53	1.65	4.40	2.42

Table 3

*Overall means and standard deviations for perceived effort (Main Study)*

Perceived Effort Survey Results				
Sunk Cost	Enjoyable		Unenjoyable	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
High	4.98	1.66	4.95	1.89
Low	4.61	1.51	4.90	1.64

Table 4

*Overall means and standard deviations for likelihood to switch for the new pen (Main Study)*

Likelihood to Switch Results				
Sunk Cost	Enjoyable		Unenjoyable	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
High	0.43	0.50	0.43	0.50
Low	0.40	0.49	0.55	0.50

Table 5

*Overall means and standard deviations of likelihood to switch to new pen in participants who correctly answered the comprehension question and selected the target pen (Main Study)*

Likelihood to Switch for Correct Comprehension Question/Target Pen				
Sunk Cost	Enjoyable		Unenjoyable	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
High	0.48	0.51	0.57	0.51
Low	0.50	0.51	0.52	0.51

## Appendix 1: Pilot Study 1 Enjoyable Condition Proofreading Passages

“The Night the Bed Fell” by James Thurber

I suppose that the high-water mark of my youth in Columbus, Ohio, was the night the bed fell on my father. It makes a better recitation (unless, as some friends of mine have said, one has heard it five or six times) than it does a piece of writing, for it is almost necessary to throw furniture around, shake doors, and break a dog, to lend the proper atmosphere and verisimilitude to what is admittedly a somewhat incredible tale. Still, it did take place. It happened, then, that my father had decided to sleep in the attic one night, to be away where he could think. My mother opposed the notion strongly because, she said, the old wooden bed up there was unsafe: it was wobbly and the heavy headboard would crash down on father's head in case the bed fell, and kill him.

There was no dissuading him, however, and at a quarter past ten he closed the attic door behind him and went up the narrow twisting stairs. We later heard ominous creakings as he crawled into bed. Grandfather, who usually slept in the attic bed when he was with us, had disappeared some days before. (On these occasions he was usually gone six or eight days and returned growling and out of temper, with the news that the Federal Union was run by a passel of blockheads and that the Army of the Potomac didn't have any more chance than a fiddler's wife.)

We had visiting us at this time a nervous first cousin of mine named Briggs Beall, who believed that he was likely to cease breathing when he was asleep. It was his feeling that if he were not awakened every hour during the night, he might die of suffocation. He had been accustomed to setting an alarm clock to ring at intervals until morning, but I persuaded him to abandon this. He slept in my room and I told him that I was such a light sleeper that if anybody quit breathing in the same room with me, I would wake instantly. He tested me the first night—which I had suspected he would—by holding his breath after my regular breathing had convinced him I was asleep. I was not asleep, however, and called to him. This seemed to allay his fears a little, but he took the precaution of putting a glass of spirits of camphor on a little table at the head of his bed.

In case I didn't arouse him until he was almost gone, he said, he would sniff the camphor, a powerful reviver. Briggs was not the only member of his family who had his crotchets. Old Aunt Clarissa Beall (who could whistle like a man, with two fingers in her mouth) suffered under the premonition that she was destined to die on South High Street, because she had been born on South High Street and married on South High Street. Then there was Aunt Sarah Shoaf, who never went to bed at night without the fear that a burglar was going to get in and blow chloroform under her door through a tube. To avert this calamity—for she was in greater dread of anesthetics than of losing her household goods—she always piled her money, silverware, and other valuables in a net sack just outside her bedroom, with a note reading:

“This is all I have. Please take it and do not use your chloroform, as this is all I have.” Aunt Gracie Shoaf also had a burglar phobia, but she met it with more fortitude. She was confident that burglars had been getting into her house every night for forty years. The fact that she never missed anything was to her no proof to the contrary. She always claimed that she scared them off before they could take anything, by throwing shoes down the hallway. When she went to bed she piled, where she could get at them hadnily, all the shoes there were about her hosue. Five minutes after seh had turend off the light, she would sit up in bde and say “Hark

Her husband, who had learned to ignore the whole situation as long ago as 1903, would either be sound asleep or pretend to be sound asleep. In either case he would not respond to her tugging and pulling, so that presently she would arise, tiptoe to the door, open it slightly adn hevae a shoe down teh hlal in one direction and its mate down the hall in the other direction. Some nights she threw them all, some nights only a couple of pairs. But I am streying from the remarkable incidents that took place during the night that the bed fell on father. By midnight we were all in bed. The layout of the rooms and the disposition of their occupants is important to an understanding of what later occurred. In the frant room upstairs (just under father’s attic bedroom) were my muther and my brother Herman, who sometimas sang in his slaep, usually “Marching Through Georgia” or “Onward, Christian Soldiers.”

(The previous passages represent the proofreadings for the low sunk cost conditions. The following passages were added onto those already presented to create the high sunk cost condition for the enjoyable groups)

Briggs Beall and myself were in a room adjoining this one. My brather Roy was in a room acrosz the hall from ours. Our bull terrier, Rex, sleptt in the haall. My bed was an iron cott, one of those affairs which are maed wide enough to sleep on comfortably only by putting up, flat with the middle section, the two sides which ordinarily hang down liek the sideboards of a drop-leaf table. When these sides are up, it is perilous to roll too far toward the edge, for then the cot is likely to tip completely over, bringing the whole bed down on top of one with a tremendous banging crash. This, in fcats, is percisely waht happneed, about tow o’clcok in the morning. (It was my mother who, in recalling the scene later, first referred to it as “the night the bed fell on your father.”)

Always a deep sleeper, slow to arouse (I had lied to Briggs), I was at first unconscious of what had happened when the iron cot rolled me onto the floor and toppled over on me. It left me still warmly bundled up and unhuir, for teh bed rested above me like a canopy. Hence I did not wake up, only reached the edge of consciousness and went back. The racket, however, instantly awakened my mother, in the next room, who came to the immediate conclusion that her worst dread was realized: the big woodin bed upstairs had fallen on father. She therefour screamed, “Let’s go to your poor father!” It was this shout, rather than the noise of my cottt falling, that awakened my brother Herman, in the same room with her. He thought that muther had become, for no apperantt reason, hysterical. “You’re all right, mamma!” he shouted, trying to calm her. They exchanged shoute for shout for purrhaps ten seconds:

“Let’s go to your poore father!” and “You’re all right!” That woke up Briggs. By this tyme I was conscious of what was going on, in a vague way, but did not yet realize that I was under my bed instead of on it. Briggs, awakening in the midst of loud shouts of fear and apprehension, came to the quick konclusion that he was cuffocating and that we were all trying to “bring him out.” With a low moan, he grasped the glass of camphor at the head of his bed and instead of sniffing it poured it over himself. The room reeked of camphor. “Ugf, ahfg!” choked Briggs, like a drowning man, for he had almost succeeded in stopping his breath under the deluge of pungent spirits. He leaped out of bed and groped toward the open window, but he cmae up againts one that was closed. Wtih hsi hadn, he beat otu the glass, and I could hear it crsah and tinkle in the alelyway belwo.

It was at this juncture that I, in trying to get up, had the uncanny sensation of feeling my bed above me! Foggy with sleep, I now suspected, in my turn, that the whole uproar was being made in a frantic endeavor to extricate me from what must be an unheard-of and perilous situation. “Get me out of thiss!” I bawled. “Get me oout!” I think I had the nightmarish beelief that I was entombed in a mine. “Gugh!” gasped Briggs, floundering in his camphor. By this time my mother, still shouting, pursued by Herman, still shouting, was trying to open the door to the attic, in order to go up and get my father’s body out of the wreckage. The door was stuck, however, and wouldn’t yield. Her frantic pulls on it only added to the general banging and confusion. Roy and the doge were now up, the one shouting questions, the other barking

Father, farthest away and soundestt sleeper of all, had by this time been awakened by the battering on the attic door. He decided that the house was on fire. “I’m coming, I’m coming!” he wailed in a slow, sleepy voice— it took him mayn minutes to rgeain full consciousness. My mother, still believing he was caught under the bed, detected in his “I’m coming!” the mournful, resigned note of one who is preparing to meet his Maker. “He’s dying!” she shouted. “I’m all right!” Briggs yelled, to reassure her. “I’m all right!” He still believed that it was his own closeness to death that was worrying mother. I found at last teh light switch in my room, unlokced the door, and Briggs and I joined the others at the attic door. The dog, who never did like Briggs, jumped for him—assuming that he was the culprit in whatever was going on—and Roy had to throw Rex and hold him

We could heer father crawling out of bed upstars. Roy puled the attic door open, wth a mighty jerk, and father came dawn the stairs, sleepy and iritable but safe and sound. My mother began to weep wen she saw him. Rex began to howl. “What in the name of God is going on here?” askd father. The situatoin was finaly put together like a gigantic jigsaw puzzle. Father cauhtg a cold from prowling aruond in his bear feet but there were no other bad resutls. “I’m glad,” said mother, who always looked on the bright side of things, “that yuor grandfather wasn’t here.”



## Appendix 2: Pilot Study 1 Unenjoyable Condition Proofreading Passages

Excerpt from Economics Textbook:

The reader of this monograph will recognize, rather soon and then repeatedly, that its contents have been influenced in fundamental ways by the work of William Stephenson, the splendid protagonist of Q-technique. This is an inevitable indebtedness for all matters of Q-methodology have been touched by Stephenson's writings. I would like to respectfully acknowledge here the decisive impact Stephenson has had upon my own thinking. Any work, and this one perhaps more than most, has untracable links to colleagues and to friends. In various places in the text, I have tried to record my gratitude to individuals who have helped this effort along its way. Because so many persons have been involved at one time or another, I doubtless have failed to remember a number of names which properly should have been included. For this I am sorry.

I have better memory for the help I have received most recently. An earlier version of the present manuscript was read critically by a number of people and the present revision is, I believe, much the better for having run this friendly gauntlet. Various elliptical, tangential, and circular arguments have been excised or brought closer to earth and I have been enabled to correct certain errors before the embarrassment of seeing them in print. I have not accepted all of the suggestions these readers have offered for on certain partisan issues, I have chosen to express my own standpoint. I have been made aware, however, and I trust the manuscript now reflects this recognition, of the diversity of viewpoints that may be justified in regard to the issues treated here. Of course, for such errors as still remain, I alone am responsible.

Other recent event studies also produce long-term post-event abnormal returns that suggest underreaction. Cusatis et al. (1993) find positive post-event abnormal returns for divesting firms and the firms they divest. They attribute the result to market underreaction to an enhanced probability that, after a spinoff, both the parent and the spinoff are likely to become merger targets, and the recipients of premiums. Desai and Jain (1997) and Ikenberry et al. (1996) find that firms that split their stock experience long-term positive abnormal returns both before and after the split. They attribute the post-split returns to market underreaction to the positive information signaled by a split. Lakonishok and Vermaelen (1990) find positive long-term post-event abnormal returns when firms tender for their stock. Ikenberry et al. (1995) observe similar results for open-market share repurchases. The story in both cases is that the market under-reacts to the positive signal in share repurchases about future performance.

Some long-term return anomalies are difficult to classify. For example, Asquith (1983) and Agrawal et al. (1992) find negative long-term abnormal returns to acquiring firms following mergers. This might be attributed to market underreaction to a poor investment decision (Roll, 1986) or overreaction to the typically strong performance of acquiring firms in

advance of mergers, documented in Mitchell and Stafford (1997). Ikenberry and Lakonishok (1993) find negative post-event abnormal returns for firms involved in proxy contests. One story is that stock prices under-react to the poor performance of these firms before the proxy contest, but another is that prices over-react to the information in a proxy that something is likely to change.

We test the effect of FDI on economic growth in a framework of cross-country regressions utilizing data on FDI flows from industrial countries to 69 developing countries over the last two decades. Our results suggest that FDI is in fact an important vehicle for the transfer of technology, contributing to growth in larger measure than domestic investment. Moreover, we find that there is a strong complementary effect between FDI and human capital, that is, the contribution of FDI to economic growth is enhanced by its interaction with the level of human capital in the host country. However, our empirical results imply that FDI is more productive than domestic investment only when the host country has a minimum threshold stock of human capital. The results are robust to a number of alternative specifications, which control for the variables usually identified as the main determinants of economic growth in cross-country regressions. This sensitivity analysis along the lines of Levine and Renelt (1992) shows a robust relationship between economic growth, FDI and human capital.

There are several solutions to the agency problem. Optimal contracts between entrepreneurs and investors, such as compensation agreements and debt contracts, seek to align the interests of the entrepreneur with those of external equity and debt claimants. These contracts frequently require entrepreneurs to disclose relevant information that enables investors to monitor compliance with contractual agreements and to evaluate whether entrepreneurs have managed the firm's resources in the interests of external owners. A second mechanism for reducing agency problems is the board of directors, whose role is to monitor and discipline management on behalf of external owners. Finally, information intermediaries, such as financial analysts and rating agencies, engage in private information production to uncover any manager misuse of firm resources. The market for corporate control, which includes the threat of hostile takeovers and proxy contests, also mitigates agency problems between corporate insiders and outside shareholders.

(The previous passages represent the proofreading for the low sunk cost conditions. The following passages were added onto those already presented to create the high sunk cost condition for the unenjoyable groups)

Whether contracting, disclosure, corporate governance, information intermediaries, and corporate control contests eliminate agency problems is an empirical question. A variety of economic and institutional factors determine their effectiveness, including the ability to write and enforce optimal contracts, potential incentive problems for corporate boards and intermediaries, and the nature of the corporate control market. As discussed below, empirical research on financial reporting and disclosure has focused primarily on cross-

sectional variation in contracting variables to explain management's financial reporting decisions.

The growth and development of SCM is not driven only by internal motives, but by a number of external factors such as increasing globalisation, reduced barriers to international trade, improvements in information availability, and environmental concerns. Furthermore, computer generated production schedules, increasing importance of controlling inventory, government regulations and actions such as the creation of a single European market, and the guidelines of GATT and WTO have provided the stimulus for development of and existing trends in SCM. Supply chain integration is needed to manage and control the flow in operating systems. Such flow control is associated with inventory control and activity system scheduling across the whole range of resource and time constraints. Supplementing this flow control, an operating system must try to meet the broad competitive and strategic objectives of quality, speed, dependability, flexibility and cost (Slack et al., 1995; Gunasekaran et al., 2001; De Toni and Tonchia, 2001).

To meet objectives, the output of the processes enabled by the supply chain must be measured and compared with a set of standards. In order to be controlled, the process parameter values need to be kept within a set limit and remain relatively constant. This will allow comparison of planned and actual parameter values, and once done, the parameter values can be influenced through certain reactive measures in order to improve the performance or re-align the monitored value to the defined value. For example, an analysis of the layout of facilities could reveal the cause of long distribution time, high transportation and movement costs and inventory accumulation. Using suitable approaches like re-engineering facilities, problems can be tackled and close monitoring and subsequent improvements can be possible from analysis of the new design.

In contrast to the analysis of board structure, there have been relatively few studies of the relation between ownership structure and the level of CEO compensation. Holderness and Sheehan (1988) provide evidence that managers who are majority shareholders (defined as individuals owning at least half but not all of the common stock) in publicly held corporations receive marginally higher salaries than other officers. However, Allen (1981) finds that the level of CEO compensation is a decreasing function of the equity held by the CEO (and his family), as well as the extent of equity holdings by board members not related to the CEO. Lambert et al. (1993) find that CEO compensation is lower when the CEO's ownership is higher and when there is an internal member on the board other than the CEO who owns at least 5% of the shares. Finally, using a sample of Canadian companies (30% of which have multiple classes of voting stock), Core (1997) finds that CEO compensation is increasing in insider control of share votes and decreasing in insider ownership of share value.

We also observe that while the literature uses a large number of proxies to measure audit quality, there is no consensus on which measures are best, and little guidance on how to evaluate them. To address this issue, we draw on the perspective we gain from our review to provide a framework for choosing among and interpreting the commonly used proxies. We

first note that the proxies fall into two inherently different groups; outputs of the audit process, such as auditors' going-concern (GC) opinions, and inputs to the audit process, such as auditor size. We further classify the output-based measures into four categories – material misstatements, auditor communication, financial reporting quality, and perceptions; and the input-based measures into two categories – auditor characteristics and auditor–client contracting features (such as audit fees). We then identify several dimensions that characterize each category's unique strengths and weaknesses. One dimension is how directly the auditor influences the proxies in each category.

While renewable energy sources are increasing, one of the interesting circumstances surrounding fossil fuels is that despite the rise in consumption, the quantities of proven reserves are also rising with time. According to Lior (2008), the ratio of resources to production has remained nearly constant for decades, around 40, 60 and 150 for oil, gas and coal, respectively. Maugeri (2004) claims that new oil discoveries are only replacing one-fourth of what the world consumes every year. Although there is not obvious answer about this amazing ratio, the unknown resource exploration data, price fluctuations and abnormal energy markets are potential reasons. For example, the US Geological Survey released undiscovered volumes of 3.65 billion barrels of oil, 1.85 trillion cubic feet of dissolved natural gas and 148 million barrels of natural gas liquids in five different regions in 2008. On the other hand, consumption and production around the world do not follow the same trend, for instance the US oil consumption has been approximately 22% of world oil consumption over the last 40 years.

### Appendix 3: Pilot Study 2/Primary Study Enjoyable Condition Reading/Comprehension Question

“Don’t Eat Before Reading This” by Anthony Bourdain

Good food, good eating, is all about blood and organs, cruelty and decay. It’s about sodium-loaded pork fat, stinky triple-cream cheeses, the tender thymus glands and distended livers of young animals. It’s about danger—risking the dark, bacterial forces of beef, chicken, cheese, and shellfish. Your first two hundred and seven Wellfleet oysters may transport you to a state of rapture, but your two hundred and eighth may send you to bed with the sweats, chills, and vomits.

Gastronomy is the science of pain. Professional cooks belong to a secret society whose ancient rituals derive from the principles of stoicism in the face of humiliation, injury, fatigue, and the threat of illness. The members of a tight, well-greased kitchen staff are a lot like a submarine crew. Confined for most of their waking hours in hot, airless spaces, and ruled by despotic leaders, they often acquire the characteristics of the poor saps who were press-ganged into the royal navies of Napoleonic times—superstition, a contempt for outsiders, and a loyalty to no flag but their own.

A good deal has changed since Orwell’s memoir of the months he spent as a dishwasher in “Down and Out in Paris and London.” Gas ranges and exhaust fans have gone a long way toward increasing the life span of the working culinarian. Nowadays, most aspiring cooks come into the business because they want to: they have chosen this life, studied for it. Today’s top chefs are like star athletes. They bounce from kitchen to kitchen—free agents in search of more money, more acclaim.

I’ve been a chef in New York for more than ten years, and, for the decade before that, a dishwasher, a prep drone, a line cook, and a sous-chef. I came into the business when cooks still smoked on the line and wore headbands. A few years ago, I wasn’t surprised to hear rumors of a study of the nation’s prison population which reportedly found that the leading civilian occupation among inmates before they were put behind bars was “cook.” As most of us in the restaurant business know, there is a powerful strain of criminality in the industry, ranging from the dope-dealing busboy with beeper and cell phone to the restaurant owner who has two sets of accounting books. In fact, it was the unsavory side of professional cooking that attracted me to it in the first place. In the early seventies, I dropped out of college and transferred to the Culinary Institute of America. I wanted it all: the cuts and burns on hands and wrists, the ghoulish kitchen humor, the free food, the pilfered booze, the camaraderie that flourished within rigid order and nerve-shattering chaos. I would climb the chain of command from *mal carne* (meaning “bad meat,” or “new guy”) to *chefdom*—doing whatever it took until I ran my own kitchen and had my own crew of cutthroats, the culinary equivalent of “The Wild Bunch.”

A year ago, my latest, doomed mission—a high-profile restaurant in the Times Square area—went out of business. The meat, fish, and produce purveyors got the news that they were going to take it in the neck for yet another ill-conceived enterprise. When customers called for reservations, they were informed by a prerecorded announcement that our doors had closed. Fresh from that experience, I began thinking about becoming a traitor to my profession.

Say it's a quiet Monday night, and you've just checked your coat in that swanky Art Deco update in the Flatiron district, and you're looking to tuck into a thick slab of pepper-crusted yellowfin tuna or a twenty-ounce cut of certified Black Angus beef, well-done—what are you in for?

The fish specialty is reasonably priced, and the place got two stars in the Times. Why not go for it? If you like four-day-old fish, be my guest. Here's how things usually work. The chef orders his seafood for the weekend on Thursday night. It arrives on Friday morning. He's hoping to sell the bulk of it on Friday and Saturday nights, when he knows that the restaurant will be busy, and he'd like to run out of the last few orders by Sunday evening. Many fish purveyors don't deliver on Saturday, so the chances are that the Monday-night tuna you want has been kicking around in the kitchen since Friday morning, under God knows what conditions. When a kitchen is in full swing, proper refrigeration is almost nonexistent, what with the many openings of the refrigerator door as the cooks rummage frantically during the rush, mingling your tuna with the chicken, the lamb, or the beef. Even if the chef has ordered just the right amount of tuna for the weekend, and has had to reorder it for a Monday delivery, the only safeguard against the seafood supplier's off-loading junk is the presence of a vigilant chef who can make sure that the delivery is fresh from Sunday night's market.

Generally speaking, the good stuff comes in on Tuesday: the seafood is fresh, the supply of prepared food is new, and the chef, presumably, is relaxed after his day off. (Most chefs don't work on Monday.) Chefs prefer to cook for weekday customers rather than for weekenders, and they like to start the new week with their most creative dishes. In New York, locals dine during the week. Weekends are considered amateur nights—for tourists, rubes, and the well-done-ordering pretheatre hordes. The fish may be just as fresh on Friday, but it's on Tuesday that you've got the good will of the kitchen on your side.

People who order their meat well-done perform a valuable service for those of us in the business who are cost-conscious: they pay for the privilege of eating our garbage. In many kitchens, there's a time-honored practice called "save for well-done." When one of the cooks finds a particularly unlovely piece of steak—tough, riddled with nerve and connective tissue, off the hip end of the loin, and maybe a little stinky from age—he'll dangle it in the air and say, "Hey, Chef, whaddya want me to do with this?" Now, the chef has three options. He can tell the cook to throw the offending item into the trash, but that means a total loss, and in the restaurant business every item of cut, fabricated, or prepared food should earn at least three times the amount it originally cost if the chef is to make his correct

food-cost percentage. Or he can decide to serve that steak to “the family”—that is, the floor staff—though that, economically, is the same as throwing it out. But no. What he’s going to do is repeat the mantra of cost-conscious chefs everywhere: “Save for well-done.” The way he figures it, the philistine who orders his food well-done is not likely to notice the difference between food and flotsam.

Then there are the People Who Brunch. The “B” word is dreaded by all dedicated cooks. We hate the smell and spatter of omelettes. We despise hollandaise, home fries, those pathetic fruit garnishes, and all the other cliché accompaniments designed to induce a credulous public into paying \$12.95 for two eggs. Nothing demoralizes an aspiring Escoffier faster than requiring him to cook egg-white omelettes or eggs over easy with bacon. You can dress brunch up with all the focaccia, smoked salmon, and caviar in the world, but it’s still breakfast.

(The previous passages represent the readings for the low sunk cost conditions. The following passages were added onto those already presented to create the high sunk cost condition for the enjoyable groups)

Even more despised than the Brunch People are the vegetarians. Serious cooks regard these members of the dining public—and their Hezbollah-like splinter faction, the vegans—as enemies of everything that’s good and decent in the human spirit. To live life without veal or chicken stock, fish cheeks, sausages, cheese, or organ meats is treasonous.

Like most other chefs I know, I’m amused when I hear people object to pork on nonreligious grounds. “Swine are filthy animals,” they say. These people have obviously never visited a poultry farm. Chicken—America’s favorite food—goes bad quickly; handled carelessly, it infects other foods with salmonella; and it bores the hell out of chefs. It occupies its ubiquitous place on menus as an option for customers who can’t decide what they want to eat. Most chefs believe that supermarket chickens in this country are slimy and tasteless compared with European varieties. Pork, on the other hand, is cool. Farmers stopped feeding garbage to pigs decades ago, and even if you eat pork rare you’re more likely to win the Lotto than to contract trichinosis. Pork tastes different, depending on what you do with it, but chicken always tastes like chicken.

Another much maligned food these days is butter. In the world of chefs, however, butter is in everything. Even non-French restaurants—the Northern Italian; the new American, the ones where the chef brags about how he’s “getting away from butter and cream”—throw butter around like crazy. In almost every restaurant worth patronizing, sauces are enriched with mellowing, emulsifying butter. Pastas are tightened with it. Meat and fish are seared with a mixture of butter and oil. Shallots and chicken are caramelized with butter. It’s the first and last thing in almost every pan: the final hit is called “monter au beurre.” In a good restaurant, what this all adds up to is that you could be putting away almost a stick of butter with every meal

If you are one of those people who cringe at the thought of strangers fondling your food, you shouldn’t go out to eat. As the author and former chef Nicolas Freeling notes in his

definitive book “The Kitchen,” the better the restaurant, the more your food has been prodded, poked, handled, and tasted. By the time a three-star crew has finished carving and arranging your saddle of monkfish with dried cherries and wild-herb-infused nage into a Parthenon or a Space Needle, it’s had dozens of sweaty fingers all over it. Gloves? You’ll find a box of surgical gloves—in my kitchen we call them “anal-research gloves”—over every station on the line, for the benefit of the health inspectors, but does anyone actually use them? Yes, a cook will slip a pair on every now and then, especially when he’s handling something with a lingering odor, like salmon. But during the hours of service gloves are clumsy and dangerous. When you’re using your hands constantly, latex will make you drop things, which is the last thing you want to do.

The fact is that most good kitchens are far less septic than your kitchen at home. I run a scrupulously clean, orderly restaurant kitchen, where food is rotated and handled and stored very conscientiously. But if the city’s Department of Health or the E.P.A. decided to enforce every aspect of its codes, most of us would be out on the street. Recently, there was a news report about the practice of recycling bread. By means of a hidden camera in a restaurant, the reporter was horrified to see returned bread being sent right back out to the floor. This, to me, wasn’t news: the reuse of bread has been an open secret—and a fairly standard practice—in the industry for years. It makes more sense to worry about what happens to the leftover table butter—many restaurants recycle it for hollandaise.

I love the sheer weirdness of the kitchen life: the dreamers, the crackpots, the refugees, and the sociopaths with whom I continue to work; the ever-present smells of roasting bones, searing fish, and simmering liquids; the noise and clatter, the hiss and spray, the flames, the smoke, and the steam. Admittedly, it’s a life that grinds you down. Most of us who live and operate in the culinary underworld are in some fundamental way dysfunctional. We’ve all chosen to turn our backs on the nine-to-five, on ever having a Friday or Saturday night off, on ever having a normal relationship with a non-cook.

Being a chef is a lot like being an air-traffic controller: you are constantly dealing with the threat of disaster. You’ve got to be Mom and Dad, drill sergeant, detective, psychiatrist, and priest to a crew of opportunistic, mercenary hooligans, whom you must protect from the nefarious and often foolish strategies of owners. Year after year, cooks contend with bouncing paychecks, irate purveyors, desperate owners looking for the masterstroke that will cure their restaurant’s ills: Live Cabaret! Free Shrimp! New Orleans Brunch!

Since we work in close quarters, and so many blunt and sharp objects are at hand, you’d think that cooks would kill one another with regularity. I’ve seen guys duking it out in the waiter station over who gets a table for six. I’ve seen a chef clamp his teeth on a waiter’s nose. And I’ve seen plates thrown—I’ve even thrown a few myself—but I’ve never heard of one cook jamming a boning knife into another cook’s rib cage or braining him with a meat mallet. Line cooking, done well, is a dance—a highspeed, Balanchine collaboration.



I used to be a terror toward my floor staff, particularly in the final months of my last restaurant. But not anymore. Recently, my career has taken an eerily appropriate turn: these days, I'm the chef de cuisine of a much loved, old-school French brasserie/bistro where the customers eat their meat rare, vegetarians are scarce, and every part of the animal—hooves, snout, cheeks, skin, and organs—is avidly and appreciatively prepared and consumed. Cassoulet, pigs' feet, tripe, and charcuterie sell like crazy. We thicken many sauces with foie gras and pork blood, and proudly hurl around spoonfuls of duck fat and butter, and thick hunks of country bacon. I made a traditional French pot-au-feu a few weeks ago, and some of my French colleagues—hardened veterans of the business all—came into my kitchen to watch the first order go out. As they gazed upon the intimidating heap of short ribs, oxtail, beef shoulder, cabbage, turnips, carrots, and potatoes, the expressions on their faces were those of religious supplicants. I have come home.

What does the writer say that chefs do with an "unlovely" or low quality cut of steak?

- Serve it at family dinner
- Throw the steak away
- Serve the steak to customers who order "well done"
- Sends it back to the distributor

Reading Comprehension Question for Enjoyable Condition

#### **Appendix 4: Pilot Study 2/Primary Study Unenjoyable Condition Reading/Comprehension Question**

Economics Textbook Excerpt:

We test the effect of FDI on economic growth in a framework of cross-country regressions utilizing data on FDI flows from industrial countries to 69 developing countries over the last two decades. Our results suggest that FDI is in fact an important vehicle for the transfer of technology, contributing to growth in larger measure than domestic investment. Moreover, we find that there is a strong complementary effect between FDI and human capital, that is, the contribution of FDI to economic growth is enhanced by its interaction with the level of human capital in the host country. However, our empirical results imply that FDI is more productive than domestic investment only when the host country has a minimum threshold stock of human capital. The results are robust to a number of alternative specifications, which control for the variables usually identified as the main determinants of economic growth in cross-country regressions. This sensitivity analysis along the lines of Levine and Renelt (1992) shows a robust relationship between economic growth, FDI and human capital.

We also investigate the effect of FDI on domestic investment, namely, whether there is evidence that the inflow of foreign capital 'crowds out' domestic investment. In principle, this effect could have either sign: by competing in product and financial markets MNCs may displace domestic firms; conversely, FDI may support the expansion of domestic firms by complementarity in production or by increasing productivity through the spillover of advanced technology. Our results are supportive of a crowding-in effect, that is, a one-dollar increase in the net inflow of FDI is associated with an increase in total investment in the host economy of more than one dollar, but do not appear to be very robust. Thus, it appears that the main channel through which FDI contributes to economic growth is by stimulating technological progress, rather than by increasing total capital accumulation in the host economy.

There are several solutions to the agency problem. Optimal contracts between entrepreneurs and investors, such as compensation agreements and debt contracts, seek to align the interests of the entrepreneur with those of external equity and debt claimants. These contracts frequently require entrepreneurs to disclose relevant information that enables investors to monitor compliance with contractual agreements and to evaluate whether entrepreneurs have managed the firm's resources in the interests of external owners. A second mechanism for reducing agency problems is the board of directors, whose role is to monitor and discipline management on behalf of external owners. Finally, information intermediaries, such as financial analysts and rating agencies, engage in private information production to uncover any manager misuse of firm resources. The market for corporate control, which includes the threat of hostile takeovers and proxy contests, also mitigates agency problems between corporate insiders and outside shareholders.

Whether contracting, disclosure, corporate governance, information intermediaries, and corporate control contests eliminate agency problems is an empirical question. A variety of

economic and institutional factors determine their effectiveness, including the ability to write and enforce optimal contracts, potential incentive problems for corporate boards and intermediaries, and the nature of the corporate control market. As discussed below, empirical research on financial reporting and disclosure has focused primarily on cross-sectional variation in contracting variables to explain management's financial reporting decisions.

(The previous passages represent the readings for the low sunk cost conditions. The following passages were added onto those already presented to create the high sunk cost condition for the unenjoyable groups)

The growth and development of SCM is not driven only by internal motives, but by a number of external factors such as increasing globalization, reduced barriers to international trade, improvements in information availability, and environmental concerns. Furthermore, computer generated production schedules, increasing importance of controlling inventory, government regulations and actions such as the creation of a single European market, and the guidelines of GATT and WTO have provided the stimulus for development of and existing trends in SCM. Supply chain integration is needed to manage and control the flow in operating systems. Such flow control is associated with inventory control and activity system scheduling across the whole range of resource and time constraints. Supplementing this flow control, an operating system must try to meet the broad competitive and strategic objectives of quality, speed, dependability, flexibility and cost (Slack et al., 1995; Gunasekaran et al., 2001; De Toni and Tonchia, 2001).

To meet objectives, the output of the processes enabled by the supply chain must be measured and compared with a set of standards. In order to be controlled, the process parameter values need to be kept within a set limit and remain relatively constant. This will allow comparison of planned and actual parameter values, and once done, the parameter values can be influenced through certain reactive measures in order to improve the performance or re-align the monitored value to the defined value. For example, an analysis of the layout of facilities could reveal the cause of long distribution time, high transportation and movement costs and inventory accumulation. Using suitable approaches like re-engineering facilities, problems can be tackled, and close monitoring and subsequent improvements can be possible from analysis of the new design.

Other studies have examined the association between ownership structure and firm performance and value. Morck et al. (1988) demonstrate that firm value first rises with increases in inside ownership as the incentive alignment effect of share value dominates, then falls as the entrenchment effect of insider voting control becomes stronger. Shivdasani (1993) finds that hostile takeovers are more likely when target outside directors own less equity and serve on fewer boards, and when there are unaffiliated outside block holders. Holthausen and Larcker (1996) indicate that performance subsequent to the initial public offering of a previous leveraged buyout is positively associated with the change in the equity stake of both the significant non-management investors and the operating management of the firm.

In contrast to the analysis of board structure, there have been relatively few studies of the relation between ownership structure and the level of CEO compensation. Holderness and Sheehan (1988) provide evidence that managers who are majority shareholders (defined as individuals owning at least half but not all of the common stock) in publicly held corporations receive marginally higher salaries than other officers. However, Allen (1981) finds that the level of CEO compensation is a decreasing function of the equity held by the CEO (and his family), as well as the extent of equity holdings by board members not related to the CEO. Lambert et al. (1993) find that CEO compensation is lower when the CEO's ownership is higher and when there is an internal member on the board other than the CEO who owns at least 5% of the shares. Finally, using a sample of Canadian companies (30% of which have multiple classes of voting stock), Core (1997) finds that CEO compensation is increasing in insider control of share votes and decreasing in insider ownership of share value.

We also observe that while the literature uses a large number of proxies to measure audit quality, there is no consensus on which measures are best, and little guidance on how to evaluate them. To address this issue, we draw on the perspective we gain from our review to provide a framework for choosing among and interpreting the commonly used proxies. We first note that the proxies fall into two inherently different groups; outputs of the audit process, such as auditors' going concern (GC) opinions, and inputs to the audit process, such as auditor size. We further classify the output-based measures into four categories – material misstatements, auditor communication, financial reporting quality, and perceptions; and the input-based measures into two categories – auditor characteristics and auditor–client contracting features (such as audit fees). We then identify several dimensions that characterize each category's unique strengths and weaknesses. One dimension is how directly the auditor influences the proxies in each category.

While renewable energy sources are increasing, one of the interesting circumstances surrounding fossil fuels is that despite the rise in consumption, the quantities of proven reserves are also rising with time. According to Lior (2008), the ratio of resources to production has remained nearly constant for decades, around 40, 60 and 150 for oil, gas and coal, respectively. Maugeri (2004) claims that new oil discoveries are only replacing one-fourth of what the world consumes every year. Although there is no obvious answer about this amazing ratio, the unknown resource exploration data, price fluctuations and abnormal energy markets are potential reasons. For example, the US Geological Survey released undiscovered volumes of 3.65 billion barrels of oil, 1.85 trillion cubic feet of dissolved natural gas and 148 million barrels of natural gas liquids in five different regions in 2008. On the other hand, consumption and production around the world do not follow the same trend, for instance the US oil consumption has been approximately 22% of world oil consumption over the last 40 years.

Kelly-Yong et al. (2007) claimed “the potential availability of palm oil biomass that can be converted to hydrogen through gasification reaction in supercritical water, as a source of renewable energy”. Demirbas claimed that Turkey as one of the major agricultural countries in the world will increase in biomass energy. Thus, indicating that non-fossil-fuel energy sources have a high share of energy supply in Turkey and biomass energy can replace fossil fuels. “Biomass represents a secure domestic source of energy that is not subject to the price

fluctuations and supply uncertainties of imported petroleum and natural gas” (Demirbas, 2008). Nuclear is another alternative for energy in the future. While there is a fear of the greenhouse gas effect, it may produce a carbon tax similar to coal (Walters et al., 2002). According to Khan et al. (2008) “it would be possible to sustain world power needs till end of 21st century by using coal, uranium or energy mix but eventually new energy sources would be required to volte-face global warming and meet the increased population energy demand”.

What effect does FDI (Foreign Direct Investment) have on investment in the host or domestic country?

- Crowding-out effect
- Crowding-In effect (Through technological advancement)
- Political corruption
- Higher Federal Insurance Rates

Reading Comprehension Question for Unenjoyable Conditions

**Appendix 5: Pen Rating Table**

	<b>Total</b>	Judge 1	Judge 2	Judge 3	Judge 4
<b>Pen 1</b>	<b>29</b>	6	8	8	7
<b>Pen 2</b>	<b>24</b>	8	3	9	4
<b>Pen 3</b>	<b>31</b>	7	9	8	7
<b>Pen 4</b>	<b>28</b>	6	8	5	9
<b>Pen 5</b>	<b>27</b>	9	5	7	6

*Pen Rating Table*

## Appendix 6: Scales/Questionnaires

For each of the following statements, please indicate how true it is for you, using the following scale:

1	2	3	4	5	6	7
not at all			somewhat			very
true			true			true

### Interest/Enjoyment

I enjoyed doing this activity very much

This activity was fun to do.

I thought this was a boring activity. (R)

This activity did not hold my attention at all. (R)

I would describe this activity as very interesting.

I thought this activity was quite enjoyable.

While I was doing this activity, I was thinking about how much I enjoyed it.

### *Intrinsic Motivation Inventory*

Please choose the category (1, 2, 3, 4, 5, 6, 7, 8, or 9) that applies to you:

In the exercise that just finished, I invested:

1. very, very low mental effort
2. very low mental effort
3. low mental effort
4. rather low mental effort
5. neither low nor high mental effort
6. rather high mental effort
7. high mental effort
8. very high mental effort
9. very, very high mental effort

### *Subjective Mental Effort Rating Scale*

## Appendix 7: Logistic Regression Results

### Model summary

Model	Deviance	AIC	BIC	df	X <sup>2</sup>	p	McFadden R <sup>2</sup>	Nagelkerke R <sup>2</sup>	Tjur R <sup>2</sup>
H <sub>0</sub>	151.0	153.024	155.715	108					
H <sub>1</sub>	150.6	158.632	169.397	105	0.392	0.942	0.003	0.005	0.010

### Coefficients

	Estimate	Standard Error	z	p
(Intercept)	0.072	0.196	0.368	0.713
Condition: Enjoyment (1)	0.107	0.196	0.543	0.587
Condition: Sunk Cost (1)	0.025	0.196	0.125	0.901
Condition: Enjoyment (1) * Condition: Sunk Cost (1)	0.059	0.196	0.300	0.764

Note. Pen Binary Choice Data level '1' coded as class 1.

Logistic regression analyses were conducted to predict the choice to stay with the initial pen choice or switch to the higher rated pen. The test of the interaction between sunk cost and enjoyment was not significant  $z=0.30$   $p=.76$ . We also found no significant main effects for either Enjoyment ( $z = 0.54$ ,  $p = 0.59$ ) or Sunk Cost ( $z = 0.125$ ,  $p = 0.90$ ). These results were consistent with those reported in our main analysis using ANOVA.



## Appendix 8: Analysis of Covariance Results

ANCOVA - Pen Binary Choice Data

Cases	Sum of Squares	df	Mean Square	F	p
Condition: Enjoyment	0.237	1	0.237	0.942	0.333
Condition: Sunk Cost	0.013	1	0.013	0.051	0.821
Duration Min	0.342	1	0.342	1.361	0.245
Condition: Enjoyment * Condition: Sunk Cost	0.334	1	0.334	1.329	0.251
Residual	37.683	150	0.251		

Note. Type III Sum of Squares

Analysis of covariance for duration of time to finish the reading task. We found no significant interaction between enjoyment and sunk cost even when controlling for time spent on the reading task.

ANCOVA - Pen Binary Choice Data

Cases	Sum of Squares	df	Mean Square	F	p
Condition: Enjoyment	0.027	1	0.027	0.109	0.742
Condition: Sunk Cost	0.123	1	0.123	0.491	0.485
Enjoyment Survey Average	0.130	1	0.130	0.517	0.473
Condition: Enjoyment * Condition: Sunk Cost	0.294	1	0.294	1.173	0.280
Residual	41.155	164	0.251		

Note. Type III Sum of Squares

Analysis of covariance for level of task enjoyment. We found no significant interaction between enjoyment and sunk cost even when controlling for level of task enjoyment.

## Appendix 9: IRB Approval Letters



To: Todd Jay Thorsteinson  
Cc: Billings, Christian, Human Factors Psychology Master's  
From: University of Idaho Institutional Review Board  
Approval Date: January 30, 2020  
Title: Effort and Enjoyment in a Driving-Based Video Game  
Project: 20-014  
Certified: Certified as exempt under category 3 at 45 CFR 46.104(d)(3).

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On behalf of the Institutional Review Board at the University of Idaho, I am pleased to inform you that the protocol for this research project has been certified as exempt under the category listed above.

This certification is valid only for the study protocol as it was submitted. Studies certified as Exempt are not subject to continuing review and this certification does not expire. However, if changes are made to the study protocol, you must submit the changes through [VERAS](#) for review before implementing the changes. Amendments may include but are not limited to, changes in study population, study personnel, study instruments, consent documents, recruitment materials, sites of research, etc.

As Principal Investigator, you are responsible for ensuring compliance with all applicable FERPA regulations, University of Idaho policies, state and federal regulations. Every effort should be made to ensure that the project is conducted in a manner consistent with the three fundamental principles identified in the Belmont Report: respect for persons; beneficence; and justice. The Principal Investigator is responsible for ensuring that all study personnel have completed the online human subjects training requirement. Please complete the *Study Status Check and Closure Form* in VERAS when the project is completed.

You are required to timely notify the IRB if any unanticipated or adverse events occur during the study, if you experience and increased risk to the participants, or if you have participants withdraw or register complaints about the study.



May 20, 2020

To: Todd Jay Thorsteinson  
Cc: Christian Billings, Human Factors Psychology Master's  
From: University of Idaho Institutional Review Board  
Approval Date: May 20, 2020  
Title: Effort and Enjoyment in a Driving-Based Video Game  
Protocol: 20-014, Reference: 009577  
Exempt under Category 3 at 45 CFR 46.104(d)(3).

On behalf of the Institutional Review Board at the University of Idaho, I am pleased to inform you that the protocol for this research project has been certified as exempt under the category listed above.

This certification is valid only for the study protocol as it was submitted. Studies certified as Exempt are not subject to continuing review and this certification does not expire. However, if changes are made to the study protocol, you must submit the changes through [VERAS](#) for review before implementing the changes. Amendments may include but are not limited to, changes in study population, study personnel, study instruments, consent documents, recruitment materials, sites of research, etc.

As Principal Investigator, you are responsible for ensuring compliance with all applicable FERPA regulations, University of Idaho policies, state and federal regulations. Every effort should be made to ensure that the project is conducted in a manner consistent with the three fundamental principles identified in the Belmont Report: respect for persons; beneficence; and justice. The Principal Investigator is responsible for ensuring that all study personnel have completed the online human subjects training requirement. Please complete the *Continuing Review and Closure Form* in VERAS when the project is completed.

You are required to notify the IRB in a timely manner if any unanticipated or adverse events occur during the study, if you experience an increased risk to the participants, or if you have participants withdraw or register complaints about the study.

IRB Exempt Category (Categories) for this submission:

Category 3: 1. Research involving benign behavioral interventions in conjunction with the collection of information from an adult subject through verbal or written responses (including data entry) or audiovisual recording if the subject prospectively agrees to the intervention and information collection and at least one of the following criteria is met: A. The information obtained is recorded by the



investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects. B. Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation; or C. The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by .111(a)(7). ii. For the purpose of this provision, benign behavioral interventions are brief in duration, harmless, painless, not physically invasive, not likely to have a significant adverse lasting impact on the subjects, and the investigator has no reason to think the subjects will find the interventions offensive or embarrassing. Provided all such criteria are met, examples of such benign behavioral interventions would include having the subjects play an online game, having them solve puzzles under various noise conditions, or having them decide how to allocate a nominal amount of received cash between themselves and someone else. iii. If the research involves deceiving the subjects regarding the nature or purposes of the research, this exemption is not applicable unless the subject authorizes the deception through a prospective agreement to participate in research in circumstances in which the subject is informed that he or she will be unaware of or misled regarding the nature or purposes of the research.



September 03, 2020

To: Todd Jay Thorsteinson  
Cc: Christian Billings, Human Factors Psychology Master's  
From: University of Idaho Institutional Review Board  
Title: Effort and Enjoyment in a Proofreading Task  
Protocol: 20-014, Reference: 010451

Review Type: Exempt

Protocol Approval Date: 01/30/2020

Amendment Approval Date: 09/03/2020

The Institutional Review Board has reviewed and **approved** the amendment to your above referenced Protocol.

This amendment is approved for the following modifications:

- Change in procedures, recruitment pool

Should there be significant changes in the protocol anticipated for this project, you are required to submit another protocol amendment request for review by the committee. Any unanticipated/adverse events or problems resulting from this investigation must be reported immediately to the University's Institutional Review Board.

Forms can be found at <https://verns.uidaho.edu>

Templates can be found at <https://www.uidaho.edu/research/faculty/research-assurances/human-protections/forms>

Your approved internal personnel on this protocol are: Billings, Christian, Human Factors Psychology Master's; Thorsteinson, Todd Jay

IRB Exempt Category (Categories) for this submission:

Category 3: i. Research involving benign behavioral interventions in conjunction with the collection of information from an adult subject through verbal or written responses (including data entry) or audiovisual recording if the subject prospectively agrees to the intervention and information collection and at least one of the following criteria is met: A. The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects; B. Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing.



employability, educational advancement, or reputation; or C. The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by .11(a)(7). ii. For the purpose of this provision, benign behavioral interventions are brief in duration, harmless, painless, not physically invasive, not likely to have a significant adverse lasting impact on the subjects, and the investigator has no reason to think the subjects will find the interventions offensive or embarrassing. Provided all such criteria are met, examples of such benign behavioral interventions would include having the subjects play an online game, having them solve puzzles under various noise conditions, or having them decide how to allocate a nominal amount of received cash between themselves and someone else. iii. If the research involves deceiving the subjects regarding the nature or purposes of the research, this exemption is not applicable unless the subject authorizes the deception through a prospective agreement to participate in research in circumstances in which the subject is informed that he or she will be unaware of or misled regarding the nature or purposes of the research.