

Preserving the Non-Physical: Essence and Value Perceptions

by

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DEDICATION

This dissertation is dedicated to my family.

To my parents, Reimund and Maria, for encouraging and supporting me to achieve my dreams.

To my wife and daughter, Swantje and Clara, for making sure that I don't miss out on life.

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ABSTRACT

The value of possessions is not always immediately apparent, making them something greater than the sum of their physical parts. People share the pervasive belief that things carry an essence which contributes to their fundamental character or identity. My dissertation explores how consumers perceive essence in both money and products and how those perceptions affect their consumption decisions.

In the first essay of my dissertation, I challenge the assumption that essence is a stable product attribute and show that people perceive product essence as impermanent. Because consumers believe that essence behaves like a physical product attribute, they infer that essence can decay through natural physical processes like aging. My studies also show that briefly removing a product from its original packaging will cause consumers to believe that essence is lost, even when the product remains physically pristine. This has important implications for consumer behavior, showing that consumers value products that lost parts of a positive essence less. My research also offers a solution to this problem: interventions which protect a product physically can also preserve its essence and fundamental identity. That is, I find that product packaging preserves essence. Taken together, my studies reveal a novel benefit of packaging that goes beyond packaging's ability to protect a product from physical harm or perceived contamination from outside sources. These findings contribute to our understanding of why consumers prefer packaged products even if they believe packaging is unnecessary.

The second chapter of my dissertation reveals that the essence of money has consequences for financial decision making. Money should be fungible, but I find that its value

is impacted by its origin. Specifically, my research shows that effort imbues money with a special essence, making it subjectively more valuable to people. This magnified valuation appears to be driven by a belief that greater effort should produce greater compensation. So, when compensation is held constant while required effort varies, workers reconcile the discrepancy by assigning greater essential value to it. This process means that workers' subjective valuation of hard-earned money is greater. My studies rule out several alternative explanations for this effect, such as contrast effects, greater attachment, virtuousness of the money, feelings about the money, and effort justification. I show that valuing money differently based on effort has consequences for financial decisions—they are particularly loss averse. People are more likely to retain hard-earned money if they could lose it by gambling and they prefer to pay with other means in order to retain hard-earned money for longer. However, when being presented with a safe investment, individuals are more likely to invest hard-earned money.

Introduction

What makes a thing a thing? Philosophers and scientists have discussed this question for millennia, beginning with Plato's dialogues to current research in psychology, philosophy, and sociology. It is important to acknowledge the ambiguity of the initial question. One interpretation focuses on what makes this particular thing a member of a category (e.g., what makes a thing *a* car?). The other interpretation focuses on what sets this particular thing apart from other, similar things (e.g., what makes a car *my* car?). In this dissertation, I will focus on the second interpretation, exploring features that set an individual thing apart from other seemingly identical things. Specifically, I explore factors that give things their individual identities.

Virtually all models of identity posit that identity consists of obvious, often physical aspects but also a hidden essence. An essence is often described as an invisible, non-obvious, or deeper feature critical to an object's overall identity (Gelman, 2013; Nemeroff & Rozin, 2018). Essence is not physically real, but it is a mental construct. Essence may be present at the "birth" of a product (Newman & Dhar, 2014), and/or contributed later. A common example of how an object can be imbued with essence is ownership. Selecting and purchasing one out of many identical products does not change the product physically but ownership makes people believe the product now carries a part of their own essence (Belk, 1988; Gelman, 2013; Weiss & Johar, 2013). The perception of essence is distinct from associations: believing that an object is imbued with an essence may create certain associations, but associations about an object do not necessarily lead people to believe that an object is imbued with an essence. For example, copies of Van Gogh's *The Starry Night* are surely associated with the Dutch painter, but only the

original created by Van Gogh himself carries his essence or soul (Fedotova & Rozin, 2018; Newman et al., 2014). Importantly, object essence does not *really* exist, but people believe that it is present and similar to the physical parts of a product. This dissertation contributes to our understanding of essence in two ways. While previous research focused on how objects gain an essence, relatively little is known about essence loss. The first chapter addresses this gap, showing that essence is less permanent than previously believed. In the second chapter, I find that earning money through great effort can imbue money with an essence, changing its subjective value and ultimately how likely a decision maker is to retain it.

The first essay of this dissertation challenges the notion that objects, and products have a permanent essence. Essence is a major contributor of value to belongings that matter to people. For some objects, their essence is *all* that matters. People value unusable, ugly clay mugs because their children made them, keep the ripped up and dirty teddy bear around because it was the first toy they ever owned, and keep unwanted family heirlooms because they carry the family's history. These examples highlight an important feature of essence: often, it is not obvious and depends on knowledge of the idiosyncratic history of objects (Gelman, 2013). The subjective value of objects containing a personally meaningful essence is rarely reflected in the market value of these objects. However, essence can sometimes impact market value as well. For example, brands are both seals that ensure a certain level of quality and a source of a distinct identity of products (Aaker, 1997). This essential identity is part of their products and otherwise physically identical products may not be perceived as having the same brand essence if there are differences in the seemingly invisible features that are associated with each product. For example, Newman and Dhar (2014) presented participants with two identical pairs of jeans but described one as being produced in the original Levi's San Francisco factory and the other

produced by an alternative authorized manufacturer. Participants perceived the jeans from the original factory as more authentic and the authors attributed this difference to the Levi's brand essence being transferred into the jeans when they were produced at the original factory. Taken together, essence generally impacts the value of a product.

When buying new products, consumers often encounter a whole shelf of seemingly identical products. A closer look might reveal that some products are no longer pristine, showing signs of use or decay such as scratches, fingerprints, or loose threads. Of course, any reasonable consumer would choose the most physically pristine product. However, do these products also differ in the amount or quality of essence that they are imagined to contain, with some products having a more complete, unadulterated essence than others? Presumably, just like a more *physically* pristine product, consumers would also choose a more *essentially* pristine product.

Past research has not focused on the permanence of essence because it is usually assumed to not decay naturally: once objects are imbued with an essence, the essence remains "stuck" in this object ("once in contact always in contact", Rozin et al., 1986). However, even early research finds that the essence in an object can be quite malleable. For example, the negative essence of a previous owner that remains in a sweater can be reduced if a positive person wears it (Nemeroff & Rozin, 1994). The first chapter shows that essence can also naturally decay and that physical interventions protecting the physical aspects of a product can also protect a product's essential aspects. Specifically, I show that the removal of packaging from a product leads consumers to perceive a loss in the essential part of the product which changes its original character. This essence loss has critical implications for the valuation of products and consumer decision making.

A pristine product removed from packaging actually does appear to lose value in the marketplace, and people will vary in their beliefs about what the value is, making an objective value hard to pin down. However, the value of money should be easier to agree on. Money *should* be fungible. Thus, one dollar should have the same value as another dollar. However, research has shown that essentialist beliefs also apply to money, altering its subjective value depending on its origin. For example, people try to avoid money that came from a dubious source (Tasimi & Gelman, 2017), they try to match the source of the money to its use (e.g., avoiding buying hedonic products if the money has a negative “tag”; Levav & McGraw, 2009), and favor unpleasant fundraising processes to fund charities and fun fundraising processes to fund entertainment (Olivola & Shafir, 2013). The second chapter of my dissertation contributes to this growing stream of literature, showing that the effort required to earn the money impacts money’s subjective value and use. My research suggests that workers value hard-earned money more than money coming from easier work. This magnified valuation causes them to believe that hard-earned money can buy them more compared to other kinds of money. The chapter further explores the psychological underpinnings of this effect and its behavioral consequences on financial decision making.

In summary, essence is a fundamental pillar of marketing, and scholars have called for more research on the topic. For example, Huang et al. (2017) call for more research on the permanence of essence, Nemeroff and Rozin (2018) questioned whether essence is depletable, and Morales et al. (2018) suggest that essentialism can explain consumer behavior in new economic environments such as the sharing economy. This dissertation advances the understanding of how essence is perceived and explores how essentialist thinking can impact decision making.

The remainder of this dissertation is structured as follows. Chapter one, “Preserving Essence: The Whole Package”, explores the impact of physical packaging on the preservation of essence. Chapter two, “How Effort Changes Subjective Valuation of Money” explores the impact of effort on the subjective valuation of money and its behavioral consequences. Both chapters are summarized in a general discussion. Experimental stimuli, question items, additional information, and supplementary analyses are attached in an appendix.

Chapter I – Preserving Essence: The Whole Package

I.1 Introduction

Sometimes seemingly generic objects are special. A pen indistinguishable from many others is on display at the Museum of Flight in Seattle, Washington. It is special because it was used to engage a broken circuit breaker that allowed Apollo 11 to leave the surface of the moon. Recently, a cartridge for the video game Super Mario 64 sold for 1.56 million dollars. This cartridge was not special because it went to space. It was simply never removed from its original packaging and was in almost perfect condition (rated 9.8/10 on the Wata game condition grading scale). A packaged, but previously opened version of the same game in a “very good” condition (7.0/10 on the Wata scale) is currently priced at only several thousand dollars, and the same game without the original box can be purchased for around twenty dollars. Notably, the functionality of the game in all three cases is identical.

I.2 Theoretical Background

I.2.1 The Nature of Essence

Object identity (i.e., the qualities that make one object distinct from others) is thought to be built on an immaterial “essence” as well as a combination of the visible attributes that the object shares with other members of its category (Bloom, 1996, 1998; Medin, 1989). In each of the aforementioned examples, the specific object is perceived as distinct from others because it has a special *hidden* essence, not because it has unique physical features that set it apart from similar objects. This essence is not directly observable but nevertheless represents an underlying

reality or true nature of a thing and is sometimes described as the “soul” of the object (Gelman, 2003; Nemeroff & Rozin, 2018).

There is some debate as to whether people believe that something like a video game could have essence. A strict definition of essence treats it as a psychological placeholder, that only occurs in natural categories (e.g., Gelman, 2003). According to this view, the perception of essence follows the existence of physical instances that are the source of an entity’s fundamental identity. For example, people believe in the essence of people because there really is something invisible to the naked eye (e.g., genes, a soul, etc.) that makes them who they are. This belief extends to natural categories (like a nugget of gold) which are believed to have some hidden causal source inside of them (e.g., the configuration of gold atoms; Gelman, 2013). Critically, converging evidence supports that an object’s history is also sometimes perceived as its essence (Gelman, 2013; Gelman & Echelbarger, 2019; Newman, 2016) and the terms are used interchangeably (e.g., Newman & Dhar, 2014).

1.2.2 The Essence of Objects

Many things contribute to the perception of an essence in an object. People might believe that the space pen gained an essence because of its special history (e.g., Gelman & Echelbarger, 2019; Newman et al., 2011). However, while some essences might be gained during the “life” of an object, objects might be born with essence as well. People believe a part of a brand’s essence is inside branded products (Aaker, 1997; Newman & Dhar, 2014) and they believe that some products carry the essence of the era in which they were created (Han & Newman, 2018). In the absence of special history, past ownership, or varying brands, what could explain the vast differences in the valuations of the three Super Mario 64 video games? I believe that beliefs about essence can explain this example as well. The amount of essence perceived to exist within

an object may change. Objects with more essence are generally valued more compared to their physically identical counterparts with less essence (Gunasti et al., 2018; Newman & Bloom, 2012; Newman & Dhar, 2014; Smith et al., 2016), except when this essence is negative (e.g., Newman et al., 2011). People believe that the creator's intent and its original purpose are an object's essence, representing its true character (Chaigneau et al., 2008). Individuals are likely to value a video game more if it has more essence of the Super Mario 64 game and thus represents its true character better. In this research, I propose that packaging is perceived as a barrier to essence change, retaining it in an object. Thus, an unopened copy of the game might contain more essence than one that was previously opened and therefore be perceived as more valuable.

1.2.3 Essence Transfer: Loss and Preservation

While extant research explored how essence is perceived to be transferred to, added to, or incorporated into an object (Argo et al., 2006, 2008; Morales & Fitzsimons, 2007; Rozin et al., 1986), little is known about its loss or decay. Early research suggested that once an object acquired an essence, it remained a stable part of this object unless specific, extreme cleansing actions were involved (Nemeroff & Rozin, 1994; Rozin et al., 1986). If and how essence can be removed from an object depends on how the essence itself is perceived. Essence is sometimes perceived as like a physical part of the object (like physical residue or germs) and sometimes as a symbolic part of the object (associative or spiritual). People believe physical-like essence can be removed through physical cleansing actions (e.g., physically cleaning the object), while symbolic essence can be removed through symbolic cleansing actions (e.g., exchanging a bad essence with a good essence; Nemeroff & Rozin, 1994). However, the general belief of participants in this

research¹ is that the object's cleansing would be extreme or even destructive—the essence would not dissipate by itself. Recently, authors have begun to question the stability of essence, however (Morales et al., 2018), and recent reviews note that no study has manipulated the permanence of essence directly (Huang et al., 2017; Nemeroff & Rozin, 2018).

I.3 The Current Research

In this research, I build on the observation that people believe essence follows physical laws (e.g., the belief that essence can be transferred through physical touch; Morales & Fitzsimons, 2007). Research has shown that people are naïve scientists who understand that, as time progresses, physical disorder increases (Biliciler et al., 2021). For objects, this disorder presents as increasing deterioration over time (e.g., burning wood turns to ash, not vice versa; Goswami & Brown, 1990; Newman et al., 2010). While research has not focused on whether essence can be lost through physical processes (Nemeroff & Rozin, 1994), the general belief that essence change follows physical laws should also apply to its loss (Nemeroff & Rozin, 2018). As a result, I propose that actions that result in physical deterioration (e.g., aging), also cause people to imagine that essential attributes deteriorate.

By the same logic, it stands to reason that interventions that protect an object's physical attributes may also be perceived as preserving essence. That is, physical barriers, containers, or packages should also be perceived as protecting a product's essence and reducing its deterioration over time. Aside from the physical functions that packaging can provide, packaging also provides utility to consumers via its non-physical functions such as protecting products from perceived contamination of a foreign essence entering *into the object* (Morales & Fitzsimons,

¹ The generalizability of these findings might be limited because only a small sample (36 participants) rated the essence of a single product category (a sweater).

2007; White et al., 2016). I take this logic one step further and explore a different, fundamental protective role of packaging—preventing essence from *leaving an object*. I suggest that product packaging can reduce the loss of essence.

I.4 Study Overview

In five studies, I vary the presence of containers or packaging of otherwise identical objects and products. Study 1a finds that unpackaged products change more than packaged ones over time because individuals believe that something inherent is lost without packaging around an object. Study 1b – 2b use a novel subjective measure to capture the amount of essence in an object—the object’s weight. Previous studies have shown that people associate abstract concepts like essence with sensory experiences of physical product attributes like weight (Barsalou, 2009). For example, people judged money as more valuable (Jostman et al., 2009) and environmental issues as more serious (Ackerman et al., 2010) if a questionnaire was presented on a heavier compared to a lighter clipboard. It is also likely that an object with more essence is perceived as heavier than an object with less essence. Importantly, I do not make predictions regarding the weight of different essences (i.e., is the weight of a positive essence different than the weight of a negative essence) but rather predict that people will believe an object with more essence is heavier than an object with less essence. Study 1b shows that an unpackaged object is perceived both as containing less essence and as weighing less than an identical object that was just removed from a package. Study 2a and 2b show that perceived weight loss of unpackaged objects, consistent with dissipating essence, is robust. Study 3 further tests the effects of packaging on loss of essence by including a condition in which the essence is negatively valenced and one where it is positively valenced, and also explores the downstream consequences of packaging on essence preservation by measuring attitudes toward the objects. In

line with dissipating essence, unpackaged objects with positive essence are perceived as less positive than those that were packaged. Conversely, unpackaged objects with negative essence are perceived as less negative than those that were packaged. While no formal power analyses was conducted, sample sizes of at least 200 participants per cell were chosen to ensure sufficient statistical power even when conducting mediation analyses and analyses with interaction terms (Pieters, 2017; Simonsohn, 2014). No participants were excluded if not explicitly stated.

Participant age and gender were collected to describe the samples.

I.5 Study 1a and 1b: Essence Loss and Packaging

Study 1a tests the intuition that essence decays over time. I measure whether people believe that an older version of a product has changed more compared to a younger version and whether packaging can slow the process of aging (i.e., packaging should moderate the impact of age on perceived change). Additionally, this study explores the underlying psychological process by testing whether the proposed essence loss actually accounts for the perceived change of the product (while controlling for external contamination). While in study 1a participants compare the same product across different ages, in study 1b participants compare between products from the same category. Specifically, this study intends to show that products stored in packaging contain more essence than products stored without packaging. Additionally, study 1b tests the proposition that objects with more essence are also perceived as heavier.

I.5.1 Study 1a: Time, Packaging, and Change

Method

Participants. 400 participants (41% female, $M_{\text{age}} = 39.73$) from Amazon Mechanical Turk (MTurk) participated in this study.

Design. The study followed a 2 (between-subjects, packaging: present vs. absent) x 5 (within-subjects, age: 1 day, 1 week, 1 month, 1 year, 10 years) mixed design. Each participant was asked to indicate whether a baseball changed across five different times in the baseball's life. Depending on packaging condition, the baseball was either shown packaged or unpackaged (see appendix A1). I asked participants if the baseball changed ("The [AGE] old baseball is ... the baseball that just left the factory", 1 = "...exactly identical to...", 9 = "...very different from..."). Additionally, participants answered whether it changed because "some part of the baseball was irreversibly lost," or if there was "irreversible contamination from an outside source" (both scales 1 = "Strongly Disagree", 9 = "Strongly Agree") for the five different ages of the baseball. The study is preregistered at aspredicted.org/blind.php?x=s6ms64. Please refer to appendix A1 for details.

Results

I compared two linear mixed models (LMM), each with change as the dependent variable (see table 1) and a random intercept to control for repeated observations within participants. Model I included fixed main effects for age (in days, log-transformed and mean-centered), effect-coded packaging (reference category = no packaging), and their interaction term. The second model added perceptions of contamination (mean-centered) and perceptions of loss (mean-centered) to the first model.

Table 1: Change predicted by two different model specifications

	Dependent Variable: Change	
	Model I	Model II
Age in days	0.394*** (28.42)	0.140*** (13.97)
Packaging	-0.159 (1.06)	0.080 (1.05)
Packaging x Age in days	-0.040* (2.06)	-0.024+ (1.88)
Perceived Contamination		0.391*** (15.19)
Perceived Loss		0.403*** (15.47)
Constant	2.841*** (26.68)	2.723*** (50.22)
BIC	7435.2	5532.3
AIC	7401.6	5487.4

Notes. z statistics in parentheses; days are log-transformed and mean-centered, contamination and loss are mean-centered. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

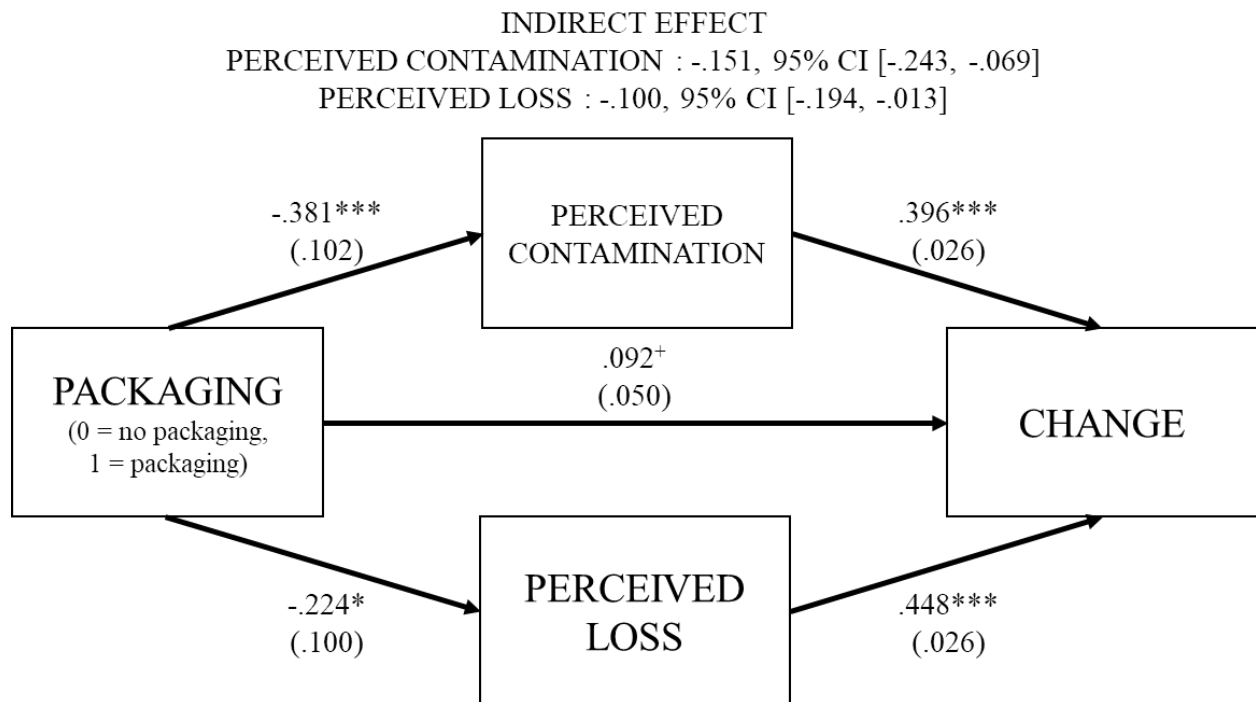
The first model reveals that, as the unpackaged baseball aged, it was perceived as less identical to one that had just left the factory ($b = .394$, $z = 28.42$, $p < .001$). I also find the predicted interaction between packaging and age: The perceived change of the baseball is significantly attenuated ($b = -.040$, $z = 2.06$, $p = .040$) when it was packaged compared to when it was not packaged². As predicted, in model II, I also find that perceptions of irreversible contamination and loss both predict change: The more contamination or loss was imagined, the more change was imagined. A Wald test revealed no significant difference between the

² The pace of change over time might not be monotonic, however. It might be that change happens rapidly early on, then slows. In a follow-up analysis, I replaced the linear age term with a square root transformed age variable to test for non-linear effects of age on perceived change. In this non-linear model, the impact of age (square root transformed) remains significant ($b = .337$, $z = 11.54$, $p < .001$) and the interaction between packaging and age (square root transformed) remains marginal ($b = -.01$, $z = 1.86$, $p = .063$). This result is discussed further in the chapter discussion.

magnitude of the coefficients for contamination and loss ($\chi^2(1) = .06, p = .804$), suggesting that they were equally impactful.

Based on the findings from model II, I ran an exploratory mediation analysis (PROCESS macro model 4; Hayes, 2017) with perceived change as the dependent variable, packaging condition as the predictor, and perceived loss and contamination as parallel mediators using 10,000 bootstrap intervals and a 95% confidence interval (see figure 1).

Figure 1: Parallel mediation model.



Notes. Standard errors in parentheses. ⁺ $p < .1$, * $p < .05$, ** $p < .01$, *** $p < .001$

Importantly, the mediation analysis reveals that packaging reduced perceived contamination ($b = -.381, 95\% \text{ CI } [-.581; -.180], p < .001$) and perceived loss ($b = -.224, 95\% \text{ CI } [-.420; -.029], p = .025$). Additionally, the model replicates findings from model II, showing that both perceived loss and contamination cause the baseball to change in participants' minds. The overall indirect effect of packaging on perceived change is significant for both mediators (see figure 1).

1.5.2 Study 1b: Category Essence and Weight

Method

Participants. 201 MTurk panelists (42% female, $M_{\text{age}} = 44.39$) participated in this study.

Design. Participants were shown pictures of two identical vases, one of which was inside a clear plastic box (see appendix A2). They were told the vases were produced at the same time and were stored next to each other for some unspecified period of time, one without packaging and the other one with packaging (however, the vase was removed from its packaging before being sold). Participants indicated which of the two vases contained more essence of the category ideal (i.e., the prototype of this particular vase) using a three-item (“The embodiment of this product line is...”, “The essential features of this product line are...”, “The special quality or essence of this particular product line is...”), nine-point semantic differential (1 = “...better represented by the vase that was packaged”, 5 = “There is no difference between the two vases”, 9 = “...better represented by the vase that was not packaged”) adapted from Smith et al. (2016). Participants also estimated which of the two vases was heavier and which of the two vases they preferred (1 = “the vase that was packaged is heavier/preferred, 9 = the vase that was not packaged is heavier/preferred). Finally, as an exploratory individual difference measure, participants completed a discreteness scale adapted from Bastian and Haslam (2005). The study is preregistered at aspredicted.org/blind.php?x=gx9k75.

Results

The three category essence items were averaged into a single essence index (Cronbach’s $\alpha = .91$). One-sample t-tests comparing each mean to the indifference point equating the two vases revealed that the version that, compared to the unpackaged version, the vase that was stored in packaging was perceived to have higher category essence ($M_{\text{essence}} = 4.60$, $t(200) =$

4.13, $p < .001$; Cohen's $d = .288$), was perceived as heavier even after the packaging was removed ($M_{\text{weight}} = 4.80$, $t(200) = 3.24$, $p = .001$; $d = .229$), and was also preferred ($M_{\text{preference}} = 3.39$, $t(200) = 11.69$, $p < .001$; $d = .824$). There was a significant positive correlation between essence and preference showing that greater essence in a product made it more desirable to participants ($r = .420$, $p < .001$). Additionally, there was also a marginally negative correlation between the individual difference of discreteness and preference ($r = -.131$, $p = .063$) showing that participants who chronically see products as unique were less likely to prefer the packaged vase. Though directionally consistent with my prediction, the positive correlation between weight and essence was not significant ($r = .092$, $p = .196$), however, offering only directional support for the hypothesis that essence is imagined to contribute mass to an object.

Discussion

Study 1a shows that the perceived change of an object over time is reduced by packaging. Importantly, although participants think that change is partially due to contamination from an outside source, they also believe (to an equal degree) that it is due to loss of something inherent. Study 1b reveals that a packaged object has higher perceived essence than an unpackaged one, even when age is not provided. Additionally, study 1b also shows that positive essence (i.e., category representativeness) can affect value: The perceived amount of essence in this object was correlated with preference. Lastly, study 1b offers some support for our proposition that essence loss may be perceived as loss of weight or mass.

1.6 Study 2a and 2b: Essence Loss and Weight Perceptions

In study 2a and 2b, I further explore perceptions of weight loss as a measure of perceived essence loss. The evidence for an association between weight and essence in study 1b was mixed. While a previously packaged product was perceived to be heavier *and* to be higher in

essence, the correlation between essence and weight was not significant but only directionally consistent. The conservative design of study 1b where participants must compare two identical products rather than judge a product on its own, might have reduced the effect size (i.e., 76% chose the indifference point). Study 2a tests this association in a between-subjects design, asking participants to estimate the weight of an object and its packaging on its own. Study 2b tests the robustness of findings from study 1b and 2a in a conservative mixed design using a behavioral measure of perceived object weight. Importantly, study 2b also explores whether the removal of packaging causes the object to lose essence. One could argue that products that were not presented in packaging (like the “not stored in packaging” choice in study 1b or the “next to packaging” condition in study 2a) have less essence and therefore they do not need to be packaged. Additionally, study 2b rules out that actual physical change of the object could have caused essence loss, showing that unpackaging is the cause of perceived essence loss.

1.6.1 Study 2a: Weight Perception and Essence

Method

Participants. I recruited 400 MTurk panelists. Three participants were excluded due to missing MTurk IDs, leaving a final sample of 397 participants (47% female, $M_{age} = 41.64$).

Design. The study used a 2 (between-subjects, packaging: in packaging vs. next to packaging) x 3 (within-subjects, object: mug, baseball, and Rubik’s cube) mixed design. For three different objects (baseball, Rubik’s cube, and mug) in counterbalanced order, participants were asked to estimate the total weight of the object and its packaging (see appendix A3). Importantly, the objects were presented either inside or next to a transparent box. Weight estimates were measured on a seven-point scale (1 = “weighs much less than the average [OBJECT NAME] and packaging”, 4 = “weighs as much as the average [OBJECT NAME] and

packaging”, 7 = “weighs much more than the average [OBJECT NAME] and packaging”). The study is preregistered at aspredicted.org/blind.php?x=97uy88.

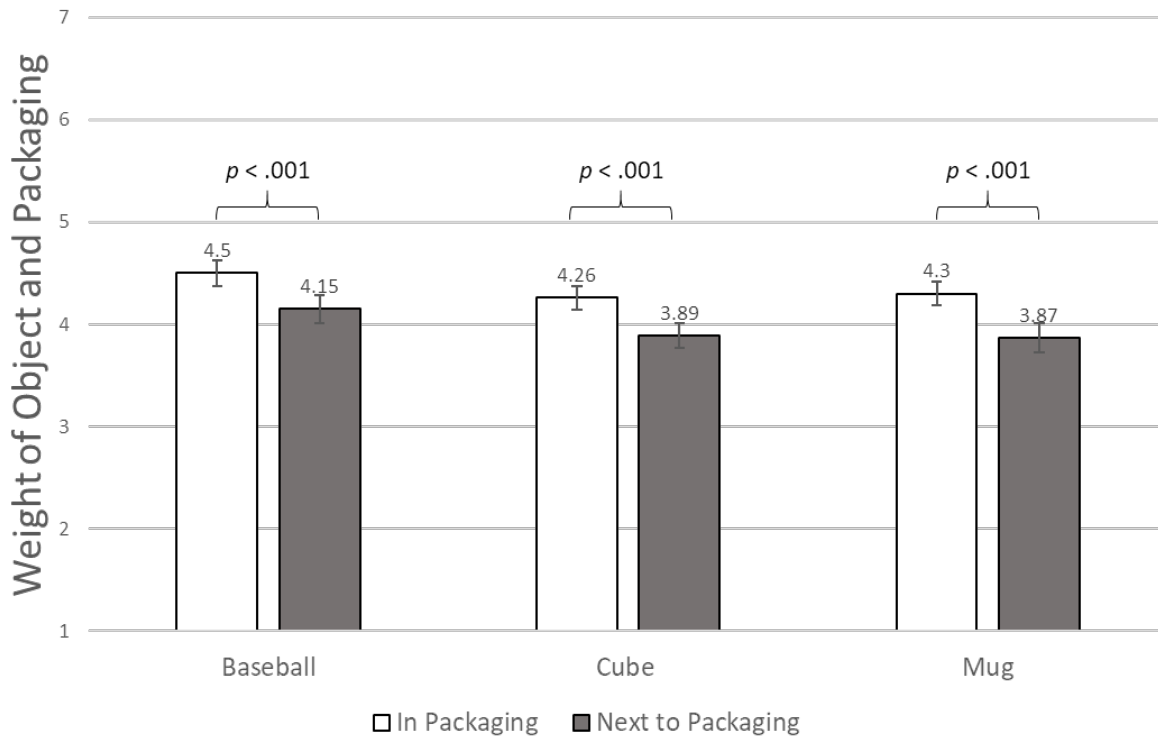
Results

I ran a repeated ANOVA³ with perceived total weight of object and packaging as the dependent variable and the object variable, the packaging variable, and their interaction term as predictors.

The analysis revealed a significant main effect of object type ($F(2, 790) = 18.40, p < .001; \eta_p^2 = .045$; see appendix A3, Table 1 for more details), suggesting that the mean perceived weight of each object and its package differs across the three objects. Critically, there was also a significant main effect of packaging ($F(1, 395) = 28.47, p < .001; \eta_p^2 = .067$): Across the three objects, the combined weight of object and packaging was perceived as greater if the object was within packaging as compared to sitting next to packaging (figure 2).

³ I preregistered a linear mixed model, but for consistency with study 2b, I report a repeated ANOVA. Results of the linear mixed model are almost identical and shown in appendix A3.

Figure 2: Study 2a results



Note. Error bars represent 95% Confidence Intervals. ⁺ $p < .1$, * $p < .05$, ** $p < .01$, *** $p < .001$

The interaction of the packaging variable and object variable was not significant ($F(2, 790) = 0.37, p = .688; \eta_p^2 < .001$; see appendix A3 table 2 for simple contrasts).

1.6.2 Study 2b: Packaging Removal and Weight Perception

Method

Participants. 398 (44% female, $M_{age} = 20.89$) undergraduate students from a large Midwestern university completed this study as part of a course requirement. Per preregistration, 21 students were tagged by the study supervisor for not following procedures and were excluded.

Design. This study was a 2 (between-subjects, baseball removed: yes vs. no) x 2 (within-subjects, measurement 1 and 2) mixed design. All participants entered the lab to participate in an approximately hour-long session. Lab staff gave each participant a baseball in a transparent

display box (total weight approximately 260g, see appendix A4), an empty opaque capped wide mouth bottle, and an identical bottle filled with 300g of sand. All participants were instructed to weigh the baseball and its case in their hands and not to remove it from the case. Then they were asked to pour sand from the full bottle into the empty bottle until the previously empty bottle matched the weight of the baseball and the display case. Afterwards, lab staff removed the materials and weighed the sand in the originally empty bottle while participants proceeded to unrelated studies. Next, participants again received the baseball in the transparent display case, and the two bottles, one empty and one with 300 grams of sand. At this point, half of the participants were instructed to remove the baseball from its case, inspect it and then return it to the case. The other half were instructed to inspect it while it remained in the case. All participants then repeated the weight-matching procedure for the baseball and the display case. Lab staff closely supervised the adherence to the study protocol and noted if participants failed to comply. After the session, the weight of the sand in the originally empty bottles was again measured. The study is preregistered at osf.io/zus5p.

Results

I ran a repeated ANOVA across the two measurements with weight (in grams) as the dependent variable, baseball removal (yes vs. no), measurement (one vs. two), and their interaction term as predictors. The analysis revealed a significant ($F(1, 375) = 6.90, p = .009; \eta_p^2 = .018$) main effect of baseball removal condition ($M_{\text{removed}} = 194.13\text{g}$ vs. $M_{\text{not removed}} = 202.91\text{g}$), but no significant main effect for measurement ($F(1, 375) = 2.34, p = .127; \eta_p^2 = .006$). Importantly, the predicted interaction of baseball removal and the timing of the measurement was significant ($F(1, 375) = 5.25, p = .023; \eta_p^2 = .014$). While there was no significant difference between conditions for the first measurement ($M_{\text{removed}} = 194.81\text{g}$ vs. $M_{\text{not removed}} = 199.49\text{g}; F(1,$

375) = 1.62, $p = .204$; $\eta_p^2 = .004$), the baseball was estimated to be significantly ($F(1, 375) = 10.90, p = .001$; $\eta_p^2 = .028$) heavier for the second measurement if it was never removed from packaging ($M_{\text{not removed}} = 206.32\text{g}$) than if it was briefly removed and put back in ($M_{\text{removed}} = 193.45\text{g}$). Participants' weight estimates significantly increased ($F(1, 375) = 7.35, p = .007$; $\eta_p^2 = .019$) between measurements when the baseball remained in packaging, but only decreased directionally ($F(1, 375) = 0.29, p = .592$; $\eta_p^2 < .001$) between measurements if the baseball was briefly removed.

The observed overall increase in estimated weight from measurement one to measurement two in the “not removed from packaging” condition is in line with previous research showing that participants tend to underestimate an object's weight in the first trial and that the estimated weight becomes more accurate for subsequent trials (Flanagan et al., 2008; Johansson & Flanagan, 2009). Indeed, participants significantly underestimated the weight of the baseball and display case (approximately 260g) in the first measurement ($M = 197.17\text{g}, t(377) = 34.13, p < .001; d = 1.758$).⁴

Study 2b found that a baseball in its case was perceived as weighing less when the ball was removed and then returned to the case compared to when it never left the case. In line with the findings of study 1b, study 2a shows that objects and their packages are perceived as heavier when they remain within the package compared to objects that have been removed from package (yet still include that packaging). Study 2b revealed that the absence of packaging is not merely associated with lower weight estimates, but that unpackaging an object actually causes perceived

⁴ To follow up on this, I ran a posttest (appendix A4) with 197 MTurk panelists (40% female, $M_{\text{age}} = 38.76$). Participants were asked to estimate the weight of an object of their choosing on an unmarked slider anchored from the weight of a penny (= 0) to the weight of a half-gallon container of milk (= 100). After an unrelated task, participants repeated the measure using the same object and slider as before. To see if there was a weight increase between measurements, I calculated the relative difference between the two weight estimates and ran a one-sided t-test to determine whether the mean relative difference significantly exceeded zero. I found a significant increase between measurements ($M_{\text{increase}} = 2.7\%, t(196) = 188, p = .031; d = .134$).

weight differences. Taken together, the findings from study 2a and 2b support the proposed association between packaging and preserving essence, where essence is perceived as having weight.

I.7 Study 3: Essence Loss and Value Perceptions

If objects indeed lose essence through time and packaging diminishes this loss, then this should be the case both when the essence is positively and negatively valenced. Study 3 examines objects with both positive and negative essence to further support my proposition that essence dissipates without packaging to contain it. The valence manipulation helps rule out the alternative explanation that packaged objects are always valued more than unpackaged objects.

I.7.1 Method

Participants. 840 MTurk panelists (54% female, $M_{\text{age}} = 40.08$) participated in this study. Per preregistration, 35 participants were excluded for not following study instructions, leaving a final sample of 805 (54% female, $M_{\text{age}} = 40.19$) participants.

Design. This study follows a 2 (storage: sealed vs. open) x 2 (valence: negative vs. positive) between-subjects design. Participants were asked to evaluate a pair of gloves that belonged to a famous person and was on display in a museum.

Prior research has shown that individuals can imbue objects with essence through ownership and through physical interaction. Importantly, the essence that is transferred into an object tends to have the same valence as the person who imbued it with the essence. Here I manipulate the valence of essence using a method adapted from Nemeroff & Rozin (1994) and Newman et al. (2011). I told participants to imagine a deceased person (in order to ensure that at least some time has passed since the gloves were put on display in the museum) whom they

either had admiration or strong negative feelings. I excluded participants who failed to provide the name of deceased person, who provided a name of a fictional person, or whose response was indistinguishable (see table 1a – 3, appendix A5 for a replication of all analyses with the full sample). As a manipulation check, participants were asked how much they would like to give the owner of the gloves a hug (1 = “Not at all”, 9 = “Very much”; adapted from Newman et al., 2011). Storage was manipulated by telling participants that the gloves were stored on an open pedestal or in a sealed glass box on a pedestal. To increase the salience of the manipulation, participants also saw a picture of how the gloves were stored in the museum (see appendix A5). The focal dependent measure was personal value measured with the three-item, nine-point pleasure scale (e.g., “I would really enjoy being given these gloves”, 1 = “Not at all”, 9 = “Very much”) from Laurent and Kapferer (1985) and averaged it into a single personal value index ($\alpha = .98$). Participants indicated how much of the original essence of the gloves was lost on a nine-point scale (1 = “Strongly disagree”, 9 = “Strongly agree”) adapted from De Freitas et al. (2017). The study is preregistered at <https://aspredicted.org/blind.php?x=qr8vd6>.

1.7.2 Results

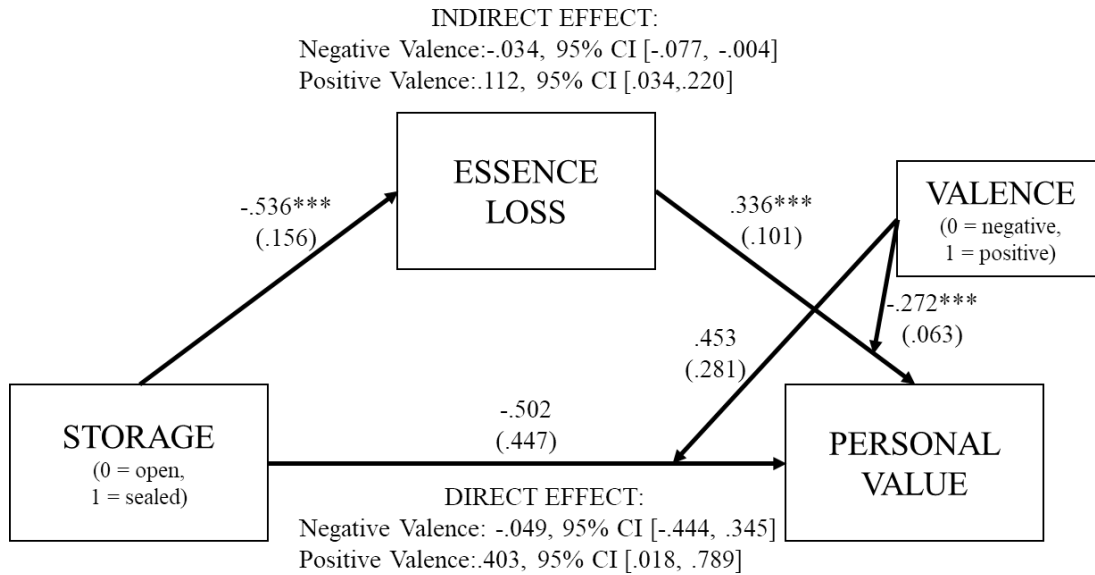
Manipulation check. The valence manipulation was successful. An independent samples t-test revealed that participants were significantly more ($t(803) = 50.96, p < .001; d = 3.593$) inclined to want to hug the person who wore the gloves if they provided the name of someone they admired ($M_{\text{positive}} = 7.10$) compared to a person toward whom they had strong negative feelings ($M_{\text{negative}} = 1.16$).

Dependent measures. An ANOVA with perceived essence loss as the dependent variable, storage condition, valence condition, and the storage-valence interaction revealed a significant main effect for storage condition ($F(1, 801) = 11.86, p < .001; \eta_p^2 = .015$). Participants believed

that more essence was lost if the gloves were stored on the open pedestal ($M_{\text{open}} = 3.76$) as compared to being stored in a sealed glass box ($M_{\text{sealed}} = 3.25$). The main effect of valence ($F(1, 801) = 1.18, p = .278; \eta_p^2 = .001$) and the storage-valence interaction ($F(1, 801) = 1.10, p = .295; \eta_p^2 = .001$) were not significant. For the personal value index, I again used an ANOVA with storage condition, valence condition, and the storage-valence interaction as predictors. The analysis revealed significantly ($F(1, 801) = 975.36, p < .001; \eta_p^2 = .549$) higher personal value if the gloves belonged to a positive person ($M_{\text{positive}} = 5.81$) as compared to a negative person ($M_{\text{negative}} = 1.47$). More importantly, the analysis revealed a significant storage by valence interaction ($F(1, 801) = 4.15, p = .042; \eta_p^2 = .005$). Follow-up contrasts confirmed that for a positive person, personal value was significantly lower ($F(1, 801) = 5.89, p = .015; \eta_p^2 = .007$) if the gloves were stored on an open pedestal ($M_{\text{open}} = 5.59$) than if they were stored in a sealed glass box ($M_{\text{sealed}} = 6.03$). If the gloves belonged to a negative person, the personal value of the gloves was directionally ($F(1, 801) = 0.22, p = .641; \eta_p^2 < .001$) greater if the gloves were stored on the open pedestal ($M_{\text{open}} = 1.50$) than if they were stored in the sealed glass box ($M_{\text{sealed}} = 1.44$). The main effect of storage condition was not significant ($F(1, 801) = 1.88, p = .171; \eta_p^2 = .002$).

Process analysis. To test the proposed mechanism that storage condition affects value via the valence of the preserved essence, I ran a mediated moderation model (PROCESS macro model 15; Hayes, 2017) with personal value as the dependent variable, storage condition as the predictor, perceived essence loss as the mediator, and valence as the moderator, using 10,000 bootstrap intervals and a 95% confidence interval (see figure 3). The overall mediated moderation model was supported with the index of moderated mediation (.146, 95% CI [.049; .270]).

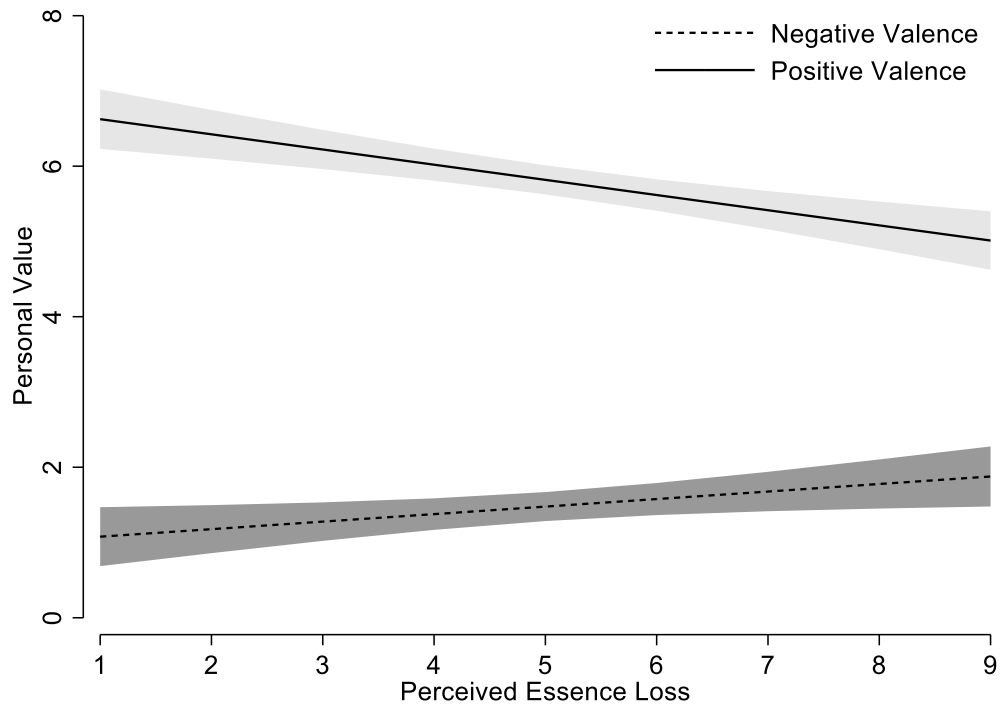
Figure 3: Moderated mediation model



Notes. Standard errors in parentheses. ⁺ $p < .1$, * $p < .05$, ** $p < .01$, *** $p < .001$

In line with previous analyses, participants believed that less essence was lost if the gloves were stored in the sealed box as opposed to on the open pedestal ($b = -.536$, 95% CI [-.843; -.230], $p < .001$). Perceived essence loss had an overall positive effect on personal value ($b = .336$, 95% CI [.138; .534], $p < .001$). Importantly, the model revealed a significant interaction between valence and perceived essence loss ($b = -.272$, 95% CI [-.396; -.148], $p < .001$; see figure 4). The indirect effect of storage condition on personal value via perceived essence loss was negative and significant for the negative valence condition (-.034, 95% CI [-.077; -.004]). For the positive valence condition, the indirect effect was positive (.112, 95% CI [.034; .220]). The direct effect of storage condition on personal value was negative, but not significant ($b = -.502$, 95% CI [-.1.380; .376], $p = .262$) and the interaction of valence and storage condition was positive, but also not significant ($b = .453$, 95% CI [-.099; 1.004], $p = .108$).

Figure 4: The impact of essence loss on value



Notes. The shaded areas depict the 95% CI.

Study 3 supports the proposed psychological mechanism of packaging as a means to preserve essence. In line with the preceding studies, less essence was perceived as lost if the object was sealed in packaging. Importantly, the impact of packaging on personal valuation is not exclusively positive but rather depended on whether the gloves were owned by a negatively or positively valenced person, proving that packaging doesn't universally increase value. I find that essence affects personal value positively if the gloves belonged to positive source. However, I observe the opposite for gloves that belonged to a negatively valenced source: Containment directionally decreased personal value. The mediated moderation model further supports the proposed theoretical model. Packaging increased the personal value of the gloves by preventing the perceived loss of a positive essence but decreased personal value if a negative essence was prevented from leaving. These results are in line with previous findings (Newman et al., 2011)

showing that an object’s value increases if there is more contact with a positive source and decreases if there is more contact with a negative source. While previous findings explored whether the amount of essence that a source transferred into an object can differ, the current study focuses on the other side of that coin—the preservation of essence after an object was imbued with an essence.

I.8 Discussion

Five preregistered studies show that unpackaged objects are seen as lesser versions of their packaged counterparts in terms of identity, essence, object mass, and value. In fact, I find that removing packaging results in essence loss even if an object has not changed physically.

While past research has primarily focused on the *addition* of essence to an object, the current studies contribute to our understanding of how essence is perceived by exploring its permanence and deterioration. Essence has been conceptualized as a stable product feature (the first law of contagion (Nemeroff & Rozin, 1994; Rozin et al., 1986; Rozin & Nemeroff, 1990)—“once in contact always in contact”), but the current research shows that perceptions of essence mimic intuitions about the deterioration of physical features (Nemeroff & Rozin, 2018). An important consequence of this intuition is that packaging, a physical intervention intended to protect the physical attributes of an object, can also protect an object’s non-physical essence. Importantly, our results do not suggest that essence loss is an alternative to contagion effects, but rather an additional way of non-physical change.

More research is required to understand the specific mechanisms behind the belief that essence can be lost. For example, study 1 shows that essence is lost over time. This result seems to contradict findings by Smith et al. (2016) that show products with earlier (i.e., lower) serial numbers are believed to have more of the creator’s essence. The authors argue that lower serial

numbers are valued more because they are temporally closer to the creator. However, as pointed out by Nemeroff and Rozin (2018), an alternative explanation could be that people interpret serial numbers as copies. That is, products with earlier serial numbers receive more of the creator's essence while it is depleted over time and products with later serial numbers receive less essence. So, the effect could also be explained by essence being spread across more products instead of putting more essence into the products that were created earlier. Another critical difference is that participants judged a single product over time in study 1a while judging two different products (as indicated by different serial numbers) at two points of time in Smith et al. (2016). It would be interesting to see if findings converge when these differences are accounted for. For example, if products cannot be identified by serial numbers (or by adding the manufacturing date), would consumers rather prefer a product that was created more recently (a "fresh" product) or a product that was created earlier?

An additional topic for future research is to understand how essence is lost over time. Study 1a reveals that a non-linear model also predicts change of a product over time, suggesting that essence loss might be stronger in the beginning of a product's life. The abrupt weight loss in study 2a also supports that a significant amount of essence is lost immediately. It appears that once a product is removed from packaging, it immediately loses essence. Anecdotally, this is supported by the steep loss of value when memorabilia are removed from the original packaging: removing the product once would have significantly reduced the price of the Super Mario 64 game. This is in line with findings that essence tends to be perceived in a categorical manner (Newman, 2016). It is possible that physical cues impact peoples' perception of essence loss differently. Removing a product from its packaging could be perceived as a cue indicating stronger physical change than information about a product's age, thus, resulting in a greater

perceived essence loss. On the flipside, future research could also explore the relationship between time and essence transfer into a product. While research has shown that (psychological) ownership transfers someone's essence into a product (Shu & Peck, 2011; Weiss & Johar, 2013) and ownership length increases psychological ownership (Strahilevitz & Loewenstein, 1998), little is known about how ownership transfers essence into a product over time.

By focusing on essence loss, this chapter explores an important gap in the perception of essence. However, in line with Nemeroff and Rozin (2018), I believe that more research is needed to understand how essence is perceived. This research explores situations where the essence of an individual product is lost over time. It would also be interesting to explore whether the scarcity of an object contributes to the perceived amount of essence within that object. That is, if a product was produced with a limited quantity, destroying products of that product line could increase the essence in the remaining products. This would suggest that the essence in a given product line would be finite and fairly stable across all products within that product line. Alternatively, people might perceive the essence of one product relative to the essence in other products. If a product is part of a limited product line with many products, there is relatively little essence in one product compared to others. However, when the product is part of a product line with few products, there is relatively greater essence in one product compared to others. Both accounts would suggest that people perceive the amount of essence in products to be greater when they are part of a product line with fewer numbers. Another interesting question is how multiple essences are perceived within an object. It would be interesting to see whether people perceive different essence in objects (e.g., a brand's essence, the owner's essence, the essence of the person who last touched it, etc.) or whether people only perceive the most dominant essence in the object. Given that essence is a psychological construct (e.g., see Gelman, 2003) and not an

actual object attribute, it is likely that people judge objects based on the most dominant essence in an object. That is, even though people might want to buy a pre-owned product because they like the brand, the negative essence of the previous owner might lower this purchase intention (e.g., see Argo et al., 2006).

The current research uncovers a novel benefit of packaging. Interestingly, even seemingly unnecessary packaging can protect an object's essence. In a follow-up study, I asked 55 participants whether a baseball needs packaging (-3 = "Packaging is very unnecessary", 0 = "It does not matter whether the baseball is packaged", 3 = "Packaging is very necessary"). A pre-sample t-test ($M = -1.418$; $t(54) = 5.707$, $p < .001$, Cohen's $d = .770$) revealed that a baseball's packaging is perceived as unnecessary. However, three of the studies in this research reveal that packaging can preserve the essence of a baseball. This has far-reaching implications: Essence preservation might be a psychological benefit that makes the reduction of even unnecessary packaging in the marketplace difficult. Sustainable packaging options like reusable packaging could be a win-win solution that supports retailers in their waste-reduction efforts while providing consumers with the same benefits as single-use packaging.

This research focused on packaging as a means to mitigate essence loss. However, the practical implications of this work extend beyond the context of packaging. I find that essence loss can impact object valuation positively if a negative essence is lost. This finding has important implications for shared consumption contexts. For example, maximizing the amount of brand essence in a product can benefit marketers and consumers alike (e.g., Newman & Dhar, 2014). However, the impact of foreign essence transfer into a product is most often perceived as negative (Huang et al., 2017) and, even in shared consumption contexts with a high degree of anonymity (e.g., using a rental car), it is possible that any cues that suggest the presence of an

essence from a previous user will be perceived as negative (Argo et al., 2006). Study 3 suggests that the deterioration of this negative essence will increase subjective value perceptions. Future research can add to our understanding of how a negative foreign essence can be effectively removed from an object. Removing this negative essence might increase the resale value of pre-owned products.

Because packaging not only retains an essence but also serves as a signal of purity, an interesting avenue for future research is to understand the psychology of newness. That is, is an unopened copy of Super Mario 64 valued almost \$1.5M more than an opened copy in very good condition because it is perceived as truly new? One might argue that newness is actually equivalent to an object's original essence. Therefore, an object that has not lost any of its own essence is essentially new. However, an alternative account is that newness is an essential product attribute by itself. For example, a new product might have a special "aura" similar to the smell of a new car that fades with its first use. Future research could explore the distinct role of newness in valuation and how products might be kept "like new" in a sharing economy where consumers increasingly share products or buy previously owned and refurbished goods.

Chapter II – How Effort Changes Subjective Valuation of Money

II.1 Introduction

During the COVID-19 pandemic, work became increasingly difficult for many frontline workers including for nurses, cashiers, truck drivers, and salespeople. Staffing shortages required frontline workers to endure heavier workloads and longer hours (Weber, 2021). While many frontline workers received public recognition in the early days of the pandemic (e.g., being hailed as “heroes”), it rarely translated into extra pay. Sometimes workers received one-time payments for their hard work from governments (e.g., German health care employees received a one-time 1,000 Euro bonus) or their employers (e.g., Walgreens paid full-time employees a one-time 300 USD bonus). However, according to many workers, these payments are not nearly adequate to account for the hard work that employees delivered. Taken together, the COVID-19 pandemic revealed an effort-compensation disparity for many people. In addition to the displeasure reported by these employees who were now working harder for the same pay, did the change in work difficulty also change how they thought about, valued, spent, or saved the money that was earned? The research in this chapter explores whether the subjective value of money is impacted by essentialist perception, linking the origin of the money to its perceived value. Specifically, I explore whether money is valued more if it was earned through hard work.

Disparities between effort and compensation have become more salient even before the pandemic. Enabled by online platforms such as Uber, DoorDash, and TaskRabbit, more Americans than ever before participate in the gig economy and are thus paid for discrete, short-term job contracts (“gigs”). Depending on the specific definition, between 10% and 36% of

American workers work in the gig economy (Anderson et al., 2021; McFeely & Pendell, 2018). For gig workers, income is clearly linked to each individual gig. For example, an Uber driver could have an easy trip to the airport and a difficult trip back, but Uber's payment algorithm does not account for this perceived difficulty. The discrepancy between actual and desired compensation can drastically lower workers' job satisfaction. Parallel to the pandemic, an unprecedented number of workers changed their jobs, many because of low pay and too many working hours (Parker & Horowitz, 2022). While it is not surprising that workers who feel constantly underpaid are unsatisfied with their jobs, the actual-desired compensation gap should not change the perception of the compensation. Regardless of its source, money should be fungible: a hard-earned dollar should have the same subjective value as an easy-earned dollar. The central question of this research is if the effort-compensation discrepancy also causes individuals to perceive the compensation differently. In line with essentialist thinking, I hypothesize that the origin of money matters for its subjective value. I predict that, if individuals have to work harder to earn money, they value it more. The next section reviews the relevant literature on effort, perception of money, and essentialism.

II.2 Theoretical Background

II.2.1 Difficulty and Effort

Typically, task difficulty is associated with effort (unless individuals choose not to participate in a task because it requires too much effort (Brehm & Self, 1989)). But the two are separable: difficulty is a feature of a given task while effort is a feature of an actor engaging in a task (Inzlicht et al., 2018). Thus, while individuals can choose to put in more or less effort on a given task, the requirements of a task could also demand a higher degree of effort from individuals simply by being more difficult. A task might be physically difficult because it

demands one to lift a heavy piece of furniture as opposed to a light piece of furniture. Similarly, researchers can make a task more cognitively difficult by requiring participants to remember a seven-digit number instead of a two-digit number. This research manipulates effort by changing how physically or cognitively demanding a task is. The terms effort and difficulty are used interchangeably in the subsequent sections.

II.2.2 Effort and Value

Though much of the economic literature describes effort as a cost to an individual that should be minimized in order to maximize utility, effort can both be rewarding in itself (Cacioppo & Petty, 1982; Csikszentmihalyi, 1990) and change the way people view its result. For example, individuals scoring high on the Protestant Work Ethic (PWE) scale believe that work is not merely a means to an end but also a source of utility (Mirels & Garrett, 1971). But effort, especially in retrospect, can increase the value of its result (see Inzlicht et al. (2018) for a review).

Though no research to my knowledge has shown that the subjective value of money changes due to hard work, there is research that suggests it might. Bagchi and Block (2011) show that spending hard-earned money is associated with greater pain of payment, consequently causing people to choose more indulgent food to offset the negative affect from spending the hard-earned money. The impact of effort on pain of payment is exacerbated for people with limited resources. Individuals reported significantly less consumption satisfaction if a purchase was made with hard-earned money and this purchase exhausted a budget (Soster et al., 2014). The greater pain associated with giving up hard-earned compensation can also be observed when individuals are asked to value objects earned through performance. Loewenstein and Issacharoff (1994) argue that an object earned by a positive performance reminds the worker of that positive

experience, so it can be more valuable to the worker than an object earned through poor performance or chance. When effort does not invoke positive associations but rather causes cognitive discomfort, individuals try to justify their effort retrospectively by increasing their valuation of the outcome. For example, individuals who went through a painful initiation ritual to join a group justified the effort (and reduced the dissonance) connected to this unpleasant experience by retrospectively increasing the attractiveness of the group (Aronson & Mills, 1959). Effort “sunk” into an outcome can make people behave as if the outcome is more valuable than it is, investing more in order to avoid realizing a painful loss (Thaler, 1980). Kivetz (2005) found a preference for congruence between promotions and effort and reactance against seemingly unearned promotions. Simply contrasting the state of being rewarded for effort with the negative affective state of exerting the effort can inflate the perceived value of the reward, too. For example, after initial training, pigeons showed a preference for food stimuli that required twenty pecks as compared to only one peck (Stagner & Zentall, 2010). Though not directly related to effort, involvement in the creation of things can increase their value because people see their identity as incorporated into the result, feeling more psychological ownership or attachment to these things (Belk, 1988; Norton et al., 2012; Shu & Peck, 2011; Prahalad & Ramaswamy, 2004).

Importantly, the impact of effort on valuation can also be forecasted. Effort ascribes more meaning to a contribution than enjoyment. Individuals donated more money to a fundraising effort when asked to do a painful 5-mile charity run as opposed to going to an outdoor charity picnic (Olivola & Shafir, 2013). Note, however, that though the participants in these experiments preferred effortful routes to charitable donation, their behavior does not align with an account where the value of each dollar donated is larger. In fact, if that were the case, participants might

have donated less when effort was involved, weighting the objective dollar value as subjectively larger.

In short, past work has shown that effort can increase the value of an object because it reminds the recipient of success or is perceived as containing some identity of the creator. Money earned through effort is treated differently than that earned through ease (it is seen as more meaningful and preferred for charitable donations), but it seems as if it does not “go as far” as other money. Previous research has shown that effort increases the pain of payment, but several mechanisms could cause this pain (e.g., greater attachment to hard-earned money, greater positive affect associated with hard-earned money, etc.). That is, there is no evidence in prior research that the subjective valuation of the money itself increases based on effort.

II.2.3 Essence of Money

Though there are not direct examinations of how *effort* might change how valuable a dollar feels to a worker, we do know that other features of a thing’s origin can change how it is perceived. Several streams of research argue and find that, in general, the source of money can imbue it with a particular essence or tag. Ultimately, that essence influences how the money is spent. For example, people tend to avoid money with a negative moral history (Tasimi & Gelman, 2017). If money was received under negative circumstances (e.g., after the death of a beloved relative), people tend to perceive the money itself as negative and spend it on more utilitarian rather than hedonic goods (Levav & McGraw, 2009). One paper actually suggests that money that is earned immorally is subjectively less valuable to participants because it threatens the identity of the owner (Stellar & Willer, 2014), though the results are not entirely consistent.

This past research has in common that it documents an invisible but significant alteration to the money—an essential change. Much like the history of an object is argued to shape its

essence (Gelman, 2013; Gelman & Echelbarger, 2019; Newman, 2016), the history of money can shape its essence. Further evidence of the similarity between object essence and money essence comes from the fact that the essence can be altered in ways similar to that of objects (Nemeroff & Rozin, 1994). Money that has negative essence based on its source can be “laundered”. Stripping money of its physical form (e.g., by adding it to a bank account) or exchanging it for the same amount of “neutral” money from another source, removes some of the negative associations (Imas et al., 2021; Uhlmann & Zhu, 2013). If object history can influence the subjective valuation of money and subsequent financial decision making, I believe that effort can also increase the subjective valuation of money, violating the principle of fungibility.

II.3 The Current Research

I began this chapter with several examples of how workers can easily compare their effort to their compensation. In some cases (like an unpleasant Uber tour), effort increases over some baseline average effort while compensation remains constant. The Uber driver might legitimately feel that (like frontline workers during COVID), they really should receive more compensation than when the work is easy. Nevertheless, the task and compensation are fixed. For those who stay in their jobs and continue to accept the same compensation for both easy and hard work, some psychological gymnastics must be employed in order to make the work “worth” it. Finding utility in effort itself (protestant work ethic) or embedding one’s identity in the money (psychological ownership) could be repair mechanisms. Another might be telling oneself that the reward is worth it because they hard to work hard for it (effort justification).

In an exploratory study (see appendix B1 for full details), I examined if hard-earned money was indeed treated differently than easy money. I wanted to see if feelings of psychological ownership could explain that behavior, or if perhaps some sort of re-valuation

might be occurring based on effort. I kept the scenario hypothetical to minimize the possibility of effort justification. I asked half of participants to imagine going to a mall and earning a \$10 bill after participating in an easy study and the other half to earn a \$10 bill after participating in a difficult study. Next, participants were asked whether they would rather keep the \$10 bill and pay with a credit card (= 8) or use the \$10 bill to pay (= 1). An independent samples t-test revealed that participants were significantly more likely to keep the \$10 bill earned from hard work ($M_{\text{difficult}} = 3.47$) as opposed to the \$10 bill earned from easy work ($M_{\text{easy}} = 2.81$; $t(999) = 3.68, p < .001$). The study also showed that while psychological ownership was indeed greater for hard-earned money ($M_{\text{difficult}} = 5.03$ vs. $M_{\text{easy}} = 4.63$; $t(999) = 4.32, p < .001$), it did not mediate the effect of effort on retention propensity ($-.039, 95\% \text{ CI } [-.102; .013]$). (This study also shows that money earned from an easy task is not perceived as equivalent to a windfall (Arkes et al., 1994—see appendix B1 for details.)

This initial examination provided evidence that people have greater attachment to hard-earned money, but that this attachment does not explain why they are less likely to spend it. Thus, I believe that there is a mechanism distinct from psychological ownership that influences their financial decisions. In line with prior research suggesting that the effort ascribed to earning money can influence the pain of spending this money (Bagchi & Block, 2011; Soster et al., 2014), I predict that workers will perceive the compensation for hard work as larger, more in line with what they wish they had been compensated. For example, Soster et al. (2014) measured and manipulated earning difficulty for a different purpose, but the results strongly suggest that hard-earned money follows a steeper value curve than easy money, which is why its loss interferes with satisfaction.

The following formulas outline a simplified version of my theoretical model that does not account for the curvature of the value function⁵. The exchange rate is based on the two dimensions that individual i assigns to the value of money V_i : the amount of money received after finishing a task (i.e., the face value of the money) AR , and the essential value E_i that an individual i assigns to the money based on the effort that goes into earning it:

$$V_i = AR + E_i$$

In this formula, the amount received AR is objectively equal for everybody while the essential value E_i depends on individual perception. I argue that individuals do not judge the value of the money in an absolute manner but rather in reference to an expected amount of money that would reflect the effort they put into the work to earn it. Ignoring the other factors reviewed in the theoretical background section that impact the essential value of money, the following equation represents how individuals re-value money based on effort. The essential value is the product of the difficulty level of a task d and the amount of money AE_i that individual i expects for the work:

$$E_i(d) = d \times AE_i$$

The difficulty d of a task and the effort e_i that one puts into the task are correlated:

$$d \sim e_i$$

Greater task difficulty requires more effort, causing individuals to increase the amount they expect to be paid for the task.

$$AE_i \times d_{hard\ work} > AE_i \times d_{easy\ work}$$

⁵ The simplified model above makes two assumptions. First, this model assumes that the discrepancy between actual and desired pay does not discourage workers from engaging in a task (i.e., difficulty and effort are correlated). Estimates of desired and historical compensation suggest that this assumption is met for the studies at hand. The model also does not consider the (probably rare) circumstance when actual compensation exceeds expected compensation. The chapter discussion suggests how the model could account for this circumstance.

Consider an Uber driver who is doing two tours of equal duration, one being perceived as very easy and the other one being perceived as very hard. Given that the driver cannot change the pay, the amount received is constant across two scenarios while the amount expected will be greater for the drive that was perceived as more difficult. Consequently, more essential value will be assigned to the hard-earned money compared to the other money.

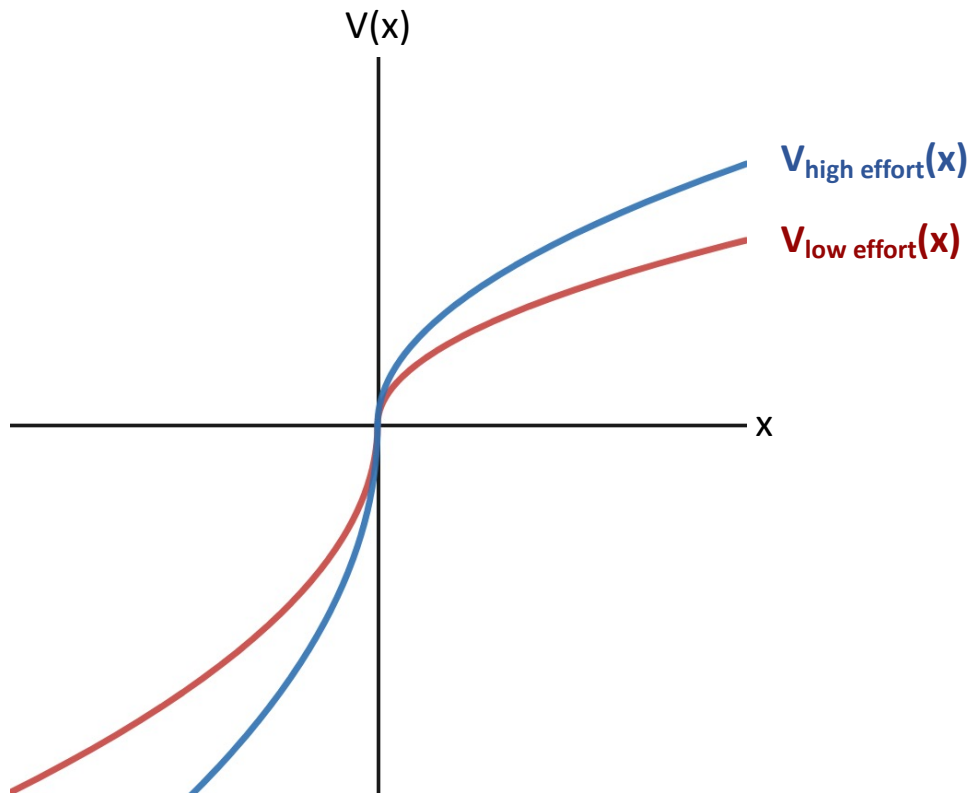
$$E_i(d_{hard\ work}) > E_i(d_{easy\ work})$$

Because the amount received is constant across the two conditions and the essential value is greater for hard work, hard-earned money is valued more by individual i :

$$V_i(d_{hard\ work}) > V_i(d_{easy\ work})$$

Figure 5 depicts the hypothesized value function (Kahneman & Tversky, 1979) for gains and losses coming from low and high effort work. I predict that effort acts like a constant that increases the curvilinearity of the function, resulting in a greater perceived magnitude of gains and losses.

Figure 5: The prospect theory value function for low (red) and high effort (blue) gains.



The impact of effort on valuation results in a violation of the principle of fungibility (i.e., a dollar earned through hard work is not the same as another dollar). Importantly, I argue that effort impacts the essential value of money. That is, the magnified value of hard-earned money is invisible to an observer who is unaware of how the money was obtained. Nevertheless, effortful money should be more painful to lose and feel more consequential to gain than the same amount of easy money (Soster et al., 2014).

Our second contribution to this stream extends the work of Prelec and Loewenstein (1998), who find that the imputed costs (e.g., effort to obtain payment; Soster et al., 2014) of consumption reduce the utility of consumption. The proposed account of assigning more mental value to hard-earned money also predicts lower utility of consumption. If hard-earned money has greater perceived value, participants should believe that hard-earned money buys them more than it actually does, consequently reducing the utility of the episode of consumption. More generally,

because hard-earned money is viewed as greater in magnitude and thus is more painful to lose than easy money, hard-earned money will be less likely to be spent or risked and will be perceived as having greater buying power. Similarly, alternative measures equating subjective feelings of wealth to other concepts should be greater for hard-earned money compared to other money.

II.4 Overview of Studies

Study 1 and study 2 show the basic effect that individuals value hard-earned money more by assigning a greater value to it, as if it has a higher exchange rate than easy money. Study 1 also finds that individuals scoring high on the Protestant Work Ethic (PWE) scale find money more special in general, but they do not value it more. Study 2 confirms that greater attachment (measured by psychological ownership) towards hard-earn money does not predict the magnified valuation. Studies 3 and 4 test the behavioral consequences of assigning a greater exchange rate to hard-earned money. Study 3 finds that increased valuation persists when individuals recall hard work from their past (instead of imagining it like in the previous two studies). Additionally, the study shows a higher propensity to retain the money (instead of spending it or gambling with it), consisted with greater valuation leading to greater loss aversion. Greater psychological ownership of hard-earned money increases the propensity to retain it (compared to gambling with it). Study 4 further elucidates the findings from study 3 by showing that individuals are *less* likely to retain hard-earned money when deciding to invest it for guaranteed returns and *more* likely to retain hard-earned money when deciding to gamble with it with the risk of losing it. While psychological ownership explains a greater propensity to retain money in the gambling scenario, it does not explain a lower propensity to retain hard-earned money when higher returns are guaranteed. This pattern is consistent with a perceived greater exchange rate being the most

consistent driver of the behavioral consequences, not psychological ownership. Study 4 also shows that individuals do not simply like hard-earned money more than easy money and thus retain it. In fact, they feel less good about hard-earned money. Taken together, the studies offer converging evidence for the hypothesis that individuals apply a mental exchange rate to hard-earned money that increases its subjective value relative to easy money.

II.5 Study 1: Effort Increases the Value of Compensation

II.5.1 Introduction

Study 1 tests the basic premise that individuals value hard-earned money more compared to money from an easy task. I predict that participants will expect more compensation in a hard-work scenario than a scenario where the work is described as easy. Specifically, given two scenarios which are equal in terms of work duration, hourly wage, and task domain, individuals should value the income of the task more if the task was described as hard compared to easy. Participants will judge the subjective value of their compensation after earning money from a task and judge the exchange value of this money. In addition to an estimate of subjective value and exchange value, this study also measures how meaningful money from each task is. Individuals might believe that hard-earned money was obtained in a more virtuous way and that they erroneously extend the virtue of the money to the value of the money. I test this alternate account in two ways—by measuring the meaning participants attach to the money and by collecting participants agreement with the Protestant Work Ethic (PWE; Mirels & Garrett, 1971). Agreement with PWE indicates participants propensity to associate hard work with being virtuous. If virtue is driving magnified valuation, hard-earned money should be valued more by participants who show high agreement with the PWE scale. However, I predict that, while higher

agreement with PWE will increase the *meaning* of the money, it will not impact the subjective value of hard-earned money.

II.5.2 Method

Participants. 796 MTurk panelists (44% female, $M_{\text{age}} = 41.77$) participated in this study in exchange for monetary compensation. Participants who missed an initial attention check or a bot check were not allowed to participate in the study and were automatically removed from the sample. Six participants were removed because they had duplicate IP addresses.

Design. This study followed a 2 (difficulty: easy and difficult) x 2 (duration: 2 hours and 4 hours) within-subjects design. The order of both within-subject factors was counterbalanced between subjects. Participants read two scenarios, asking them to imagine working as a gig worker and moving furniture in exchange for money. One scenario was either described as easy or as difficult (see appendix B2). Additionally, participants were told that they earned \$50 for 2 hours of work or \$100 for 4 hours of work, keeping the hourly wage of both conditions constant at \$25/hr. Displaying two different working durations and total wages served two critical functions. First, it discourages anchoring on the responses to the scenario participants saw first. Secondly, the change of working duration obscured the experimental manipulation. The orders of difficulty and work duration were randomized between subjects (i.e., the duration and pay of either scenario could be \$50/2hrs or \$100/4hrs and the easy or hard scenario could be shown first). Order effects did not impact the relationship of the focal predictor difficulty on the three different dependent variables of interest and will not be mentioned further (see appendix B2 for results including main effects and interactions with order effects). All models control for the variation in duration/payment amounts.

I capture the subjective value of the money through two different quantitative measures, one tapping into perceived value directly and the other looking at its value in an exchange. Each measure was elicited twice, once after participants finished reading each scenario. First, I adapted a measure of subjective wealth from De La Rosa et al. (2020), asking participants to create a circle to represent the subjective value of money that was earned from the task.

Participants saw a small circle and were told that this circle represented the value of \$1. Based on this reference point, participants were asked to draw a circle that represents the \$50/\$100 earned from the task described in the easy/hard scenario (see appendix B2). The area of the circle was recorded on a 0 – 100 scale. Next, participants were asked to imagine they were buying a gift card from a friend. Participants were told to write down the amount of dollars that needed to be on the gift card in order for them to buy it for the \$50/\$100 earned from the easy/hard scenario. This measure captures the extent to which the money has been transformed by some sort of re-valuation.

Next, participants indicated the meaning of the money using a three-item, seven-point semantic differential scale asking them to compare the \$50/\$100 from the easy/hard scenario to any other \$50/\$100 they have earned in the past (less – more meaningful, less – more significant, less – more special). Lastly, participants indicated what payment they would actually expect after doing easy/hard work for two/four hours as a manipulation check. Finally, as an individual difference measure of virtue associated with hard work, I collected participants' agreement with the protestant work ethic using eleven items from the protestant work ethic scale (PWE, see appendix B2).

Data exclusions and transformations. When exchanging money for a gift card, a rational actor should not be willing to exchange a certain amount of money for a gift card with less

money than the given amount. In this case, participants should not be willing to buy a gift card with less than \$50 when earning \$50 and less than \$100 when earning \$100. However, when earning \$50, 348 participants were willing to pay less than \$50 and when earning \$100, 364 participants were willing to pay less than \$100. It is possible that participants misunderstood the questions and instead reported their willingness to pay for a \$50/\$100 Amazon gift card. Participants reporting a gift card amount below the respective payment were excluded from the analysis. To account for outliers on the right-hand tail of the distribution, the remaining observations were log-transformed. Given the large number of exclusions, the results for this measure should be interpreted with caution.

The expected compensation was transformed to account for the two different payment amounts. In the \$50 scenario, the reported expected pay was divided by \$50 and in the \$100 scenario, the reported expected pay was divided by \$100. Consequently, the variable describing expected pay represents the proportion of expected pay to actual pay. For example, a ratio of expected pay to actual pay of 1.25 shows that participants expected 25% more compensation for the scenario at hand. Again, to account for outliers on the right-hand side of the distribution, the expected pay ratio was log-transformed. I will refer to this transformed measure as relative extra compensation in the subsequent section.

II.5.3 Results

Relative extra compensation. A linear mixed model accounting for within subject observations with a random intercept revealed a significant difference for the relative extra compensation between easy and difficult conditions ($b = .411, z = 25.50, p < .001$). Participants expected significantly less extra compensation when the task was framed as easy ($M_{\text{easy}} = 0.28\%$) compared to difficult ($M_{\text{difficult}} = 51.31\%$). In the easy condition, the relative extra compensation

was not significantly different from zero, suggesting that on average the actual pay was in line with participants' expected pay ($b = .003, z = 0.18, p = .859$). In the difficult condition, participants expected extra compensation was significantly greater than the actual pay ($b = .414, z = 26.22, p < .001$). Taken together, the manipulation successfully impacted participants' expected pay between difficulty conditions.

Subjective value and meaning. A linear mixed model was used to account for within-participant observations by adding a random intercept. I ran three separate models, one for each of the dependent variables: circle area equivalent, gift card equivalent, and the meaning index ($\alpha = .96$). The predictor variables remain the same for each model. The focal predictor variable is the main effect accounting for difficulty conditions and each model controls for the 2/4hr duration conditions. Lastly, the model explores the impact of participants' agreement with the protestant work ethic scale by adding a main effect for the averaged ($\alpha = .82$) and mean-centered PWE score. Table 2 depicts the beta coefficients and z-values for each model.

Table 2: Dependent measures study 1

	Circle Area Equivalent	Gift Card Equivalent (log-transformed)	Meaning Index
Difficulty Reference Category = Easy	4.266*** (4.80)	.140*** (12.34)	.605** (9.32)
Duration Reference Category = 2 hours	16.216*** (18.23)	.634*** (55.98)	.188** (2.90)
PWE	-.012 (0.01)	.003 (0.20)	.163*** (4.69)
Constant	47.795*** (45.79)	4.233*** (249.03)	4.086*** (70.17)
N	1,532	870	1,571

Notes. z statistics in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Circle area equivalent. The area of a circle representing the subjective value of the payment was significantly greater if the payment was coming from a difficult task ($M_{\text{difficult}} = 60.17$) as compared to an easy task ($M_{\text{easy}} = 55.90$). Not surprisingly, the work duration and total earnings also impacted the area of the circle. When working two hours and earning \$50 the circle was significantly smaller ($M_{\text{two hours}} = 49.91$) compared to working four hours and earning \$100 ($M_{\text{four hours}} = 66.12$). PWE did not impact the circle area equivalent.

Gift card equivalent. Participants demanded a significantly greater amount of money on the gift card when asked to buy it for money coming from a difficult task ($M_{\text{difficult}} = \$108.31$) as opposed to an easy task ($M_{\text{easy}} = \$94.19$). Like before, participants expected a greater amount when asked to buy the gift card for the money earned from a short task ($M_{\text{two hours}} = \$73.82$) as opposed to a longer task ($M_{\text{two hours}} = \$139.20$). PWE did not impact the gift card equivalent.

Meaning index. Like the two subjective value measures, the meaning of the money was perceived as greater when the money was earned through a difficult task ($M_{\text{difficult}} = 4.79$) as opposed to an easy task ($M_{\text{easy}} = 4.18$). Interestingly, participants believed that money from the longer task ($M_{\text{four hours}} = 4.57$) was more meaningful than money from the shorter task ($M_{\text{two hours}} = 4.39$). Higher PWE agreement increased the meaning of the money ($b = 0.16, z = 4.69, p < .001$).

II.5.4 Discussion

Study 1 reveals that individuals value hard-earned money more than money from an easy task. Participants felt the money was more valuable when earning money through hard work. This study makes an important contribution by showing that effort does not only change the meaning of money but also, distinctly, the subjective valuation of money. Participants reported that they expected significantly more compensation when doing hard work as opposed to doing

easy work, and appear to then use a higher psychological exchange rate with their hard-earned money. While the virtuousness of effort (PWE) was associated with the meaning of money, it did not predict the magnified valuation of it.

II.6 Study 2: Effort Increases the Exchange Value of Compensation

II.6.1 Introduction

Study 2 aims to conceptually replicate findings from study 1 and rule out alternative explanations. In this study, I will also keep the amount that participants earn constant between condition but once again manipulate the effort that is needed to earn the money. I again predict that a difficult task will increase the perceived essential value of the money. That is, in an exchange rate paradigm (e.g., Raghurir & Srivastava, 2002), participants should again expect greater compensation when exchanging money earned from a difficult task compared to an easy task. I use a new measurer of exchange (exchanging money to gold) to avoid the potentially misunderstandings observed with the gift card equivalent measure in study 1. To account for the possibility that great effort causes individuals to value the target currency less, study 2 manipulates whether people earn money and exchange it to gold or vice versa. I expect to find a greater exchange rate for hard-earned compensation for both gold and money.

Additionally, I test another possible explanation for the difficulty-value relationship. I examine whether participants are also more attached to hard-earned money by capturing their psychological ownership of hard-earned money. Based on the proposition that self-investment increases attachment (e.g., Belk, 1988; Shu & Peck, 2011), I predict that more self-investment from greater effort will increase individuals' attachment to their payment. However, this does not necessarily play a role in valuation. The exploratory study discussed earlier supports this prediction. Additionally, study 1 found no relationship between the propensity to see hard work

as more virtuous (high agreement with PWE) and greater subjective valuation of money, it remains possible that the virtuousness of the work itself can account for greater subjective valuation. This study measures the virtuousness of the work directly. While I expect that money from hard work is perceived as more virtuous, I do not expect that it will translate into greater subjective value.

II.6.2 Method

Participants. 586 undergraduate students (50% female, $M_{age} = 19.83$) participated in this study as part of a course requirement.

Design. The study followed a full-factorial 2 (task difficulty framing: easy vs. difficult) x 2 (payment type: money vs. gold) between-subjects design. Participants read a hypothetical scenario, asking them to imagine interning at a FinTech startup (see appendix B3). Half of participants imagined engaging in an easy task that did not require much attention, while the other half was asked to imagine a hard task that required their full attention. In both conditions, participants were told that the task was finished after 40 hours. As a second between-subjects factor, participants were either told that they received a \$900 paycheck or a ½ ounce of gold after working 40 hours. The market value of a ½ ounce of gold at the time of the experiment was roughly equivalent to \$900. The purpose of these different types of payment is to rule out that participants simply believe that the medium they are exchanging hard-earned money for is worth less than their original medium. Like in endowment effect paradigms, the participant should value the medium of payment that they were endowed with more than the one they could obtain. However, I believe that they will demand higher exchange value when they associate greater effort with the earnings. As the focal dependent measure, participants were asked to indicate how much compensation they would expect if the company allowed them to exchange the money for

gold or vice versa. If participants were originally compensated with gold, they indicated the expected exchange compensation on a slider scale ranging from \$600 to \$1200. If originally compensated with money, they indicated the expected exchange compensation on a slider scale ranging from $\frac{1}{4}$ ounces to $\frac{3}{4}$ ounces of gold. Additionally, participants indicated their psychological ownership over the paycheck or gold using a three-item, seven-point Likert scale (see appendix B3).

II.6.3 Results

Exchange value. The two different exchange value response scales (i.e., $\frac{1}{4}$ – $\frac{3}{4}$ ounces and \$600 – \$900) were normalized to become a 0 – 100 scale. A full factorial ANOVA with the normalized exchange value as the dependent variable, a main effect for difficulty framing, payment type, and their interaction term was used to analyze differences of the focal dependent measure across experimental conditions. The ANOVA revealed a significant main effect of difficulty framing ($F(1, 583) = 19.10, p < .001; \eta_p^2 = .032$). Imagining earning money through a difficult task resulted in a higher exchange value ($M_{\text{difficult}} = 58.35$) compared to an easy task ($M_{\text{easy}} = 51.83$). Neither payment type ($F(1, 583) = 0.29, p = .588$), nor the interaction between difficulty framing and payment type were significant ($F(1, 583) = 0.54, p = .464$).

Psychological ownership. The three psychological ownership items were highly reliable ($\alpha = .86$) and were averaged into a single psychological ownership index measure. Again, a full factorial ANOVA with the psychological ownership index as the dependent variable, a main effect for difficulty framing, payment type, and their interaction term was used for analysis. The ANOVA revealed a significant main effect of the difficulty framing ($F(1, 583) = 46.09, p < .001; \eta_p^2 = .073$). As predicted, imagining earning money through a difficult task resulted in higher psychological ownership of the money ($M_{\text{difficult}} = 6.04$) compared to an easy task ($M_{\text{easy}} = 5.40$).

The analysis also revealed a significant difference in psychological ownership by payment type ($F(1, 583) = 46.74, p < .001; \eta_p^2 = .074$). Participants indicated significantly greater psychological ownership for money ($M_{\text{money}} = 6.04$) relative to gold ($M_{\text{gold}} = 5.39$)

Posttest. For the final 276 participants (52% female, $M_{\text{age}} = 19.82$) of the total sample, an additional question was added at the end of the questionnaire. Participants indicated how virtuous the manner was in which the money was earned (1 = extremely unvirtuous, 7 = extremely virtuous). A full factorial ANOVA with virtuousness as the dependent variable, and difficulty framing, payment type, and their interaction term as predictors revealed a significant main effect of difficulty framing ($F(1, 273) = 22.87, p < .001; \eta_p^2 = .077$). The task framed as difficult was perceived as more virtuous ($M_{\text{difficult}} = 6.88$) compared to the task framed as easy ($M_{\text{easy}} = 5.93$). Virtuousness did not differ significantly between payment type conditions ($F(1, 273) = 1.51, p = .220$). The interaction between difficulty framing and payment type was marginally significant ($F(1, 273) = 3.83, p = .051; \eta_p^2 = .014$). Planned contrast show that the easy-framed task was perceived as significantly more virtuous for money ($M_{\text{money}} = 6.25$) than gold ($M_{\text{gold}} = 5.61; p = .025$). When the task was framed as difficult, there was no significant difference ($p = .607$) between money ($M_{\text{money}} = 6.81$) and gold ($M_{\text{gold}} = 6.96$).

Exploratory process analysis. To better understand the relative roles that psychological ownership and virtuousness might have in the difficulty-value relationship, a parallel moderated mediation model (Model 8; Hayes, 2017) with 10,000 bootstrap intervals (95% CI) was used to analyze the relationship between the experimental conditions, virtuousness, psychological ownership, and the dependent measure exchange value. Difficulty framing was added as the main predictor, payment type as the moderating variable, and virtuousness and psychological ownership as two parallel mediators. Because payment type did not moderate any paths, I reran

the model as a simple parallel mediation model (Model 4), removing payment type as the moderator. Task difficulty did not impact the exchange value via psychological ownership (.430, 95% CI [-.593; 1.641]) or virtuousness (.100, 95% CI [-1.272; 1.559]).

II.6.4 Discussion

Conceptually replicating findings from study 1, study 2 revealed that compensation from a task framed as difficult is perceived as more valuable compared to compensation from a task framed as easy. Participants indicated that regardless of being paid with money or gold, they imagined more compensation when asked to exchange that income. On average, participants demanded 6.52% (or \$39.12) more to exchange their identical compensation from a task framed as difficult compared to easy. Participants also indicated higher feelings of psychological ownership of the compensation and perceived the task as more virtuous if it was framed as difficult. Importantly, neither psychological ownership nor perceived virtuousness mediated the effect of difficulty framing on the exchange compensation. Taken together, studies 1 and 2 reveal that individuals value hard-earned money more than money from a task framed as easy. This higher subjective valuation was not based on the perceived virtuousness of the money. Neither agreement with PWE in study 1, nor direct measures of the money's virtuousness explained the higher valuation of hard-earned money. Additionally, participants reported higher psychological ownership of hard-earned money as compared to money coming from an easy task. This attachment, however, could also not explain the greater subjective valuation of hard-earned money.

II.7 Study 3: Effort Increases Loss Aversion of Compensation

II.7.1 Introduction

Study 3 is designed to provide further support for my account and explore the behavioral consequences of valuing hard-earned money more than easy money. I predict individuals will be especially averse to losing hard earned money, as is captured in the steepness of the blue line relative to the red line in figure 5. Of course, money is a medium of exchange, and is designed such that one can easily part with it in exchange for goods or services. However, I believe that participants will be less likely to use hard-earned money for gambling because increased valuation causes greater pain in the case of a loss (Bagchi & Block, 2011; Soster et al., 2014). Hard-earned money is likely to be retained. For example, when simply having the opportunity to keep hard-earned money or spend it, I predict that participants will be more likely to keep hard-earned money than easy money (opting to use other means of payment first like in the exploratory study). This loss aversion is both an important behavioral consequence of inflated subjective value and additional evidence of that inflated value. This study also aims to generalize the findings from study 1 and 2. In the previous two studies, I find that participants value hard-earned money more after being asked to imagine engaging in a work scenario and receiving an imaginary payment. Contrary to the previous two studies where participants judged hypothetical scenarios, study 3 asks participants to recall a work scenario from the past and their choices regarding this money. Answering questions about psychological ownership might be more applicable when thinking about one's own money. Therefore, study 3 again measures psychological ownership and tests whether it mediates the impact of effort on using hard-earned money.

II.7.2 Method

Participants. 401 undergraduate students (54% female, $M_{\text{age}} = 20.44$) participated in this study as part of a course requirement.

Design. This study followed a one-factor, between-subjects design (task difficulty: easy vs. hard). Participants were asked to recall a task that was limited in time with a specific reward connected to that task (e.g., receive \$100 for doing 5 hours of work). In the hard condition, participants were asked to recall a task that “required a lot of skill and attention and was complicated and difficult” and in the easy condition they were asked to recall a task that “did not require much skill or attention and was straightforward and simple”. Participants were then asked to name the task, briefly describe how they felt about the money earned doing that task and write down how much they earned and how long they worked. Next, participants answered several questions. First, participant indicated whether they believed they deserved less (= 1) or more (= 7) compensation for the task. This difference is again used as a manipulation check to confirm that participants feel like they deserved more pay in the difficult condition. Then participants indicated their psychological ownership using the same three-item, seven-point Likert scale as in study 2. Next, participants indicated whether they would have been willing to gamble with the money (1 = Not at all, 7 = Extremely) and whether they would rather have saved (= 1) or spent (= 7) the money immediately after receiving it. Lastly, participants indicated how challenging they thought the task was (1 = Not challenging at all, 7 = Extremely challenging).

II.7.3 Results

Task descriptions and perceived difficulty. A keyword density and word count tool (<https://seoscout.com/tools/text-analyzer>) revealed that participants mentioned lawn mowing (39 times), babysitting (34 times), chores (31 times), and internships (18 times) most often. I

calculated the hourly wage by dividing the self-reported earnings by self-reported duration. A random selection of self-reports regarding how the money was used can be found in appendix B4. An independent samples t-test revealed that participants believed the work was significantly ($t(399) = 25.13, p < .001$; Cohen's $d = 2.51$) more challenging when asked to remember a hard task ($M_{\text{hard}} = 5.20$) as compared to remembering an easy task ($M_{\text{easy}} = 2.26$).

Self-reported wages and deserved income. Reported wages ranged from \$0/hour to \$37.500/hour with a mean hourly wage of \$130.48 (SD = \$1.899.61) and a median of \$15. Given the extreme skewness of the data, I excluded responses below the first percentile and above the 99th percentile, resulting in eight exclusions. After these removals, the mean is reduced to \$20.51 (SD = \$28.65). An independent samples t-test revealed no significant difference ($t(391) = .679, p = .642$; Cohen's $d = .047$) in the self-reported hourly wage between the challenging (\$19.84) and easy condition (\$21.19). Using Fisher's exact test, I performed a nonparametric equality-of-medians test on the complete sample to ensure the validity of the results. In line with the t-test, Fisher's exact test also did not reveal a significant difference between groups ($\chi^2(1) = .913, p = .339$). An independent samples t-test revealed that participants believed they deserved significantly more ($t(399) = 10.673, p < .001$; Cohen's $d = 1.07$) compensation when asked to remember a hard task ($M_{\text{hard}} = 5.03$) as compared to remembering an easy task ($M_{\text{easy}} = 3.57$). The manipulation of deserved income was successful, again showing that participants earning money from a hard task expect significantly greater compensation.

Psychological ownership. The three psychological ownership items formed a reliable scale ($\alpha = .86$) that was averaged into a single psychological ownership index. An independent samples t-test revealed that participants reported significantly greater ($t(391) = 6.86, p < .001$;

Cohen's $d = .685$) psychological ownership when asked to remember a hard task ($M_{\text{hard}} = 6.02$) as compared to remembering and easy task ($M_{\text{easy}} = 5.13$).

*Retention versus gambling and spending*⁶. As predicted, an independent samples t-test revealed that participants were significantly more likely ($t(399) = 5.26, p < .001$; Cohen's $d = .525$) to retain hard-earned money than to gamble ($M_{\text{hard}} = 5.44$) compared to money earned from an easy task ($M_{\text{easy}} = 4.48$). When reporting their desire to spend the money, an independent samples t-test revealed that participants were significantly ($t(399) = 2.82, p = .005$; Cohen's $d = .282$) more likely to save/retain the money when asked to recall a hard task ($M_{\text{hard}} = 5.00$) as compared to recalling earning money from an easy task ($M_{\text{easy}} = 4.41$).

Exploratory process analysis. To explore the effect of task difficulty on retention propensity via psychological ownership, I ran two mediation models (95% CI; 10,000 bootstrap intervals; model 4; Hayes, 2017) with task difficulty as the predictor and psychological ownership as the mediator. For retention propensity while making a gambling decision, I observe a significant indirect effect of task difficulty via psychological ownership (.254, 95% CI [.103; .438]). Recalling a hard task increased participants psychological ownership over their earnings ($b = .891, p < .001$) which decreased participants' desire to gamble with the money, thus increasing the propensity to retain it ($b = -.285, p < .001$). The second model, comparing spending the money or retaining (saving) it, the indirect effect of task difficulty via psychological ownership was not significant (.137, 95% CI [-.014; .313]).

⁶ For ease of interpretation, the scores of the scales were reversed. Higher scores indicate a higher propensity to retain (7) the money instead of gambling (1) and to save it (7) instead of spending it (1).

II.7.4 Discussion

Study 3 again shows that participants were more likely to retain hard-earned money than easy money. That is, participants were significantly more likely to retain money compared to gambling with it and they were also more likely to save hard-earned money than to spend it. In addition, participants indicated higher feelings of psychological ownership for hard-earned money, and they believed they deserved more compensation after completing a difficult task even though hourly wages did not differ between conditions. These findings highlight again that hard work leads to a discrepancy between expected and actual compensation.

Interestingly, unlike previous studies, higher feelings of psychological ownership mediated the effect of difficulty on retention propensity. However, psychological ownership only explained a greater retention propensity when thinking about gambling, not when thinking about simply spending the money. So, participants choosing to retain their hard-earned money rather than spend it were not doing so out of attachment to the money, but rather something else. I maintain that the increased subjective valuation of the hard-earned money seen in the preceding studies is a parsimonious explanation for retention in both the gambling and the spending scenarios.

However, it is likely that retention is multiply determined. Psychological ownership may also lead to retention of hard-earned money when ownership is threatened. Gambling would be just such a case (all could be lost). Spending is less of a clear-cut case—something is lost, but something is gained. Presumably, in a clear-cut gain situation, psychological ownership would not be threatened, so psychological ownership would not explain propensity to retain hard-earned money. Additionally, remembering real hard-earned money might have increased the accuracy of psychological ownership estimates. A clear-cut gain scenario such as a riskless investment would be a case where, if workers felt that hard-earned money was more valuable

than easy money, retention should *decrease* for hard-earned money in favor of increasing returns. The next study explores this by comparing scenarios where participants can lose money in a gamble and a scenario where participants are guaranteed to receive extra payment if they are willing to wait.

II.8 Study 4: Effort Impacts Prospective Gains and Losses Differently

II.8.1 Introduction

In study 3, participants showed a greater propensity to retain hard-earned money (instead of gambling) and save it (instead of spending it). In this study, participants will encounter a hypothetical gamble with specific odds and payouts (receive more/lose all with a 50% chance). Additionally, in the previous study participants could have interpreted “saving” in two ways: saving could mean one invests the money in a safe manner or one saves it by keeping the money in a wallet/bank account. If individuals are simply more likely to retain hard-earned money when asked to make a risky investment (such as a gamble) or a safe investment (such as a savings account), they might avoid *parting* with hard-earned money at all. However, if individuals actually see hard-earned money as more valuable than easy money, they would be *less* likely to gamble it (the loss would be more painful than for easy money) and *more* likely to make a safe investment because a larger investment produces larger returns (the gain would be more pleasurable than for easy money, though modestly so given diminishing sensitivity in the domain of gains). This pattern comes from the magnified valuation account of hard-earned money. A greater subjective value of hard-earned money causes participants to feel a greater (anticipated) pain of losing the money when considering gambling, reducing their propensity to engage in the gamble. However, the increases valuation of hard-earned money as shown in study 1 and 2, also increases the expected return on investment, thus potentially increasing individuals’ propensity

to invest the money. To clearly distinguish between risky gambles and safe investments, the investment choice is framed as a “larger-later” choice as in temporal discounting paradigms (e.g., Odum, 2011), resembling a riskless choice between a guaranteed reward now and a larger guaranteed reward in the future.

This study also explores the alternative psychological processes that may explain why hard-earned money is treated differently than easy money. Study 1 and 2 revealed that virtuousness does not cause participants to value hard-earned money more, but it is possible participants had other positive and negative feelings that impact subsequent decision making. For example, Levav and McGraw (2009) find that money with a positive affective tag is more frequently spent on hedonic options while money with a negative affective tag is spent more frequently on utilitarian options. The lower propensity to gamble with hard-earned money in study 3 could also be explained by a negative affective tag. Study 4 allows me to test this account by measuring participants’ feelings about the money. This measure also allows me to test two additional alternative accounts. First, this study tests whether contrast effects could explain a magnified valuation of hard-earned money. Contrast effects would suggest that participants report greater positive feelings after engaging in difficult tasks because the effort is associated with negative emotions. Second, the study tests if participants engage in effort justification to reduce the cognitive dissonance between effort and compensation, hard-earned money should be associated with more positive feelings. As in the previous studies, I will also measure whether greater attachment (psychological ownership) can explain retention rather than gambling or investing. My prediction is that, while it helps explain retention rather than gambling, it plays no role in retention rather than investing because ownership is not at risk.

A tertiary aim of this study is to ensure the robustness of the phenomenon by using both cognitively and physically difficult tasks. In line with previous research suggesting that perhaps effort can increase value through physical effort like a 5-mile race (e.g., Olivola & Shafir, 2013) and cognitive effort like taking a quiz (e.g., Loewenstein & Issacharoff, 1994), the scenarios in studies 1-3 found hard-earned money is valued more for cognitively difficult tasks (study 2, study 3) and physically difficult tasks (study 1, study 3).

II.8.2 Method

Participants. 388 undergraduate students (44% female, $M_{\text{age}} = 20.39$) participated in this study as part of a course requirement.

Design. This study followed a mixed 2 (*between*, difficulty: easy vs. hard) x 2 (*within*, task type: cognitive vs. physical). The order of the within-subjects factor was counterbalanced between subjects. Order effects did not impact the focal predictor difficulty on any of the dependent variables in question and will not be discussed further.

Participants were asked to imagine doing work after reading two different scenarios. One scenario described an office job that was cognitive, while the other scenario described yard work that was physical. For half of participants, the work outlined in the scenarios was described as difficult, requiring a high degree of effort and for the other half of participants, the work outlined in the scenarios was described as easy (please refer to appendix B5 for the full scenarios). In both scenarios and regardless of difficulty condition, participants were told that the task lasted 3 hours with a compensation of \$50 for the yard work, and \$60 for the office work.

After each scenario, participants answered several questions. The focal dependent measures were participants' willingness to use the money for a riskless investment and a risky gamble. For the riskless investment, participants made a binary hypothetical choice, choosing to

invest the \$50 earned from the yard work (\$60 from office work) to receive \$70 (\$85 in office condition) six weeks later or to imagine receiving and retaining the \$50 (\$60) immediately after the work is finished. For the risky investment, participants also made a binary hypothetical choice, choosing to either gamble with the money or retain it. In this imaginary gamble, participants imagined that after betting the \$50 (\$60) there was a 50% chance of receiving \$140 (\$170) and a 50% of losing the entire \$50 (\$60). These values were selected to ensure that the expected values of the gamble and the investment were identical. Additionally, participants indicated their feelings of psychological ownership of the money (three seven-point items as in studies 2 and 3), and how positive they felt about earning this money (1 = bad, 7 = good).

II.8.3 Results

Retention versus investment and gambling. To analyze the impact of difficulty, task type, and order on the retention propensity, I ran a mixed logistic regression model controlling for within-participant observations with a random intercept. Both dependent measures, investment and gambling, were collapsed into a single retention variable and I control for “investment” by adding a binary predictor to the model, indicating whether the investment is risky (gamble) or not (safe investment). The model also includes a main effect for difficulty condition and task type, as well as their interaction term. All variables are effect coded and odds ratios are depicted in table 3.

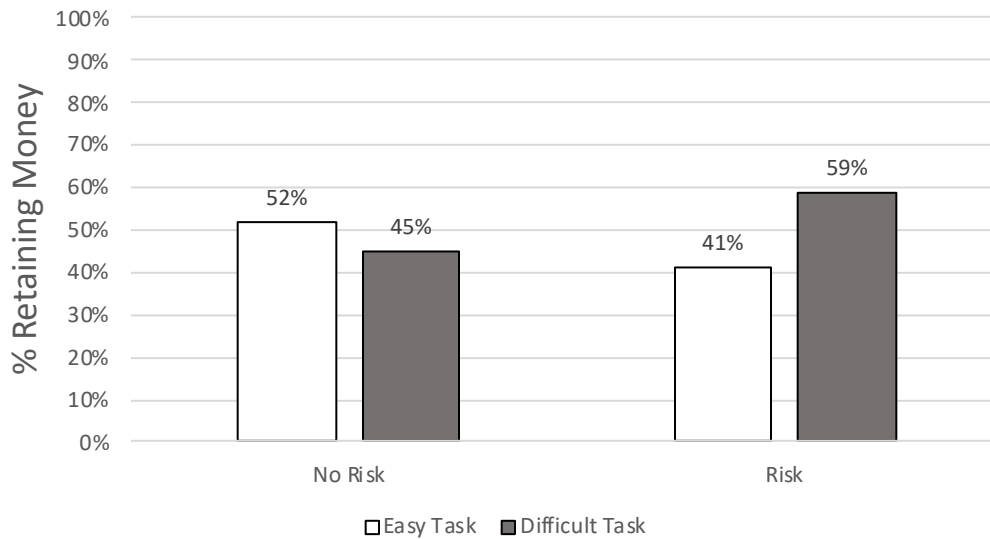
Table 3: Retention of hard-earned money

	Money Retention (0 = No, 1 = Yes)
Difficulty	1.259*
Reference Category = Easy	(2.25)
Investment	1.076
Reference Category = No Risk	(0.71)
Difficulty X Investment	2.606*** (4.67)
Task Type	1.171
Reference Category = Cognitive	(1.54)
Constant	0.983 (0.15)

Notes: Depicted are odds ratios; z statistics in parentheses. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

When money was hard-earned, it marginally increased participants propensity to retain it. 47% retained the money in the easy condition compared to 52% retaining the money in the hard condition. There was no significant main effect on retention propensity based on whether the investment was safe or risky. However, this effect was qualified by a significant interaction between difficulty and investment type (see figure 6). If the investment was safe, money earned from an easy task was retained by 52% of participants compared to 45% of participants retaining hard-earned money ($OR = .78, z = 1.72, p = .085$). However, when the investment was risky, the pattern was reversed: following easy task descriptions, only 41% of participants chose to retain the money compared to 59% of participants retaining the money after reading scenarios describing difficult tasks ($OR = 2.03, z = 4.86, p < .001$). There was no significant difference between the cognitively and physically challenging scenario.

Figure 6: Propensity to retain money when investing and gambling



Notes. $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Psychological ownership and positive affect. As with the binary outcome variables in the previous analysis, I am using a linear mixed model to account for within-participant observations with a random intercept. The dependent variables, psychological ownership, and positive feelings about the money, are predicted by difficulty condition, scenario type, and their interaction term. All variables are effect coded; Beta coefficients and z-values are depicted in table 4. Psychological ownership formed a highly reliable measure in both the cognitive ($\alpha = .77$) and physical work ($\alpha = .79$) scenarios and were therefore averaged into two indices.

Table 4: Dependent measures study 4

	Psychological Ownership	Positive Affect
Difficulty Reference Category = Easy	0.796*** (8.29)	-0.737*** (5.56)
Task Type Reference Category = Cognitive	0.171*** (4.13)	-0.041 (0.58)
Difficulty X Task Type	0.021 (0.98)	-0.155 (1.08)
Constant	5.185*** (59.56)	5.845*** (47.13)

Notes. *z* statistics in parentheses. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

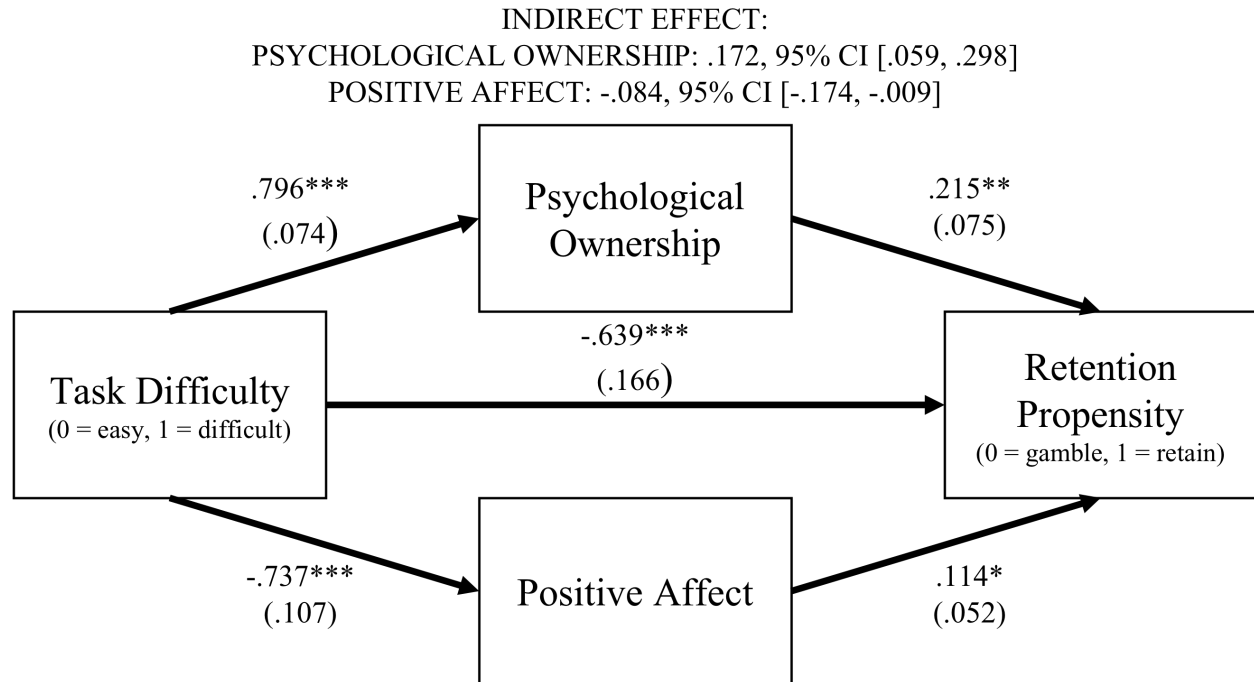
As in the previous studies, participants reported higher feelings of psychological ownership after imagining engaging in difficult work ($M_{\text{difficult}} = 6.08$) than easy work ($M_{\text{easy}} = 5.28$). Participants also reported higher feelings of psychological ownership for money earned through physical effort ($M_{\text{physical task}} = 5.77$) than through cognitive effort ($M_{\text{cognitive task}} = 5.59$). Participants felt more negatively about money earned through difficult work ($M_{\text{difficult}} = 5.15$) than through easy work ($M_{\text{easy}} = 5.89$).

Exploratory process analysis. A parallel mediation model (Model 4; Hayes, 2017) with 10,000 bootstrap intervals was used to analyze the relationship between difficulty, psychological ownership, positive feelings about the money, and the dependent binary measures of retention versus investment and gambling propensities. The data was collapsed across the cognitive and physical task conditions. Difficulty was the main predictor, and feelings about the money and psychological ownership were the two parallel mediators.

For retention versus investment propensity, neither positive feelings (.056; 95% CI [- .019, .133]) nor psychological ownership (.025; 95% CI [-.090, .139]) mediated the effect of task

difficulty on investment propensity. For retention versus gambling propensity, the mediation model revealed a significant indirect effect of task difficulty via positive feelings about the money (-.084; 95% CI [-.174, -.009]) and psychological ownership (.172; 95% CI [.059, .298]) (see figure 7).

Figure 7: Parallel mediation model



Notes. Standard errors in parentheses. ⁺ $p < .1$, * $p < .05$, ** $p < .01$, *** $p < .001$

This model replicates the findings of study 3. Task difficulty increases psychological ownership of the money and higher psychological ownership increases the propensity to retain the money, but only for a risky gamble. Greater positive feelings about the money also increase the propensity to retain the money, but people feel less positive about money from hard work.

II.8.4 Discussion

Study 4 pitted the domain of gains against the domain of losses to determine if behavior followed the pattern an exaggerated value function would predict. The data reveals that participants' propensity to gamble was significantly reduced when money was earned through a

difficult task as compared to an easy task, consistent with increased loss aversion. When making a safe investment, participants were marginally *more* likely to invest hard-earned money, also consistent with higher valuation. It is important to note that prospect theory predicts larger effects for the same amount of money in losses than for gains (hence the asymmetry between the two quadrants of the value function). In this study, I held the expected value constant across gains and losses. Because the value function flattens more quickly for gained values than lost values (losses have an impact about two times as large as gains), it is possible that a difference in valuation from hard-earned to easy money is just harder to detect in gains. Importantly, however, the pattern observed for losses reverses for gains in this study, in line with my account.

The increased propensity to invest hard-earned money is also at odds with previous research showing that individuals are less likely to invest money/keep their money invested when they have greater psychological ownership (Peck & Shu, 2018). Thus, one possibility is that greater feelings of psychological ownership dampened the impact of greater subjective value leading to the marginal result. Indeed, participants reported greater feelings of psychological ownership for hard-earned money. However, this account is not supported by the mediation analysis: psychological ownership only predicted retention behavior when making a gambling decision, not an investment decision. Taken together, these findings suggest that psychological ownership can partially account for individuals' aversion to losing hard-earned money, but it cannot explain a higher propensity of investing hard-earned money. Together these results suggest that hard-earned money impacts behavioral consequences more if losses are involved because of two drivers: participants are more loss averse because of the steepness of the value function and because psychological ownership is threatened.

Earning money from a difficult task decreased participants' positive feelings about the money. This finding rules out a contrast effect account that would cause individuals to merely associate rewards with positive feelings after engaging in a task associated with negative feelings. Here, I find the opposite. These results also make it unlikely that effort justification can explain the effects. Again, if participants were to justify the effort of a hard task in order to reduce cognitive dissonance, I would expect that hard-earned money is associated with greater positive feelings, not lower positive feelings. Lastly, these results are not in line with Levav and McGraw's (2009) affective tagging account which suggests that participants with greater positive feelings about money tend to spend it on more hedonic options (if we assume that gambling is hedonic). Instead, I observe that greater positive feelings are associated with higher retention of hard-earned money.

There is also an interesting relationship between psychological ownership and positive feelings. In line with previous research (Shu & Peck, 2011), I find a significant positive correlation between psychological ownership and positive feelings ($r = .149, p < .001$). However, task difficulty increases psychological ownership, but it decreases positive feelings about hard-earned money. Overall, these findings show psychological ownership helps explain why there is a higher propensity to retain hard-earned money if there is a significant risk of losing it. These findings also go against the account proposing that individuals are simply generally less likely to part with hard-earned money. Instead, it is more likely that individuals believe that hard-earned money has greater subjective value compared to money from an easy task. Consequently, participants might be *more* likely to make a safe investment because the greater subjective value might lead to the belief that a safe investment also has greater return on investment. This mechanism would also account for a lower propensity to gamble with hard-earned money: if

individuals believe that hard-earned money has greater subjective value, they should be more loss averse.

II.9 Discussion

Four studies lend support the prediction that individuals value hard-earned money more than money obtained from easy work or a windfall. Studies 1 and 2 support the basic prediction that individuals value hard-earned money more and behave as if it has a greater exchange rate. I hypothesized that the valuation of hard-earned money will be magnified if the discrepancy between expected and actual pay is greater. This hypothesis is supported by the results in study 1: when facing a difficult task, individuals expected more pay and assigned a greater exchange rate to the compensation. This magnified valuation has behavioral consequences. Individuals were more likely to retain hard-earned money because losing something of more value would be more painful. Studies 3 and 4 reveal a higher retention propensity of hard-earned money if asked to use it for gambling. However, individuals are not always less likely to part with hard-earned money. While they showed an aversion to using hard-earned money as payment when other forms of payment are available (exploratory study), they were (marginally) more likely to invest it safely for greater returns in the future (study 4). A higher propensity of investing hard-earned money safely is in line with the magnified valuation account. Because effort impacts the value function by a constant factor, it also increases the amount one receives in returns from an investment.

My studies rule out several alternative explanations for this effect. In several studies, I find that participants reported greater psychological ownership for hard-earned money. However, I do not find support that psychological ownership causes greater subjective value (study 2). While psychological ownership predicts a greater propensity to retain hard-earned money instead

of gambling, it did not impact participants' propensity to spend (exploratory study, study 3) and to invest (study 4). Given the mixed results, especially in the domain of gains, I suspect that the proposed account of assigning a greater exchange rate to hard-earned money is distinct from attachment to hard-earned money.

Additionally, I find that while effort impacts several psychological constructs, those constructs do not necessarily impact valuation. Even though individuals believe that hard-earned money is more virtuous, virtuousness was not associated with greater valuation of hard-earned money (study 1 and 2). Contrast effects and effort justification would suggest that a hard task is associated with negative feelings, resulting in more positive feelings about the reward for this task. Study 4 revealed the opposite pattern: individuals reported more negative feelings about hard-earned money. Lastly, affective tagging predicts that positively tagged money is spent on more hedonic options and negatively tagged money is spent on more utilitarian options. Findings from study 4 do not support this account, showing that greater positive feelings are associated with greater retention propensity. However, effort clearly impacts a multitude of psychological constructs and further research is required to distinguish the proposed account of a greater psychological exchange rate of hard-earned money from other accounts.

The primary goal of future studies is to find supporting evidence for the basic hypothesis that hard-earned money is associated with a greater exchange rate because individuals project their desired pay onto the actual pay. A potential design could manipulate effort in a more continuous way by manipulating the performance required for a reward. Investment decisions could be manipulated more continuously by eliciting participants' discount rates in a temporal discounting paradigm. Gambling paradigms could also be operationalized in a more continuous manner by manipulating odds and payouts. Incentive compatible designs can help to increase the

generalizability of current findings. Importantly, the monetary amount of the reward needs to be kept constant across conditions because otherwise a magnified valuation based on effort is confounded with the intrinsic curvature of the value function which suggests higher subjective valuation of greater gains. Thus, performance could be manipulated by changing the working hours, the number of tasks required, or the error-likelihood of a task (Dunn et al., 2017). Increasing the required performance to gain a reward should result in greater discrepancies between actual and expected payments.

More studies are required to rule out alternative explanations. While the current studies offer robust evidence against contrast effects and effort justification, other constructs might still contribute to the behavioral consequences of valuing hard-earned money more (e.g., affect, psychological ownership, and virtuousness). While this research proposed that desired compensation increases the subjective value of money, an alternative explanation could be that replacement costs increase the subjective value of the money. That is, after spending money from a hard task, it requires more effort to replace the money compared to spending money from an easy task. Individuals might erroneously believe that these replacement costs are a part of the money's subjective value.

Additionally, an interesting direction would be to test what happens when the actual payment exceeds the perceived appropriate payment. Money from a windfall is (by definition) unexpected and thus it should always exceed the "expected" compensation. For windfalls, the proposed altered psychological exchange rate could still hold but in the opposite direction: because there is no essential value attached to a windfall through effort, individuals might value it less. The proposed mechanism might offer a theoretical framework that could explain why money from hard work is valued more compared to money from easy work and why windfalls

are valued less. On the other hand, other mechanisms than effort could lead to a discrepancy between actual and desired compensation. For example, sellers tend to expect greater compensation for goods than buyers (Kahneman et al., 1990). It is possible that the perceived value of income from sales is greater if seller receive lower compensation compared to their desired compensation. Future studies could explore these extensions of the research at hand.

Future studies could also aim to determine whether the essence imbued through effort is associative or physical (Fedotova & Rozin, 2018; Nemeroff & Rozin, 1994). While the essence studied in chapter 1 is of physical nature (i.e., the essence has become like a physical part of the object), it is more likely that the essence imbued into money by great effort is associative. In chapter 1, participants were asked to make judgments about specific real or hypothetical objects. In chapter 2, study 1 and study 4 did not specify the medium of payment. In study 2 the medium was specified to be a check or a piece of gold and in study 3, the medium of payment was self-reported by participants. Given that the magnified valuation of hard-earned money holds for these different mediums, it is more likely that the essence is associative rather than physical. However, a study should specifically manipulate the payment medium to provide empirical evidence for this prediction.

General Discussion

Two essays explore critical gaps in the understanding of essence perception (Huang et al., 2017; Nemeroff & Rozin, 2018; Morales et al., 2018). Overall, my dissertation contributes to the growing body of work on how essentialist thinking impacts consumer behavior.

The first essay focuses on the permanence of essence, finding that just like physical product attributes, essence can deteriorate over time. Because product essence tends to be positive, consumers seek products that carry more essence. My studies reveal a novel mechanism of how product packaging contributes to the value of a product: product packaging does not only protect the physical properties of products but also their essential ones. The psychological benefits of packaging might make it difficult to remove from the marketplace, but more sustainable packaging options (e.g., reusable packaging) could provide consumers with the same benefits as single-use packaging and help reduce the amount of household waste.

Moving forward there are some important research questions in this domain that require further investigation. For example, recently, an art collective created 999 identical copies of an Andy Warhol print. The original print was hidden among the 999 fakes but not even the creators or art experts could identify the original (McGreevy, 2021). The essence of the original print was diluted across the other 999 prints. In a similar fashion, a blockchain firm recently burned an original Banksy painting valued at \$95,000 in order to create a non-fungible token (NFT; i.e., a unique digital copy based on blockchain technology) of the picture (Criddle, 2021). In this case, the essence of the original was destroyed and whether a NFT can represent the true essence of the original remains to be seen. These are extreme example of course but consumers perceive digital products differently than physical products (Atasoy &

Morewedge, 2018). Essentialism offers a theoretical framework to understand the true identity of products and how it can be preserved in an increasingly digital world.

The second essay focuses on the essential value of money. Money should be fungible but, in line with previous research, I find that its value is impacted by essentialist thinking as well. My research shows that people value hard-earned money more. This magnified valuation is based on a greater psychological exchange rate that individuals use for hard-earned money. If compensation is lower than what workers expect given their effort, they make up for this difference by assigning a greater psychological value to the money. Effort leads people to expect greater compensation, thus exacerbating the difference between actual and expected pay. Current societal developments highlight the importance of these findings. The rise of the gig economy allows workers to clearly identify how they earned their money. Thus, the financial decision making of more workers than ever before might be impacted by the findings of this current research. In addition, the global COVID-19 pandemic created harder work environments for many essential workers. Parallel to the COVID-19 pandemic, an unprecedented number of workers quit their jobs as part of the “Great Resignation”, many of them citing that they feel undervalued (Corrigan, 2022). The current and future research aims to contribute to our understanding of these phenomena.

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APPENDICES

APPENDIX A – Appendix to Chapter I

Appendix A1: Chapter I, study 1a

Figure A1: Pictures of baseball used in study 1a.



Notes. Between subject conditions: in packaging (left), out of packaging (right).

Measures

Change

- Would you say the [AGE⁷] old baseball shown above is identical to the version of itself that was just manufactured? (1 = “The [AGE] old baseball is exactly identical to the baseball that just left the factory”, 9 = “The [AGE] old baseball is very different from the baseball that just left the factory”)

Essence Loss

- During the [AGE] in storage, the identity of the baseball was changed because some part of the baseball was irreversibly lost. (1 = “Strongly Disagree”, 9 = “Strongly Agree”)

Contamination

During the [AGE] in storage, the identity of the baseball was changed because it was irreversibly contaminated by an outside source. (1 = “Strongly Disagree”, 9 = “Strongly Agree”)

⁷ [AGE] is replaced with each level of the within subject factor age. The levels are 1 day, 1 week, 1 month, 1 year, 10 year.

Appendix A2: Chapter I, study 1b

Figure A2: Pictures of vase used in study 1b



Notes. In packaging (left), out of packaging (right).

Measures

Category Essence (adapted from Newman and Dhar (2011))

Imagine that somebody asks you to compare these two vases to the blueprint of the vase. That is, which one of the vases is more similar to an ideal or perfect version of a vase from this particular product line? Right before comparing the two vases to the ideal version of the vase you remove the packaging. The packaging itself is not part of this comparison.

(all items: 1 = Better represented by the vase that was packaged, 5 = There is no difference between the two vases, 9 = Better represented by the vase that was not packaged)

- The embodiment of this product line is...
- The essential features of this product line are...
- The special quality or essence of this particular product line is...

Weight

If you put the two vases on a very sensitive scale, how would the weight differ?

Please ignore the weight of the packaging and any dust, dirt, etc. in your estimates that could have accumulated on the product. It's only about the vases.

(1 = The vase that was packaged is heavier, 5 = Both vases weigh exactly the same, 9 = The vase that was not packaged is heavier)

Preference

If you were going to purchase one of the vases, which one would you prefer? The vase that was packaged does not come with packaging. The choice is between a vase that was kept in packaging and a vase that was not kept in packaging.

(1 = I would prefer to purchase the vase that was packaged, 5 = I feel completely indifferent about choosing either vase, 9 = I would prefer to purchase the vase that was not packaged)

Exploratory Measure

Discreteness

(adapted from Bastian and Haslam 2005, all items 1 = Strongly disagree, 7 = Strongly agree)

- The kind of object something is, is clearly defined; it either is a certain kind of object or it is not
- An object can be used in ways that seem ambiguous, but the central aspects of its purpose are clear-cut
- An object's basic qualities exist in varying degrees, and are never easily categorized (reversed)
- All things are either a certain type of object or they are not
- An object's basic purpose is never easily defined (reversed)
- An object either has a certain attribute or it does not
- No matter what qualities an object has, those qualities are always indefinite and difficult to define (reversed)
- An object can have many attributes and it is never completely defined by any particular one of them (reversed)

Appendix A3: Chapter I, study 2a

Figure A3: Product pictures used in study 2a



Notes. Top to bottom: Baseball, Rubik's Cube, Mug). Between-subjects conditions: in packaging (right), out of packaging (left).

Measures

Weight

Compared to an average [OBJECT NAME], how much do you think the [OBJECT NAME] and all packaging depicted above weighs?

Please indicate your answer on the scale below ranging from (1) weighs much less than the average [OBJECT NAME] and packaging, (4) weighs as much as the average [OBJECT NAME] and packaging, (7) weighs much more than the average [OBJECT NAME] and packaging.

Additional Analyses

Table A1 provides an overview of pairwise object comparisons from the mixed model in study 2a. Table A2 provides an overview of the differences in perceived weight between the object in packaging and next to packaging across the three different products.

Table A1: Pairwise object comparisons

Comparison	Baseball	Rubik's Cube	Mug	<i>F</i> -value	<i>p</i> -value
Baseball vs. Rubik's Cube	4.32	4.07		26.965	< .000
Baseball vs. Mug	4.32		4.08	26.120	< .000
Rubik's Cube vs. Baseball		4.07	4.08	0.042	.826

Table A2: Interactions

Comparison	Δ in - out Baseball	Δ in - out Rubik's Cube	Δ in - out Mug	<i>F</i> -value	<i>p</i> -value
Baseball vs. Rubik's Cube	.35	.37		0.028	.862
Baseball vs. Mug	.35		.43	0.663	.416
Rubik's Cube vs. Baseball		.37	.43	0.451	.502

Mixed Model Replication of Study 2a

I ran a mixed model with the perceived total weight of each object and packaging as the dependent variable and the object variable, the variable, and their interaction term as predictors to replicate the repeated ANOVA from study 2a. A random intercept on the participant level controls for repeated observations. Table A3 depicts simple follow-up contrasts for the predictors.

Table A3: Linear mixed model replication of study 2a

Predictor	Test Statistic and <i>p</i> -value
Object	$\chi^2(2) = 36.80, p < .001$
Packaging	$\chi^2(1) = 28.47, p < .001$
Object X Packaging	$\chi^2(2) = 0.74, p = .689$

Appendix A4: Chapter I, study 2b

Figure A4: Baseball and packaging used in study 2b



Notes. Participants received an unmarked baseball in a transparent display case and were asked to estimate its weight.

Measures

Weight

Weight in grams was the focal dependent measure of this study. After participants left the lab, the lab staff measured the weight of the bottle from measurement 1 and measurement 2 using a digital kitchen scale and rounding to the next gram.

A Qualtrics questionnaire was used to instruct people on how to estimate the weight of the baseball and to merge the data from measurement 1 and measurement 2 by using a unique participant ID.

Additional Analyses

Study 2b posttest

197 participants (40% female, $M_{\text{age}} = 38.76$, $SD_{\text{age}} = 12.27$) were recruited from MTurk. This study followed a one-factor design (*within-subjects*, 2 measurements). Participants were asked to estimate the weight of an object of their choosing – but heavier as a penny and lighter as a half-gallon container of milk – at two points and participate in an unrelated task between these measurements. Weight estimates were given on an unmarked slider, anchored between the weight of a penny and the weight of a half-gallon container of milk. To test for a weight increase

between measurements, I calculated the relative difference between the two weight estimates (estimate 2/estimate 1 x 100) and ran a simple t-test to test whether the mean relative increase significantly exceeds zero. A one-sided simple t-test revealed a significant relative increase between measurements ($M_{\text{increase}} = 2.7\%$, $t(196) = .03$). To test the robustness of these results, I excluded participants that deviated more than two standard deviations from the mean. Results of the simple t-test are similar to the previous analysis, revealing a significant relative increase between measurements ($M_{\text{increase}} = 2.4\%$, $t(185) = .02$). Robustness of these results is further supported by a one-sided Wilcoxon matched-pairs signed-rank test on the raw estimates, revealing that significantly ($p = .03$) more participants increased ($n = 105$).

Appendix A5: Chapter I, study 3

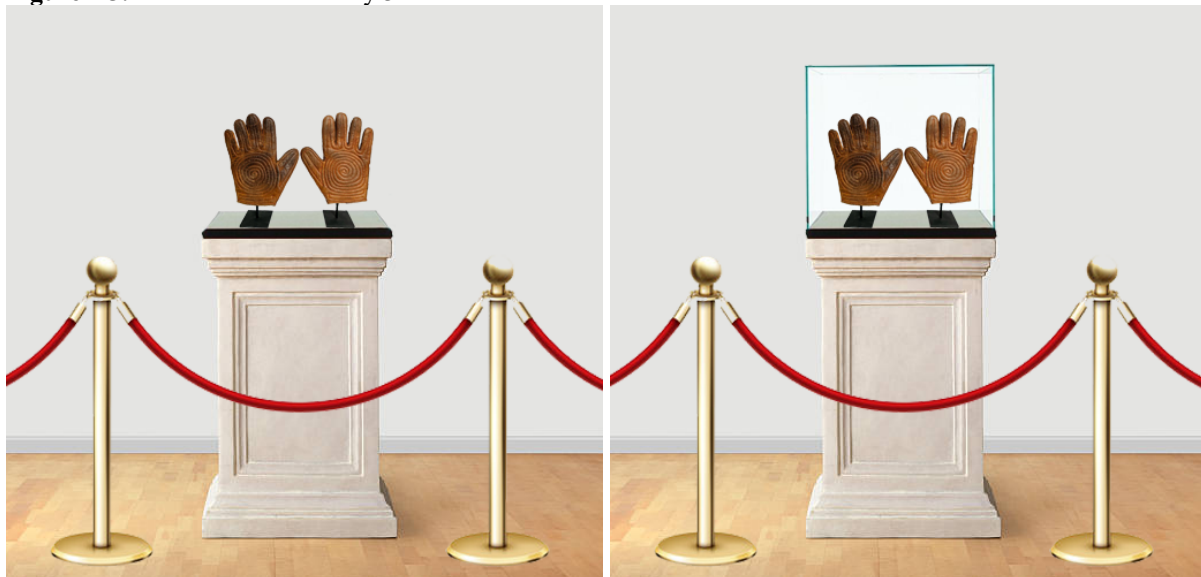
Valence Manipulation

Negative: In the space below please provide the name of a DECEASED person, whom you consider to be evil, or to personify evil; not someone you know personally, but a villain. This could be a mass murderer, or a fanatical leader—someone that you have strong negative feelings about. Please provide the full name only, no additional information. Please do not use abbreviations.

Positive: In the space below please provide the name of your favorite DECEASED celebrity or public figure. This could be a movie star, a musician, a professional athlete, a politician, etc. This should be someone whom you like very much and admire and would be excited to meet personally. Please provide the full name only, no additional information. Please do not use abbreviations.

Storage Manipulation

Figure A5: Products used in study 3



Notes. Open storage (left) and sealed storage (right).

Sealed: Please imagine that a pair of gloves that was owned by [NAME] is kept in a museum. These were [NAME]'s favorite gloves. Ever since the death of [NAME] these gloves have been kept in a sealed glass box on a pedestal behind a velvet rope.

Open: Please imagine that a pair of gloves that was owned by [NAME] is kept in a museum. These were [NAME]'s favorite gloves. Ever since the death of [NAME] these gloves have been kept on an open pedestal behind a velvet rope.

Measures

Valence

How much would you want to give [NAME] a hug? (1 = “Not at all”, 9 = “Very much”)

Personal Value

Adapted from Laurent & Kapferer (1985), all items 1 = “Not at all”, 9 = “Very much”

- I would really enjoy being given these gloves
- Buying these gloves would be like giving myself a present
- To me, it would be quite a pleasure to own these gloves

Essence Loss

After being stored [in a sealed box on a pedestal][on an open pedestal] since the death of [NAME], these gloves no longer contain the true essence that they originally contained. (1 = “Strongly disagree”, 9 = “Strongly agree”)

Full Sample Replication

Table A4 depicts the means for perceived essence loss by packaging, valence, and packaging X valence without exclusions. Table A5 depicts the ANOVA for perceived essence loss predicted by packaging, valence, and packaging X valence without exclusions.

Table A4: Means perceived essence loss for full sample (n = 840)

	Open	Sealed	
Bad	3.82	3.09	3.45
Good	3.70	3.42	3.55
	3.76	3.25	

Table A5: ANOVA perceived essence loss for full sample (n = 840)

Packaging	$F(1,839) = 10.75, p = .001$
Valence	$F(1,839) = 0.41, p = .520$
Packaging X Valence	$F(1,839) = 2.12, p = .146$

Table A6 depicts the means for personal value by packaging, valence, and packaging X valence without exclusions. Table A7 depicts the ANOVA for personal value predicted by packaging, valence, and packaging X valence without exclusions.

Table A6: Means personal value for full sample (n = 840)

	Open	Sealed	
Bad	1.51	1.44	1.47
Good	5.59	6.03	5.81
	3.54	3.74	

Table A7: ANOVA personal value for full sample (n = 840)

Packaging	$F(1,839) = 1.74, p = .188$
Valence	$F(1,839) = 949.50, p < .001$
Packaging X Valence	$F(1,839) = 3.28, p = .070$

Table A8 depicts the replication of the mediated moderation model (Hayes 2017, Model 15, 10,000 bootstrap intervals, 95% CI) from study 3 with the full sample.

Table A8: Mediated moderation results for full sample (n = 840)

Outcome: Perceived Essence Loss			
	Coefficient	95% CI	<i>p</i> -value
Packaging (0 = open, 1 = sealed)	-.507	-.811, -.203	.001
Outcome: Personal Value			
Packaging	-.387	-1.258, .484	.383
Essence	.385	.191, .578	<.001
Valence (0 = negative, 1 = positive)	4.785	3.777, 5.793	<.001
Packaging X Valence	.386	-.163, .934	.168
Perceived Essence Loss X Valence	-.292	-.414, -.170	<.001
Conditional direct effects			
Negative Valence	-.002	-.392, .389	.994
Positive Valence	.384	-.002, .770	.051
Conditional indirect effects			
Negative Valence	-.047	-.096, -.012	N/A
Positive Valence	.101	.029, .202	N/A

APPENDIX B – Appendix to Chapter II

Appendix B1: Chapter II, exploratory study

Introduction

The exploratory study explores whether individuals are more likely to retain hard-earned money and easy money. This study also tests whether psychological ownership is greater for hard-earned money and if it can explain a potential effort-retention relationship. Additionally, the exploratory study tests a windfall condition where participants received the \$10 without effort. This condition allows me to test whether money earned from an easy task is perceived as a windfall that is spent more readily (Arkes et al., 1994). If money from an easy task is perceived like a windfall, there should be no difference between the easy and no effort conditions.

Method

Participants. 1,508 Prolific panelists participated in this study (50% female, $M_{\text{age}} = 35.44$).

Design. This study follows a one-factor design with three between subject levels (money: earned from hard task vs. earned from easy task vs. windfall). Participants were told to imagine going shopping at a mall. In two conditions, participants imagined that they were approached by a researcher to participate in a 20-minute study in exchange for \$10. Similar to study 1, this study was described as either easy or hard. In the windfall condition, participants were told to imagine that they found a \$10 bill on the ground with nobody around to return it to. The focal dependent measure was whether participants would retain the \$10 bill that they earned/found. In

one scenario, I told participants that they made a purchase of exactly \$10 and could pay with either the \$10 they earned/found or two \$5 bills that were sitting in their wallet for some time. The other scenario was identical, except that the other payment option was a credit card instead of two \$5 bills. Psychological ownership of the \$10 bill was collected on a three-item, seven-point scale adapted from Shu and Peck (2011) that was averaged into a single psychological ownership index measure ($\alpha = .81$). Additionally, I collected perceived difficulty as a manipulation check (1 = “I did not have to work at all to receive the \$10 bill”, 7 = “I had to work very hard to receive the \$10 bill”).

Results

Manipulation check. A one-way ANOVA revealed significant differences in the perceived difficulty across the three experimental conditions ($F(2,1500) = 6329.90, p < .001; \eta_p^2 = .894$). Simple contrasts reveal that the perceived difficulty was significantly greater ($p < .001$) in the condition where the task was described as hard ($M_{\text{difficult}} = 8.52$) compared to a task framed as easy ($M_{\text{easy}} = 2.09$) or when money was found ($M_{\text{windfall}} = 1.28$). The mean perceived difficulty in the easy task condition was also significantly greater ($p < .001$) than in the windfall condition. The difficulty manipulation was successful.

Retention of \$10. Two one-way ANOVAs using the three experimental conditions as the predictor variable were used to analyze participants’ propensity to retain the \$10 bill. The first ANOVA exploring participants retention propensity of the \$10 bill compared to two \$5 bills did not reveal a significant effect of difficulty manipulation ($F(2,1500) = 1.47, p = .230$).

Directionally, however, the retention propensity was greatest when the task was described as difficult ($M_{\text{difficult}} = 3.96$) followed by the easy ($M_{\text{easy}} = 3.72$) and windfall ($M_{\text{windfall}} = 3.69$) conditions. The second ANOVA, exploring retention propensity of the \$10 bill compared to a

credit card, revealed a significant impact of difficulty manipulation ($F(2,1500) = 7.78, p < .001$). Simple contrasts revealed that retention propensity was significantly greater ($p < .001$) if the task was framed as difficult ($M_{\text{difficult}} = 3.47$) compared to a task framed as easy ($M_{\text{easy}} = 2.81$), but not greater for windfall money ($M_{\text{windfall}} = 3.38, p = .645$). The preference to retain the \$10 bill was also significantly lower ($p = .002$) in the easy condition than the windfall condition.

Psychological ownership. A one-way ANOVA with the psychological ownership index as the dependent measure revealed significant differences across the three experimental conditions ($F(2,1500) = 99.77, p < .001; \eta_p^2 = .117$). Simple contrasts revealed that psychological ownership of the \$10 bill was significantly greater ($p < .001$) in the condition where the task was framed as hard ($M_{\text{hard}} = 5.03$) compared to a task framed as easy ($M_{\text{easy}} = 4.63$) or when money was found ($M_{\text{windfall}} = 3.69$). Psychological ownership was also significantly greater ($p < .001$) in the easy task condition than the windfall condition.

Exploratory process analysis. To test for the mediating impact of psychological ownership on retaining the \$10, I ran a simple mediation model (95% CI; 10,000 bootstrap intervals; model 4; Hayes, 2017) with the retention propensity of the \$10 bill compared to a credit card as the dependent variable, difficulty framing as the predictor, and psychological ownership as the mediator. I do not find a significant indirect effect of difficulty via psychological ownership on retention propensity ($-.039, 95\% \text{ CI } [-.102;.013]$).

In a follow-up analysis, I ran the same mediation model as above but excluded the easy condition to compare the windfall and hard conditions. As expected, the model reveals that earning money through a windfall decreases psychological ownership ($b = -1.339, p < .001$). Interestingly, the model shows that greater psychological ownership *decreases* the propensity to retain the \$10 earned from the hard task ($b = -.270, p < .001$). Overall, the indirect effect of

difficulty framing on retention propensity via psychological ownership was significant (.361, 95% CI [.217;.512]).

Discussion

The exploratory study offers initial evidence that hard-earned money is special. Participants were more likely to retain a \$10 bill compared to spending \$10 from a credit card if a task was framed as hard as compared to easy. However, while directionally consistent, this effect did not replicate when asking participants about their retention propensity of a \$10 bill compared to two \$5 bills. When comparing two \$5 bills that were already owned to a newly acquired \$10 bill, I might have neglected the psychological ownership that participants would feel for these two \$5 bills that had been in their wallet for some time (endowment effect). Because history matters more to physical currency compared to other forms of currency (such as money in a bank account) and ownership length increases attachment, a high degree of psychological ownership for the two \$5 bills could have prevented us from detecting an effect of task difficulty with this measure (Strahilevitz & Loewenstein, 1998; Uhlmann & Zhu, 2013).

The exploratory study also offers interesting insights into the psychological process. First, the study shows that participants are not likely to spend the money that they earned from hard work more readily. One could imagine that workers would like to gratify themselves after working hard, but the results suggest the opposite. While psychological ownership was higher for hard-earned money, it did not mediate the effect of task difficulty on retention propensity of the \$10 bill. Additionally, the results do not show that money from an easy task is perceived as a windfall, suggesting that hard-earned money is indeed special (rather than easy earned money being perceived as windfall).

Appendix B2: Chapter II, study 1

Easy Scenario:

Imagine that you are signed up as a worker on TaskRabbit – an online platform that matches freelance labor with local demand, allowing consumers to find immediate help with everyday tasks.

Your task is to help moving furniture into a new house. It takes 2 (4) hours to finish the task and you take home \$50 (\$100).

The client's house consists of a ground floor and a basement, without the need to carry the furniture up the stairs.

Furniture trolleys, pads, and straps are available. These tools make it fairly easy to move the furniture out of the U-Haul into the house.

The client owns a lot of light and well-protected furniture. Moving the furniture does not require too much care or strength

At the end of the 2 (4) hours, you're still rejuvenated and physically invigorated. You take home \$50 (\$100) from this easy work.

Difficult Scenario:

Imagine that you are signed up as a worker on TaskRabbit – an online platform that matches freelance labor with local demand, allowing consumers to find immediate help with everyday tasks.

Your task is to help moving furniture into a new house. It takes 2 (4) hours to finish the task and you take home \$50 (\$100).

The client's house consists of a ground floor and two upper levels, requiring you to carry the furniture up to two flights of stairs.

No furniture trolleys, pads, and straps are available. Without these tools, it is really difficult to move the furniture out of the U-Haul into the house.

The client owns a lot of heavy but delicate antique furniture. Moving the furniture requires extreme care but also significant strength.

At the end of the 2 (4) hours, you're exhausted and physically spent. You take home \$50 (\$100) from this hard work.

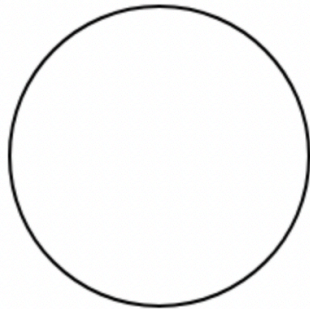
Figure B1: Circle area equivalence measure

Imagine that this small circle represents \$1:



If the circle above represents \$1, how big does a circle need to be to represent the **\$50** from doing **2 hours** of easy work?

Please use the slider below to create a circle that represents the **\$50**:



Note: the text in the screenshot below represents the two hours/\$50 and easy condition. It was adaptive, being different for the four hours/\$100 and difficult condition.

Protestant Work Ethic Scale (CITE, 1 = Strongly disagree, 7 = Strongly agree)

- Most people spend too much time in unprofitable amusements.
- Money acquired easily (e.g. through gambling or speculation) is usually spent unwisely.
- The most difficult college courses usually turn out to be the most rewarding.
- I often feel I would be more successful if I sacrificed certain pleasures.
- Life would have very little meaning if we never had to suffer.
- The credit card is a ticket to careless spending.
- I feel uneasy when there is little work for me to do.
- Anyone who is able and willing to work hard has a good chance of succeeding.
- Hard work offers little guarantee of success.
- The person who can approach an unpleasant task with enthusiasm is the one who gets ahead.
- If one works hard enough they are likely to make a good life for themselves.

Table B1: Study 1, analysis including order effects

	Circle Area Equivalent	Gift Card Equivalent	Subjective Value Index	Expected Income
Difficulty	4.389 ***	10.775 ***	.596***	49.262***
Reference Category = Easy	(4.96)	(9.60)	(9.32)	(19.33)
Duration	16.069 ***	63.750***	.191**	67.423***
Reference Category = 2 hours	(18.16)	(54.80)	(2.99)	(26.44)
Difficulty Order	1.857 (1.10)	-1.537 (0.72)	.093 (1.30)	19.114*** (5.14)
Duration Order	-7.717*** (4.57)	1.336 (0.63)	-.249 (3.48)	5.409 (1.45)
PWE	-.435 (0.47)	-.713 (0.61)	.097* (2.09)	-2.026 (0.93)
Difficulty X Difficulty Order	6.138** (3.47)	3.631 (1.59)	.611*** (4.77)	1.75 (0.34)
Difficulty X Duration Order	1.920 (1.08)	0.673 (0.29)	.009 (0.07)	11.312* (2.21)
Difficulty X PWE	1.420+ (1.66)	-.287 (0.26)	.161** (2.60)	-1.013 (0.41)
Constant	53.824*** (28.83)	66.968*** (28.20)	4.313*** (45.45)	47.251*** (10.58)
N	1,551	826	1,592	1,592

Appendix B3: Chapter II, study 2

Easy Scenario:

Imagine that you are doing a short internship at an Ann Arbor fintech startup. This particular startup is known for giving their employees the option to get paid in dollars or gold.

You are hired to work on one specific project during your internship. You are 100% focused on this project alone and your salary solely depends on this project.

You have a large database at your disposal and it is your task to come up with a financial model to predict future sales. The data is **very simple** and structured like a practice dataset that you encountered in one of your classes. You can use the same methods that were used in class and you can simply check your notes in order to run your models.

The task doesn't require much skill or attention. This task is repetitive and soothing. You feel well-equipped and confident during this task. Without much hassle, you were able to run the models and finish your job.

After **one week** you are done. You worked 40 hours and you earned a **½ ounce of gold [a \$900 paycheck]**.

Difficult Scenario:

Imagine that you are doing a short internship at an Ann Arbor fintech startup. This particular startup is known for giving their employees the option to get paid in dollar or gold.

You are hired to work on one specific project during your internship. You are 100% focused on this project alone and your salary solely depends on this project.

You have a large database at your disposal and it is your task to come up with a financial model to predict future sales. The data is **very simple** and structured like a practice dataset that you encountered in one of your classes. You can use the same methods that were used in class and you can simply check your notes in order to run your models.

The task doesn't require much skill or attention. This task is repetitive and soothing. You feel well-equipped and confident during this task. Without much hassle, you were able to run the models and finish your job.

After **one week** you are done. You worked 40 hours and you earned a **½ ounce of gold [a \$900 paycheck]**.

Psychological Difficulty Scale (adapted from XXX; 1 = Strongly disagree, 7 = Strongly agree):

- I feel like this money [gold] mine.
- I feel a very high degree of personal ownership over this money [gold].
- I have high attachment to this money [gold].

Appendix B4: Chapter II, study 3

Table B2: Random selection of participant responses

Task	Description of feelings about money	Condition
Lawn Maintenance	The money felt well earned and that I should not waste it immediately as I put in time and effort for this task.	Hard
Making graphic designs for sweatshirts	It felt good because it was an easy task that required little effort. The effort that was put it enjoyed so when I made money from it I was pleased.	Easy
Raking leaves in my yard as a younger child	Being younger, I felt really good about earning that money. I had focused in on the task for several hours independently and completed what was asked. Because it was physical and I did a good job, I thought I had earned the money	Easy
internship	I felt like I earned it after putting in the work. It was not enough for how much work I did/	Hard
Tutoring a girl that was in elementary school	Even though the task was easy, I was still making an effort to do it instead of just watching TV or doing any other fun activity, so I was proud of the money I made.	Easy
Starbucks barista	I felt that the money was hard earned and that I had to spend it wisely since I worked so hard for it. I became a lot more stingier in using this money on things I wanted and was a lot more careful as to how I spent my money.	Hard
The challenging task involved me working in retail and constantly running around to find products.	The money I earned was rewarding. Compared to other work that I did in an office, this money did feel harder to earn and more valuable.	Hard
watering plants	I felt like the money came as a bonus. Because I love plants, I enjoyed doing the task and earned some money while doing it.	Easy
Tutoring on non-busy days	I felt good about it. I would literally just sit in a classroom for 2 hours alone and get my own personal work done and get paid for the 2 hours.	Easy
Housecleaning for others	I hate cleaning professionally but as a contracted helper I had to be diligent and pay attention. At the end, receiving the money was a relief and exciting. I did this before having my own money and working a official job myself, so the \$80 felt like a lot. I was glad it was over and didn't want to do it again.	Hard
yard work	I felt ownership over the money I made since it was a challenging task.	Hard
Packaging items	I felt happy that I earned money after working and following instructions. However, I felt that I could be applying my skills into a more professional environment and earn more money.	Easy
Teaching little kids	It was money I earned and well-deserved, but I didn't really pay attention to the amount since I did enjoy the job (so the numbers I entered below are probably not accurate).	Hard
homework	i earned money for good grades, a hard task. i was responsible for getting all A's in school and was awarded money if done so.	Easy
Doing the dishes	I felt excited about earning the money even though I did not have to do that much to earn it.	Easy
teaching in a school	Each day, it was challenging to wake up early in the morning and have the energy to teach kids in a school. However, it was one of my first real jobs and made me feel like an adult. I liked knowing that I was working for my money and earning it. This feeling influences my purchasing habits, because I do not want to waste my hard-earned money.	Hard
cooking, cleaning, babysitting	I felt like the money was hard earned. After every day I worked there and got paid I was so tired but knew that I was making good money.	Hard

Appendix B5: Chapter I, study 4

Office scenario, easy:

Imagine that you are interning at an Ann Arbor tech startup.

You have a pile of receipts in front of you and it is your task to put these expenses into an Excel file. For each receipt, you enter information including the date, vendor, and total dollar amount. You find entering the expenses to be easy and you've worked on similar tasks before.

The task doesn't require much skill or attention. This task is repetitive and soothing. You find yourself daydreaming while you work.

After 3 hours you are done and you earned \$60. You feel relaxed and don't feel like you have worked at all.

Office scenario, hard:

Imagine that you are interning at an Ann Arbor tech startup.

You have a large database at your disposal and it is your task to come up with a financial model to predict future sales. The data is much more complicated than anything you have worked with before, and you frequently have to check coding and statistics websites for help.

The task requires a great amount of skill and your full attention. This task is extremely mentally taxing. You have not blinked once since you started.

After 3 hours you are done and you earned \$60. You feel mentally drained and you have a tension headache.

Yard work scenario, easy:

Imagine that you are doing some gardening for a neighbor to earn some cash. It is a really pleasant day and the yard is covered in shade. It is the perfect temperature to be outside.

Over the course of 3 hours, you have a few tasks:

- First, you pick cherries from a tree. The tree is full of cherries and they are easy to reach without a ladder. It requires little effort to pick them.
- After that, you pull weeds. The weeds are easy to remove, and you find it relaxing to pull them from the ground.
- Finally, you mow their lawn with a brand-new electric lawnmower. The mower is self-propelled and the yard is small, allowing you to do the mowing without much physical effort.

At the end of the 3 hours, you're rejuvenated and physically invigorated. You earned \$50 for your work.

Considering the \$50 that you earned from the easy gardening work, please answer the following questions:

Yard work scenario, hard:

Imagine that you are doing some gardening for a neighbor to earn some cash. It is an extremely hot day and the sun is beating down on you. Your clothes are sticking to you with sweat.

Over the course of 3 hours, you have a few tasks:

- First, you shovel holes for fence posts. The earth is extremely hard, and it requires all your strength to get the shovel into the ground.
- After that, you pull weeds. The weeds have deep roots and your back aches as you muscle them out of the earth.
- Finally, you mow their lawn with an old-fashioned push mower. The yard is extremely hilly and it requires a lot of effort to push the lawnmower up and down the hills.

At the end of the 3 hours, you're exhausted and physically spent. You earned \$50 for your work.

Considering the **\$50** that you earned from the **challenging gardening work**, please answer the following questions: