

Human Engagement and the Experience of Value

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ABSTRACT

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Research on value has focused on the valence of stimuli (e.g. Thorndike, 1911) or on the way an actor engages with those stimuli (e.g. Kierkegaard, 1843). We use an approach to the study of value that understands value as an interaction between the actor and a value target, between the valence of a stimulus or activity, and a person's strength of engagement with that value target. In Experiment 1, we test the central prediction of Regulatory Engagement Theory (RET) (Higgins, 2006), that increased strength of engagement, as manipulated by inducing a situation of scarcity, *intensifies* the value experience associated with tasting a disliked yogurt, causing participants to feel more intensely negative about the yogurt when they perceive it as scarce. In Experiment 2, we extend this finding by testing whether manipulating the scarcity of one array of products at time 1 can create a psychological state that can *transfer* to intensify the value of an unrelated product presented later in the experiment. In Experiments 3 and 4 we work toward developing a measure of engagement as sustained attention in order to begin to establish strength of engagement as a mechanism for these effects. In these studies, we use Regulatory Fit (Higgins, 2000) to create conditions of strong and weak engagement within participants, and we measure engagement by recording the extent to which participants attend to a focal task at the expense of irrelevant distracting information presented during that task. By conceptualizing value as a motivational force *experience*, using RET to make new

predictions about this experience, and developing a measure to test the mechanism itself, we hope this work contributes to the development of a new way of understanding value.

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I have acquired a new family since I've been working on this paper, a family of people who think so largely that I've begun to believe I can think like that, too. Thanks to these people, and thanks Tory for showing us all how it works, how to believe in and help and inspire each other, for demonstrating how powerful it feels when there's somebody who somehow knows you can do anything. Thanks to Thane for also somehow knowing this, and thanks to my family for making it so unconditional support like this wasn't new to me.

Human Engagement and the Experience of Value

Do you not know that there comes a midnight hour when everyone has to throw off his mask? Do you believe that life will always let itself be mocked? Do you think you can slip away a little before midnight in order to avoid this? Or are you not terrified by it?

Søren Kierkegaard

Learning how to think really means learning how to exercise some control over how and what you think. It means being conscious and aware enough to choose what you pay attention to and to choose how you construct meaning from experience.

David Foster Wallace

What should I do?

Our behavior matters. Choosing what to do and how to behave, *this is* life. We learn to draw on the decisions of our past to define who we are, and we learn to use the decisions of our future to define who we want to become. In today's reign that feels mandated to maximize our number of choices, as well as the number of options within those choices, it feels increasingly important for each of us to consider how we want to behave. This involves the hard work of figuring out how to orient ourselves toward the world, of figuring out how to go about choosing to do one thing over another, of developing a systematic way of *behaving* in our lives. We want to behave in a way that has value, somehow. But how are we supposed to do this? How are we supposed even to think about this kind of question?

One approach is to choose the most valuable *option* in any decision, to assume (and hope) that the locus of value resides within each of the choice options, and that one of these options contains more value than the others. Here, choice is about calculating the probable outcomes of several courses of action, and choosing whichever alternative is likely to deliver the highest score on the dimension of value.

Another way of thinking about choice is to behave or choose in a *way* that creates value, to assume (and hope) that the locus of value resides within ourselves, within the behavior of the actor, rather than in the characteristics of the options. Here, choice is about the process of choosing and acting, and creating value through our behavior, rather than relying on the choice alternatives themselves to provide value.

Whether we work under the assumption that value is within the object or within the perceiver, we won't get far in any discussion of selecting and motivating behavior without exploring the issue of value, of what it is and how it's created.

The word *value* can be used as a noun or verb. As a noun, *value* means the *relative worth, utility, or importance* (Mirriam-Webster) of something. As a verb, *value* means *to rate or scale in usefulness, importance, or general worth* (Mirriam-Webster). These different uses of the word are helpful in exploring the role of value in choice and behavior.

The noun form of the word suggests that value is a thing, a characteristic of objects in the world. Calculating value according to this definition involves assessing the characteristics inherent in that thing; here, value creation is about pursuing these characteristics, which exist outside in the world, independent of the evaluator.

The verb form, however, argues that value is a process, the human action of *valuing* something, and treats value as something that is created and experienced by an individual actor, rather than something that exists independently of her. In fact, this definition of value seems to *require* an actor.

A rich history of thought supports each of these approaches to the concept of value. Some thinkers have spent time trying to understand *what kinds of things* we should evaluate when choosing how to behave, in order to end up with the most valuable outcome,

while others have worked to develop approaches to thinking about the *way* we should value things, the way we should behave in choice situations, in order to maximize value.

In trying to understand value and explore how this understanding might help us make more meaningful choices, we can draw on both of these approaches to getting at value: we can construct our choices around an attempt to choose the right *thing*, as well as to choose in the *right way*. I'll review some important thinkers in the history of value whose work helps us understand these different approaches, and I will appeal to their work to suggest an experimental approach that incorporates both lines of thought, that seeks an interaction between the two perspectives, in order to make use of all that the concept of value affords.

The Role of Stimulus Properties in the Experience of Valence

One approach to figuring out how to behave in the world is to focus on selecting options that possess the most valuable, or are likely to result in obtaining the most value. Axiology, or value theory in ethics, is the philosophical study of goodness, the branch of philosophy that deals with classifying things as good or not. This approach understands value as a property that inheres in objects, and it considers actions and objects as good (high in value) or bad (low in value) according to the kinds of characteristics they have.

Using this approach, we can understand human behavior as motivated primarily by a comparison of the goodness or badness properties inherent in different options. We would assume that separate from the actor, there are things in the world that have different amounts of value, and these relative amounts of value determine the way we behave and make decisions. In order to calculate value this way, we first have to identify

characteristics that might enhance or diminish the value of each option, or the goodness and badness of those options.

Historically, thinkers have used the properties of *pleasure* and *pain* as two properties of stimuli that have the power to affect the value of those stimuli (see Higgins, 1997; Higgins, 2006). Several thinkers have focused on the effect of pleasure and pain on the value of targets in order to understand the way those targets motivate human behavior. This position argues that humans are primarily driven by motivations to approach pleasure and avoid pain (e.g. Bentham, 1781; Freud, 1950).

Experimental psychologists have found that pleasure and pain are important in understanding what properties give a stimulus value, and they have drawn on the effects of pleasure and pain in understanding human motivation. Psychologists have explained important phenomena in human behavior by demonstrating that people choose the option they estimate will bring the most pleasure and the least pain. Understanding human motivation by using the language of hedonic properties of stimuli has been so pervasive in studying human behavior that one of the most powerful traditions in experimental psychology, behaviorism, was devoted to exploring the powerful effects of a stimulus's pleasure and pain properties on human behavior (see Thorndike, 1911; Skinner, 1953). These researchers used powerful positive and negative stimuli, such as food rewards for pleasure and electric shocks for pain, in order to show the strength of the motivation to approach pleasure and avoid pain.

In fact, the influence of this work was so strong, its demonstration of the effects of pleasure and pain on human choice and behavior so powerful, that it has become common to define value in terms of an object's *valence*, that is, the amount of pleasure and pain

afforded by a stimulus (see Higgins, 1997; 2006). However, recall that value is defined as the *relative worth, utility, or importance* of something. Valence, on the other hand, is *the degree of attractiveness an individual, activity, or thing possesses as a behavioral goal* (Mirriam-Webster). While the worth, utility, and importance of an object can certainly *include* that object's attractiveness, reducing the concept of value to this one characteristic might limit our ability to more thoroughly understand the nature of what value is and how we might pursue it.

One reason for this conflation of *worth* and *attractiveness* is that experimental psychology has historically aimed to understand how external stimuli affect human behavior, and has therefore focused on identifying the properties of stimuli that have the power to make particular human behaviors more or less likely to be repeated. By definition, this area studies the effect of *stimuli* on *people*. One property of stimuli that tends to influence human behavior is the attractiveness of the stimuli. Because properties like attractiveness can exert such a powerful influence on human behavior, psychologists have learned to understand the value of a stimulus to be synonymous with the bundle of positive and negative properties it contains.

Unfortunately, people are famous for miscalculating the positivity and negativity of options and events, especially in estimating their reactions to future positive and negative events (Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998). Higgins et al. (2006) suggested that one reason people fail to accurately estimate how they will feel in a hypothetical future scenario is that they discount a factor that is essential in the creation of value, a characteristic other than the pleasure and pain properties of stimuli or outcomes.

Consideration of the anticipated positivity and negativity afforded by stimuli doesn't, on its own, allow us to accurately predict how we will experience their value. Various demonstrations of irrationality in human behavior, that is, our inability to consistently choose the option or behavior that will result in the most positive outcome for us, underline the importance of trying to account for dimensions in choice *other than* the hedonic properties of choice stimuli. Considering other sources of value at play in choice situations could give us more power to predict the effects of stimulus properties on human choice behavior.

Indeed, recent work has demonstrated that describing people's tendency to approach pleasure and avoid pain paints an incomplete picture of human motivation (Higgins, 1997). This and other work demonstrates that rather than responding to pleasure and pain in a stable and predictable way, people show systematic variability, both within- and between individuals, in the way they perceive and react to hedonic characteristics of objects. When people vary in the way they respond to pleasure and pain, it is difficult to predict their behavior by relying on hedonic properties alone.

Given that humans don't respond consistently to the pleasure and pain properties of stimuli, how are we supposed to locate characteristics in choice alternatives that justify our choosing that option over another? This work illuminates another difficulty of making choices by attempting to select the option that contains the most pleasure characteristics and the fewest pain characteristics. By assuming that pleasure and pain characteristics are things that are inherent within stimuli, and exist completely external to, and independent of, the humans evaluating those stimuli, this approach must assume humans respond

predictably to objective characteristics present in the outside world. Humans, however, do not respond consistently to experiences of pleasure and pain in the outside world.

The Role of the Perceiver in the Experience of Valence

The question of why humans respond differently from each other, and differently from themselves in different situations, has been an important issue for a long time. Thinkers have acknowledged that human perceivers do not all experience the same events identically, and these thinkers began to understand that different people are not actually responding to the same perceptions. Instead, the features of particular individuals shape their perceptions of reality; the human perceiver is inseparable from her perception of the world. Thinkers understood that we impose our categories and assumptions onto our experience of the world, and in that active structuring of our perceptual landscape, humans play an important role in structuring and creating the reality they experience (Kant, 1781). This insight creates difficulty for conceptualizing any kinds of qualities or characteristics that are said to exist *independently* of human perceivers, or even those that are constant across different perceivers in different psychological states.

Some of the most exciting work in psychology has focused on exploring this active perception of the world, studying the individual's contribution to the creation of her perceptions by trying to understand the way individuals form their own individual representations of stimuli. For example, early work on perception demonstrated that, rather than responding to stimuli themselves, people create a representation of stimuli, and respond to that representation (Weber, 1967). By understanding how human representation of stimuli affects their experience with these stimuli, subsequent work has been able to understand the way people contribute to their experience of the positivity or

negativity associated with a stimulus. Researchers in the area of social cognition, for example, have begun to understand the basic processes by which people's expectations, assumptions, motivational and affective states shape the way they perceive objects, people, and events (Kunda, 1999). This research helps explain why it is difficult to approach choice by considering only properties that are external to the perceiver, by operating under the assumption that actors can extract the most value by choosing based on the pleasure and pain characteristics of an object.

Understanding that the perceiver is active in constructing representations and responding to these representations, rather than the objects themselves, affords a richer understanding of how humans might experience valence information. Rather than judging the properties of a stimulus that are thought to be independent of our perception of those properties, we can allow for different ways of representing those properties.

In understanding the way people represent properties of an object or experience, we have begun to understand that the individual is crucial in contributing to her experience of pleasure or pain in that stimulus. Today's evidence that the person is active in influencing her own experience of value with stimuli allows us to understand that pleasure and pain properties can influence the experience of value through the perception of the actor. Perhaps even more importantly, when we know that humans operate in their world drawing on *representations* of stimuli rather than with direct access to those stimuli, we can imagine different kinds of forces acting on these representations. We can start to imagine previously invisible forces that could help explain why using pleasure and pain properties alone doesn't work in predicting human response to stimuli.

This research on the valence of objects, human representation, interpretation, and understanding of these properties of objects, emerged from, and has come to support, the idea that people, in the way they behave, have the power to influence the valence of their experiences. Accounting for this fact allows us to use pleasure and pain more powerfully to predict human reactions to stimuli. Given this human influence on perception of these properties, it begins to make sense that the word is also used as a verb. Humans actively value stimuli, and this valuation includes more than simply the human's response to the pleasure and pain properties they perceive in the target. This implication emphasizes the importance of human agency that is *completely separate* from the actual pleasure and pain properties of a target.

The Role of the Perceiver in Generating Value

Instead of answering the question of what kinds of objects or properties people experience as valuable, a different approach asks how people go about *valuing* something. These thinkers focus on value as an experience, a process; here, valuing is active, it's something that is done by the person who is seeking or experiencing that value. This way of thinking about value, as a verb, implies that there can be no value without an individual to experience it, that value is fundamentally an activity involving a person and a target. Since value is fundamentally an *experience*, it can be affected not only by a person's perception of the stimulus, but also by the behavior of the person at the center of that experience, her process of choosing. In this way of thinking, people play a part in creating value *themselves*, by determining their orientation toward the choice, independent of their perception of the valence of the stimulus properties.

In order to experience a valuable outcome, people do not need to rely on the characteristics of whatever it is they choose, but instead they must consider their choice and behave *in a way* that confers value on their chosen option. Here, it is the behavior of an actor, specifically the way an actor considers options and makes choices, that ultimately determines the way she experiences value in a decision outcome, through forces completely independent of the perception of stimulus characteristics.

The work of Søren Kierkegaard argues that people can imbue their choices with value by fully engaging in the process of choosing, “What is important in choosing is not so much to choose the right thing as the energy, the earnestness, and the pathos with which one chooses” (Kierkegaard, 167). Here Kierkegaard de-emphasizes the role of the hedonic properties of the options themselves, and advocates looking elsewhere for value. According to his thought, to assume that there exists a ‘right choice’ independent of the actor is to imply that options contain some value that is external to an actor’s engagement with these options.

Indeed, if an actor fails to engage in her choice, he argues, value cannot exist in that choice. “Rather than designating the choice between good and evil, my Either/Or designates the choice by which one chooses good and evil or rules them out...It is not so much a matter of choosing between willing good or willing evil as of choosing to will, but that in turn posits good and evil” (169). Kierkegaard explains that we cannot rely on experiencing a value that results from the choice of one particular option over another. Instead, we experience value as a result of the *way* we choose one of those options. Rather than focusing on an option’s valence, and advocating that people try to choose positive things rather than negative things, Kierkegaard argues that options have no value, positive

or negative, that exists independently of human 'willing,' or an actor's full engagement in a choice.

This thought, in contrast with valence-driven considerations of value, deemphasizes the importance of a particular stimulus's pleasure or pain properties, locating the source of value creation instead in the *individual's behavior in* determining and experiencing that value, unrelated to the object of evaluation itself. The pleasure and pain properties of a stimulus are not central in determining value; instead, it's an actor's behavior that generates her experience of a target's value, through strong engagement with the target.

The discipline of experimental social psychology grew out of an insight that forces other than valence can contribute to the value experience. Kurt Lewin (1951) described value as a force consisting of both direction and strength (see Higgins, 2006). Here, *direction* refers to the positivity or negativity of a stimulus, the hedonic valence elements of the value target. He posited a separate variable that affects the force of value, which is not the direction of that attraction or repulsion, but its strength. Some researchers in the tradition of Lewin have supported Lewin's claim that forces other than positivity or negativity of stimuli can act on the value of those stimuli. The experience of arousal, for example, is one influence that can exert an effect on value, independent of the positivity or negativity of the source of that arousal (Schachter & Singer, 1962).

This way of thinking was innovative in understanding that factors other than properties of a chosen object can affect our experience of value with that object. Some work in experimental social psychology and motivation has explored the implications of these insights by testing whether the way people construe the process of choosing, the *way* people choose, can affect their experience of a chosen object's value. For example, Higgins,

Camacho, Idson, Spiegel, & Scholer (2008) examined participants who all made the same choice (choosing between a mug and a pen), and who all chose the same option within that choice (the mug). Experimenters manipulated how participants perceived *the way* they made their choice, and explored whether the way a participant perceives her choice affects her experience of value with the chosen object. Half of the participants were induced to perceive that they had made their decision ‘in the right way,’ whereas the other half perceived that they had made their decision in the way that would result in ‘the best choice.’ Participants who perceived that they had made their choice ‘in the right way’ attributed more value to the chosen mug than participants who perceived that they had made their choice in the way that would result in ‘the best choice’. Despite making the same choice, and using the *same means* to make this choice, participants who considered that they had made their choice in the right way experienced a more intense experience of value with their chosen object. Evidence like this suggests that people can influence the value of their choices through the way they engage in those choices. Given that participants all chose the same mug, and experimenters manipulated only the way individual participants thought about this decision, it’s clear that factors other than the hedonic properties of the mug affected the experience of value associated with that mug.

Regulatory Engagement Theory

In spite of evidence suggesting that a stimulus’s characteristics cannot fully account for the value experience associated with that stimulus, and that the mode of engagement with stimuli affects the value experience associated with those stimuli, little work has explored the way a person’s manner of engagement with a choice interacts with the valence properties of the choice alternative to comprise the value experience. Regulatory

Engagement Theory (RET) (Higgins, 2006; Higgins & Scholer, 2009) offers a new point of view on value creation that is classically social psychological; the theory posits that the experience of value is an interaction between two kinds of forces: forces offered by a value target, such as a target's valence, and forces generated by an individual, such as an individual's strength of engagement with that value target. By arguing that value is a *motivational force experience*, RET can incorporate contributions made by both the stimulus and the actor, *and* account for their interaction, in making predictions about an actor's experience of value with a target. RET that both the subjective hedonic properties of that target, and an individual's strength of engagement with that target contribute to determining the experience of value associated with a target.

In this framework, a positive value experience with a stimulus represents attraction toward that stimulus, and a negative value experience represents repulsion away from it. Critically, this motivational force experience contains both a direction (toward vs. away) and an intensity (strong vs. weak) of attraction to, or repulsion from, a stimulus. The *direction* of the motivational force experience represents the hedonic pleasure and pain properties associated with that target, while the *intensity* represents an actor's strength of engagement with the target. Therefore, according to RET, it should be impossible to accurately predict an actor's experience of value with an object without knowing about the object's hedonic characteristics *and* the actor's level of engagement with that object. In addition to locating the value experience in the interaction between an actor and a target object, this approach allows researchers to conceptually separate the effects of these two central forces acting on value (direction and strength), and manipulate them independently of each other. By understanding direction and strength as distinct forces, RET makes new

predictions about the way these two forces interact to make up a person's experience of value with a target.

RET defines strong engagement as a state of being involved, occupied, fully absorbed, or engrossed in something; engagement is the amount of sustained attention a person pays to any kind of stimulus. According to the theory, a stimulus's value is a function of its hedonic valence (*direction*: attraction vs. repulsion) and an individual's strength of engagement with the stimulus (*intensity*: strong vs. weak). RET predicts that engagement strength will act as an intensifier of an object's valence in determining the value experience associated with that object: with increased strength of engagement, stimuli with a positive valence should increase in value, while stimuli with a negative valence should *decrease* in value. It is important to have established experimental procedures that we can use to develop and understand new ideas like RET; the method that has been most helpful in the initial exploration of RET is Regulatory Fit.

Regulatory Fit

People tend to represent and pursue goals in ways that are stable across time. For example, according to Regulatory Focus Theory (Higgins, 1997), people represent and pursue goals using two systems that each exist in different proportions within a person. The *promotion* system is concerned with gains and non-gains, and people in a promotion focus tend to represent goals as hopes and aspirations. The prevention system, on the other hand, is concerned with losses and non-losses, and people in a prevention focus tend to represent goals as duties and obligations. Imagine two students who have the same goal of writing a good dissertation, but who experience the goal differently. One of the students is in a *prevention focus*, she experiences the goal as a responsibility, as something she is

obligated to do, a duty. The other student is in a *promotion focus*, and she experiences the same goal of writing a good dissertation as an opportunity, as something she aspires to do, an ideal.

Independent of this distinction is the *way* a person might pursue this goal: a person might use eager means during goal pursuit, ensuring matches to desired outcomes. On the other hand, a person might use or vigilant means, avoiding mismatches to undesired outcomes. In the dissertation writing example, one student uses *eager means* to accomplish the goal of writing a good dissertation: she spends every night and using all available energy writing the dissertation, she reads books from other disciplines that might help her maximize the power of her ideas, and she works on her presentational flare for performance during the dissertation defense. Another student uses *vigilant means* to accomplish the same goal of writing a good dissertation: she avoids accepting other social or work obligations that would conflict with the completion of her dissertation, she makes sure she has read and cited all of the literature necessary for discussing her topic, and she works on avoiding any errors in the way she presents her data at the defense.

Different students can have promotion or prevention representations of their dissertation, and independently, can use eager or vigilant means to accomplish the same goal of writing a good dissertation. A person's representation (promotion vs. prevention) of a goal can fit or not fit with the *way* a person engages in that goal (eager vs. vigilant means); a promotion focus is a fit with eager means of goal pursuit, while a prevention focus is a fit with vigilant means of goal pursuit. Research in Regulatory Fit finds that people are *more strongly engaged* in goal pursuit when they use means that fit their underlying orientation

toward accomplishing that goal (Forster, Higgins, & Idson, 1998; Shah, Higgins, & Friedman, 1998).

For example, Forster, Higgins, & Idson (1998) manipulated regulatory focus by manipulating the framing of participants' compensation structure in an experiment. In this study, participants entered the lab, and those in the *promotion focus* condition were told they would be paid \$4 for their participation and they could earn an extra \$1 by finding 90% or more of all the possible to an anagram task. Participants in the *prevention focus* condition, on the other hand, were told that they would be paid \$5 for their participation and that they could avoid losing \$1 by not missing 10% or more of all the possible words.

Independent of this manipulation, these researchers manipulated the participant's *means* of goal pursuit during different sets of anagrams. During some anagram trials, experimenters instructed participants to push downward on the top of a surface; arm extension induces avoidance means of goal pursuit, as in moving an object *away* from one's body. During other anagram trials, researchers instructed participants to push upward from the bottom of a surface, which (arm flexion) induces approach means of goal pursuit, as in bringing an object toward oneself. Participants pushed down on the surface while solving one set of anagrams, and pushed up on a surface while solving another set of anagrams.

The eagerness-related approach means of pushing up in a surface is a fit with a promotion orientation, while the vigilance-related avoidance means of pushing down on the surface is a fit with a prevention orientation. As predicted by Regulatory Fit, participants in a promotion focus performed better in the approach-gain condition

compared to the avoid-loss condition, and the reverse was true for predominantly prevention-focused participants.

Importantly, this research discovered that, whether experimentally manipulating regulatory focus or measuring a participant's chronic regulatory focus, prevention and promotion-focused participants performed better when using means of goal pursuit that fit with their underlying motivational orientation. First, these researchers demonstrated that strength of engagement, as measured by an arm pressure device, was stronger when participants were in regulatory fit than when in regulatory non-fit (Experiments 1 and 2). Second, in Experiment 3, the researchers found that participants persisted longer in attempting to solve anagrams, and solved more anagrams, when their orientation fit their means of goal pursuit (promotion/eager approach; prevention/vigilant avoidance).

Importantly, regulatory fit has effects that generalize beyond the processes or stimuli by which the regulatory fit is manipulated. Studies in Regulatory Fit and value transfer have discovered that people assign more value to a liked object when they choose that object using strategies that fit with their chronic orientation. Higgins & Idson (2000) found that participants offered more money for a mug when they were asked to consider the decision to choose that mug *in a way* that fit their chronic regulatory focus.

Predominantly promotion-focused participants offered more money for the mug when experimenters instructed them to think about what they would *gain* by *choosing* the mug (an eager strategy that fits with the promotion orientation) vs. what they would *lose* by *not choosing* the mug. On the other hand, predominantly prevention-focused participants offered more money for the mug when experimenters instructed them to think about what they would *lose* by *not choosing* the mug vs. what they would gain by choosing the mug.

Although researchers manipulated regulatory fit independently of the actual mug itself, participants transferred their experience of regulatory fit to the valuation of the mug, and assigned a higher price to the mug. The effects of regulatory fit, experienced because of the way participants considered making a decision about the mug, generalized in the experimental context and transferred to participants' evaluations of the mug itself.

In addition to enhancing the value of a positively-valenced object like a mug, Regulatory Fit can intensify the negativity of a negative value target. For example, Idson, Liberman, & Higgins (2000) asked participants to imagine failing or succeeding on a task, and also asked participants to imagine and report how good or bad they would feel after this result. They found that participants' ratings of how good they would feel when they imagined a positive outcome were higher while participants were imagining this failure or success in regulatory fit (vs. regulatory non-fit). Interestingly, when rating how bad participants would feel when they imagined a negative outcome, participants reported that they would feel *more negative* when in regulatory fit vs. non-fit. Thus, regulatory fit *intensified* the degree to which participants imagined feeling positively or negatively about a success or failure.

Regulatory fit has similar effects on the communication of persuasive information. Parallel to the kind of persuasive communication research conducted in the area of scarcity and value, Aaker & Lee (2001) found that participants in conditions of regulatory fit (vs. conditions of regulatory non-fit) evaluated persuasive messages *more positively* when those messages were supported by strong arguments, but evaluated those messages *more negatively* when they were supported by *weak arguments*. This evidence corroborates research in scarcity and persuasive communication (Bozzolo & Brock, 1992), that the

regulatory fit manipulation has effects very similar to the scarcity manipulation. Both of these lines of research use different manipulations to suggest that paying more attention to strongly supported messages *increases* the persuasiveness of those messages, while paying more attention to *weakly* supported messages decreases the persuasiveness of those messages.

In further support of this explanation, Cesario, Grant, & Higgins (2004) found that, when participants had *positive thoughts* about a persuasive message, participants were *more persuaded* when they experienced regulatory fit during message communication compared to when they experienced regulatory non-fit. However, when participants had *negative* thoughts about a persuasive message, participants were *less persuaded* when they experienced regulatory fit compared to when they experienced regulatory non-fit. These studies supported the results of Idson et al. (2000) in suggesting that increased engagement, as manipulated by regulatory fit, can intensify the *negativity* of a negative value target in addition to intensifying the positivity of a positive value target (Higgins & Idson, 2000).

If regulatory fit increases the amount of attention participants pay to arguments and objects, it should be the case that participants are able to more accurately remember information presented to them as part of these goal pursuit activities. Indeed, Bianco, Higgins, & Klem, (2003) found that participants in regulatory fit have better memory for central events presented in a film shown during the experimental session, compared with participants who were in regulatory non-fit during the film presentation. This work uses Regulatory Fit in order to directly implicate engagement and attention in a way that helps to explain the intensification effects found in the previous studies. Additionally, this work

shows that memory is enhanced under Regulatory Fit through increased engagement and attention, and further, these findings suggest that testing for memory may be an effective way to measure engagement across different experimental contexts. All of this work in regulatory fit corroborates research on scarcity and persuasion not only in finding bidirectional intensification, but also in converging on attention as a mechanism in explaining these effects.

Studies of regulatory fit have produced the most direct evidence for the bidirectional effects of engagement and attention on value found in scarcity work and predicted by RET. Drawing on empirical support from the regulatory fit literature, RET attempts to explain the bidirectional intensification of value, and further predicts that a manipulation of engagement can transfer to affect the value of a *separate* object, not directly related to the manipulation of fit. Furthermore, work in Regulatory Fit has suggested that strengthened engagement is responsible for these effects, and has found that participants are more engaged, and more able to pay attention to a focal task, under conditions of regulatory fit compared to regulatory non-fit, pointing to sustained attention as a potential mechanism for the both the bidirectional intensification effects and the transfer, or generalization of engagement effects to subsequently presented stimuli. Regulatory fit implies a mechanism that makes predictions that we should see borne out in other lines of research, lines of research that might help us to demonstrate the power of regulatory fit to generate new discoveries.

Scarcity and Value

Timothy Brock's (1968) commodity theory states that 'any commodity will be valued to the extent that it is scarce, unavailable, or difficult to obtain.' This proposition

encouraged researchers to design experiments that consider the effects of an object's valence *separately* from aspects of an individual's engagement with those objects when examining the way people evaluated the objects. Initially, research designed to test this theory held constant the valence of their stimuli, using only products that were pretested to be *positive* for participants. Independently of the positivity of the product, researchers manipulated the perceived scarcity of the product, and tested the effects of adding perceived scarcity to positive objects, in order to determine whether the perception of scarcity increased the desirability of those objects. While this research tested the effects of adding the perception of scarcity to *positive* products only, the design is innovative and progressive in the study of value in that it allows researchers to conceive of using the same manipulation of scarcity to test negative stimuli.

Researchers in this area found that making a positive product scarce can increase its attractiveness, using products like women's apparel (Fromkin, 1970), cookies (Worchel, Lee, & Adewole, 1975), cookbooks (Verhallen, 1982), censored desirable materials (Fromkin & Brock, 1973; Zellinger, Fromkin, Speller, & Kohn, 1975), and paintings (Lynn, 1987). Adding scarcity to positively-valenced objects reliably increased participants' ratings of the value of these objects.

Given the wide range of contexts and products that supported this finding, many causal explanations attempted to explain the mechanism by which scarcity enhances the value of these positively-valenced objects, including an individual's need for uniqueness (Fromkin, 1971), desire for unique consumer products (Lynn & Harris, 1997), as well as motivational explanations like reactance (Worchel et al., 1975), energization theory (Wright, 1992), and cognitive mechanisms like the use of an automatic value-scarcity

associative heuristic (Cialdini, 1985; Lynn, 1989), and the existence of naïve economic theories (Lynn, 1991; 1992).

The explanation that accounted for the widest range of data across different domains emphasized scarcity's tendency to attract and sustain attention, which led to increased elaborative processing of stimuli, (Bozzolo & Brock, 1992; Folger, 1992) causing participants to focus more intensely on the positive stimuli and conclude that they were more positive than participants who paid less attention to the stimuli, and experienced their positivity less strongly.

The tendency for manipulations of scarcity to increase the value of positive targets has led scholars to believe that scarcity's effect is to increase the desirability of an object (Cialdini, 1985; Dai, Wertenbroch, & Brendl, 2008; King, Hicks, & Abdelkhalik, 2009). However, research outside of product objects, research on scarcity's effects on other kinds of stimuli (non-objects, negative stimuli) has shown that making something scarce *does not* always increase its value. This work began to demonstrate the scarcity paradigm's advantage of allowing researchers to manipulate valence and motivational force experience independently. It began to allow researchers in the field of scarcity to study the interactive effects of valence and attention on value, and evidence emerged suggesting that there may be one comprehensive explanation for scarcity's effects on value that we can use to extend work on scarcity and more fully understand the wide range of effects on value generated by scarcity manipulations.

This research manipulated not only the scarcity of an object, but also the *valence* of that object, testing the effects the value of negative objects thought to be scarce vs.

nonscarce. This work has demonstrated that scarcity can *intensify* evaluative responses to stimuli, opposed to simply *enhancing* the extent to which participants value the stimuli.

For example, in research on attribution (Frieze & Weiner, 1971), researchers presented participants with task performance information (success vs. failure) about a target person in order for the participants to make a judgment about him or her. Participants read about this target person attempting a performance test on which he or she succeeded or failed. Participants also read about the number of other people who succeeded or failed (low vs. high) at the same task. This number of other people who either also succeeded or also failed was either low (Rare performance condition) or high (Common performance condition). Researchers found that participants were likely to attribute positive and negative task performance to ability, rather than the ease or difficulty of the task (task attributions), to the extent that the actor was *rare* in her success or failure on a task. When a participant was *common* in her success or failure, that is, her performance was consistent with others, participants were more likely to make task attributions, in which they explained the actor's behavior in terms of difficulty of the task, and not the actor's ability. Instances of uncommon success and failure resulted in *more extreme judgments* of ability when compared with instances of common success and failure.

This work suggested a symmetry among scarcity's effects: not only did participants judge successful actors to be higher in ability when very few others (vs. many others) were successful, but participants also judged unsuccessful actors to be *lower* in ability when very few others (vs. many) were *unsuccessful* in the task. In this case, scarcity of actors who were or were not able successfully perform a given task *intensified* the perception of actors' ability; people whose success at a given task was scarce (vs. abundant) were judged as

extremely capable, whereas people whose failure at a given task was scarce (vs. abundant) were judged as extremely *incapable*. This was among the first work to demonstrate this kind of symmetry effect of a single manipulation of scarcity intensifying the evaluation of a target in both directions, positive and negative. In this experiment, participants appeared to focus on the actor's ability in evaluating the actor's performance, and this resulted in intensified judgments of that ability.

Using a different stimulus, medical diagnosis, and testing these predictions of scarcity's ability to intensify value when participants themselves were the possessors of a characteristic, rather than a target actor as part of a scenario, Ditto & Jemmott (1989) brought participants into a physician's office and diagnosed them all with thioamine acetylase. Thioamine acetylase is a non-existent medical condition that was imagined for use in this experiment. Participants were randomly assigned to one of four descriptions of this medical condition. Depending on experimental treatment group, thioamine acetylase was rare (vs. common), and had positive (vs. negative) consequences for human health, creating a 2 (prevalence: rare/common) X 2 (health consequences: negative/positive) factorial design. When asked to rate the healthfulness of thioamine acetylase after being diagnosed, participants in the condition that described thioamine acetylase as a *positive health condition* rated the condition as *more healthful when they believed it was rare* (vs. common), while participants in the condition that described thioamine acetylase as a *negative health condition* rated the condition as *less healthful when they believed it was rare* (vs. common). Among participants who were told thioamine acetylase was an unhealthy medical condition, those who believed it was rare not only reported experiencing more fear and anxiety about having thioamine acetylase, but they also sought

out more information about the medical condition when compared to participants who believed it was unhealthy but common.

This evidence that participants in the *scarce* condition responded more extremely to their diagnosis, whether it was positive or negative, suggests that scarcity intensifies value in this case, rather than simply enhancing it. Additionally, this work directly identified a behavior associated with this polarization: participants in the negative valence condition were more likely to request information about the medical condition when it was scarce compared to when it was nonscarce. Further, the effect of the scarcity manipulation on a participant's tendency to request additional information occurred in positive and negative valence conditions. These results suggest that creating conditions of scarcity around a medical diagnosis causes participants to exert *more attentional resources* in researching the medical condition, when compared to participants who believe the condition is common.

Using the area of communication in order to examine the effect of scarcity and valence on the value of a persuasive message, Bozzolo & Brock (1992) presented participants low in need for cognition with a message in one of four conditions: this message was either perceived to be scarce or nonscarce, and was either supported by strong or weak arguments. When participants were told the message was scarce (vs. nonscarce), they displayed *more positive attitudes* in response to *strong* messages, and *more negative attitudes* in response to *weak* messages. Again testing scarcity's ability to increase participants' allotment of attention to these stimuli, across both strongly and weakly argued messages, researchers found that participants showed *higher ratings of perceived effort* while reading the message when they thought the messages was scarce vs. nonscarce.

In demonstrating that participants were more motivated to pursue information under conditions of scarcity, this work on medical diagnosis and persuasive communication supported the most comprehensive and powerful explanation for scarcity's effect on value: Folger's (1992) assertions that scarcity attracts attention to ("increases the salience of") stimuli and sustains that attention ("fosters rumination") in order to generate effects on the value of those stimuli.

If it is the case that sustained attention intensifies evaluative responses to a target, as RET argues, then increased attention generated by a manipulation of scarcity can explain the intensification effects seen in the work manipulating the scarcity of non-object targets (attributions, medical diagnoses, persuasive communications). In the original scarcity research area of objects, the assumption that scarcity universally increases the value of an object has left the effect of scarcity on the value of an *undesirable* object untested, and researchers have continued to assume that adding scarcity simply *adds* value in the area of objects. The more recent work in other scarcity domains calls for a test of the effect of adding scarcity to negative objects.

Although the absence of negative object tests in research on scarcity and value limits our ability to explore potential mechanisms of bidirectional intensification, there is reason to believe the attention mechanism proposed in other areas may work similarly in the product domain. In fact, researchers focusing on the value of product objects have subsequently found that scarce packaging design, that is, packaging that deviates from that same product's usual packaging, increases the amount of attention participants pay to the product in an experiment (Schoormans & Robben, 1997). Given this additional support for the attentional explanation of scarcity effects, that products whose packaging deviates

strongly from usual packaging (i.e. scarce package design) attract and sustain more attention than those with more common packaging, it seems likely that such increased attention plays a role in intensifying the value of scarce objects.

Given the bidirectional intensification findings across different kinds of scarcity research, as well as the evidence that attention can help explain these effects, we believe RET offers several new opportunities to understand the effects of scarcity on value. In fact, the manipulation of regulatory fit (Higgins, 2000) has found effects similar to those found in the scarcity literature, and has provided evidence that attention and engagement are responsible for some of these effects.

RET in the Scarcity and Value Paradigm

By allowing the separate manipulation of valence and scarcity of an object, the scarcity paradigm is uniquely suited to test RET's predictions about the effect of the interaction between valence and motivational intensity on value. Conceptually, the scarcity manipulation is a good candidate for making predictions using RET, since manipulations of both scarcity and regulatory fit have produced bidirectional intensification of value, and researchers in both areas have proposed increased attention as a mechanism for these effects.

Work in regulatory fit, as well as the theoretical insights of RET, not only provide new ways to approach experimental work in scarcity, but also offer new predictions that promise to expand the literature on scarcity, predictions with the potential to advance knowledge about the bidirectionality and generalizability of the psychological and behavioral effects of scarcity. For example, while research has shown that regulatory fit generates bidirectional intensification effects that transfer to objects outside of the

manipulation itself, nobody has yet studied whether scarcity effects can similarly transfer to affect the value of subsequently presented stimuli.

An RET perspective maintains that manipulations of scarcity across the wide range of contexts in the experimental literature on scarcity have created *situations of scarcity* that cause participants to be more strongly engaged in their experience with the value target. This strong engagement with the value target in turn *intensifies* the value of *all stimuli* within the psychological situation of scarcity.

So, the first unique contribution of applying RET to the scarcity literature is capitalizing on RET's prediction that the manipulation of an object's scarcity will *intensify* the value of that object, whether the object has a positive *or* negative valence for a given participant. In order to test this first hypothesis that sustained attention *intensifies* the value of an object instead of merely increasing it, it is necessary to manipulate the valence of the scarce product, as work in object scarcity has not previously done, and test the effect of scarcity on a *disliked* object.

RET's second major contribution to the literature on scarcity and value is its prediction that scarcity effects may generalize from the object manipulated to *other objects* presented as part of the situation. However, previous research in scarcity has manipulated the scarcity of one target, and measured the way scarcity affects the value of *that particular target*. In order to determine whether scarcity's effect on value generalizes to other objects that are part of that situation, we need a paradigm that allows for other objects to be evaluated as part of the situation of scarcity.

Experiment 1

Method

Fifty-two Columbia University students (25 women and 27 men) participated for pay. We presented each participant with a tray containing cups of yogurt: several cups of yogurt A (the abundant yogurt) and one cup of yogurt B (the solitary yogurt).

Unbeknownst to the participants, all cups contained the same slightly bitter yogurt, which was predetermined to be mildly disliked. The participants were randomly assigned to either the Scarce condition or the Replenish condition. In the Replenish condition, the participants were told that whichever cup of yogurt they chose would be replaced by another cup of the same yogurt for the next participant in the study. In the Scarce condition, the participants were told that the cups of yogurt on the tray were all the yogurt cups that were left, and whichever cup they chose would not be replaced, creating high scarcity for the solitary cup only. We then asked participants to choose one cup of yogurt, take one bite from that cup, and evaluate it. We then debriefed, thanked, and paid participants for their participation.

Results

We did not expect participants to choose the solitary cup more than an abundant cup in either condition, as previous research has shown that even when people value a solitary item more than the abundant items, they tend not to choose it because of politeness considerations (Lesourne, 1979; Lynn, 1991; Shippee, Mowen, & Gregory, 1981; Verhallen & Robben, 1994). Indeed, in neither the Scarce nor the Replenish conditions was the solitary item chosen more than the abundant item, ($\chi^2(1, N=53) < 1$).

The participants disliked the yogurt. We asked them, '*Given that a normal cup of yogurt costs \$2.50, how much would you be willing to pay for a cup of the yogurt you just*

sampled? The average price offered was \$0.80, and 86.5% of participants offered less money than the \$2.50 normal price, thus confirming that the yogurt was disliked.

Regardless of which yogurt participants chose, participants in the Scarce condition offered significantly less money for the yogurt than participants in the Replenish condition (controlling for age and gender), $t(52) = 2.31, p = .03$. Of participants who chose the solitary cup, those in the Scarce condition offered less ($M = \$0.51, SD = .49$) than those in the Replenish condition ($M = \$1.12, SD = 1.2$). Of participants who chose one of the abundant cups, those in the Scarce condition offered less ($M = \$0.63, SD = .75$) than those in the Replenish condition ($M = \$1.21, SD = 1.14$).

Discussion

With the discovery that inducing a situation of scarcity can *decrease* the value of a negative object, we have provided the first evidence suggesting that scarcity intensifies negative value in the domain of objects. Using RET to make these predictions in the scarcity paradigm also enabled us to create a *situation of scarcity* whose effects generalized to an object other than the object used to manipulate scarcity.

Previous studies in scarcity and value have manipulated the scarcity of a single object, and measured the effect of scarcity on the value of that same object. In order to determine whether scarcity effects generalized to *other* items, we used a new experimental paradigm. Because this design allows participants a choice between different items, we could examine the effect of scarcity on the value of both the solitary and abundant item, depending upon which item participants chose.

Beyond testing for the generalization of scarcity effects, using an array of items in our manipulation of a situation of scarcity has several benefits. First, it is possible that

there is something about visual solitude, and *not* scarcity, that creates effects thought to be caused by scarcity. By presenting a tray with abundant *and* scarce cups of yogurt in both the scarce and non-scarce conditions, we were able to control for visual solitude, and thereby rule out the explanation that the appearance of one single item is what generates our scarcity effects.

Researchers in past scarcity work have explained scarcity's effects by noting that valuable things tend to be low in supply, so when we tell participants an item is scarce, the participants will infer that the object is in high demand, and is therefore valuable. Our paradigm suggests that this is not the mechanism driving scarcity's effects on value. According to this explanation, participants should overwhelmingly choose the solitary yogurt in our experiment, assuming it is more valuable than the abundant yogurts. However, in our study, participants did not differ in their rate of choosing the solitary vs. the abundant yogurt.

A second prediction of this scarcity-inference explanation is that participants will infer that scarcity signals value *only* for the solitary yogurt, and therefore we should see different effects of scarcity on value depending on which yogurt participants chose. Again, in disconfirmation of this hypothesis, our manipulation of scarcity had the same effect on the value of the yogurt whether participants chose the solitary or the abundant yogurt.

Finally, we chose to manipulate scarcity by telling participants whether or not we would *replace* their chosen cup of yogurt for the next participant in the study. This way of manipulating scarcity has the advantage of being parallel to many situations of scarcity in the real world, where scarce resources tend to be those that are *irreplaceable*, and not simply those things of which *only one* is left, as in other manipulations of scarcity.

Considering that a *situation of scarcity* may be intensifying value helps in trying to understand how researchers have found such similar effects of scarcity using such vastly different kinds of stimuli to manipulate scarcity. RET would explain that these different manipulations each created a *situation of scarcity*, which strengthened engagement, and intensified participants' evaluations of targets within that situation. If it is truly a situation of scarcity that is created by the manipulation, it follows that the value of other objects in the situation should also be affected by the scarcity manipulation.

Experiment 2

In order to determine whether it is truly a *situation of scarcity* that helps to drive intensification of different kinds of stimuli in these different domains, it is necessary to manipulate scarcity using one kind of product, and test its effects on the value of *another* kind of product in a later phase of the experiment, but within the same experimental situation. Secondly, if the *situation of scarcity* is what is driving the effect on value, it should be possible to demonstrate that the manipulation of a positive object's scarcity will *increase* the value of that liked stimulus whose array is used to manipulate the situation of scarcity, and will *decrease* the value of an unrelated, disliked stimulus in the same experiment, a stimulus not at all involved in the manipulation of scarcity. By completely decoupling the measurement of scarcity effects from the array of stimuli used to manipulate scarcity, we can perform an even stronger test of RET's prediction that we can strengthen engagement by manipulating the perceived replaceability of an item from one set of stimuli, and measuring intensification effects on a completely separate stimulus.

Method

Forty-seven Columbia University students (29 women and 18 men) participated for pay. In a study explicitly about evaluating different products, we first presented participants with a tray containing an array of one type of product (half the participants saw pens, the other half saw notebooks). Participants either chose between two types of pens (one type solitary and one type abundant) or two types of notebooks (one type solitary and one type abundant). As in Experiment 1, there were replicates of one version (abundant) and a single instance of another version (solitary). We told half of the participants that we would replace whichever product they chose by another of the same kind (Replenish condition), and we told the other half that we would not replace their choice (Scarce condition). The participants first chose and evaluated a product, using a 15-item likert-type scale (-7 = dislike it very much, 7 = like it very much). Next, participants tried a distasteful drink (either watered-down sugar drink or watered-down tomato juice, which piloting indicated were evaluated negatively). After completing a series of questionnaires, the participants were debriefed, thanked, and paid for their participation.

As in Experiment 1, the primary dependent measure was the amount of money participants were willing to pay in order to buy the product they sampled. In Experiment 2, we also recorded how much of the distasteful drink participants drank later in the experiment. We predicted that participants in the Scarce condition would offer to pay more for the first (liked) product, regardless of whether they chose the numerous (six items) or solitary (one item) version of the product, given the generalization of scarcity's effect to all any item in the array in Experiment 1. Furthermore, we predicted that the intensification of value from this situation of scarcity induced by the manipulation of the scarcity of positive objects at Time 1, the pens or notebooks, would spread to a completely unconnected,

disliked product, intensifying the negative value experience associated with a watered-down drink, causing participants in the Scarce condition to drink *less* of the mildly disliked drink at Time 2.

Results

Evaluations confirmed that our participants liked the products ($M = 3.15, SD = 3.06$). As in Experiment 1, the solitary item was not chosen more than the abundant item in either the Scarce or the Replenish condition, $\chi^2(1, N = 47) < 1$. Controlling for age, gender, and product type (pens or notebooks), we found participants were willing to pay more for the (liked) product in the Scarce condition $t(47) = 1.84, p = .07$, regardless of which product they chose. Of participants who chose the solitary product, those in the Scarce condition offered more ($M = \$1.47, SD = .57$) than those in the Replenish condition ($M = \$1.11, SD = .54$). Likewise, of participants who chose the abundant item, those in the Scarce condition offered more ($M = \$1.39, SD = .59$) than those in the Replenish condition ($M = \$1.23, SD = .54$).

Participants in the Scarce condition drank significantly *less* of the unrelated, distasteful drink than participants in the Replenish condition, $t(17) = 2.16, p = 0.04$, again regardless of which product they had chosen. On average, participants in the Replenish condition drank 38 (± 7.3) ml while participants in the Scarce condition drank 21 (± 3.6) ml—45% less.

Discussion

Using scarcity as a way to attract and sustain attention, and using RET to make predictions given this characteristic of the scarcity manipulation, Experiment 1 demonstrates that disliked objects can become *more negative* when evaluated within a

situation of scarcity. Moreover, as predicted by RET, the value of a single *abundant* object that is embedded in the situation of scarcity can *also* be intensified (in this case, intensification of dislike). In Experiment 2, we extended these findings by demonstrating that a situation of scarcity can intensify the value of an unrelated object that appears subsequently to the manipulation but still within the experimental session. Lastly, using positive *and* negative products, we found in Experiment 2 that one manipulation of scarcity can enhance the value of a positively-valenced object *and* diminish the value of an unrelated, subsequently presented, negatively-valenced object.

Together, these studies demonstrate that 1) scarcity can *diminish* the value of physical objects, and 2) intensification of value from scarcity can affect behavior with regard to an unrelated object, indicating that it is the situation of scarcity that affects value, not the scarcity of one particular object itself. Using RET to make this prediction resulted in findings that extend research on scarcity by demonstrating that the effects are not due to the manipulation of one scarce object, and it demonstrated that the effects of scarcity manipulations are more generalizable than previously known. It appears from these results that, as long as a participant is within the same psychological situation, scarcity effects can generalize from several different kinds of manipulations to affect the value a wide range of stimuli completely separate from the manipulation.

Given the argument for attention as the underlying mechanism behind scarcity results, and the predictions made by RET under conditions of increased sustained attention, RET is useful in order to experimentally test the suspected mechanism for these effects, to provide direct evidence for the *reason* these effects are occurring. In order to begin to determine whether scarcity effects are driven by sustained attention to the target

object, it is necessary to develop an experimental paradigm in which we can directly measure sustained attention.

Sustained Attention

Evidence from Experiments 1 and 2 helps to explain scarcity findings across many different domains, producing evidence suggesting that it is a situation of scarcity that attracts and sustains attention to the focal goal within that situation, intensifying evaluative responses to those goals and other stimuli within the situation. In order to determine whether it is indeed sustained attention paid to a focal goal or target that intensifies that target's value, it is necessary to demonstrate that participants *randomly assigned* to conditions of high engagement in a focal task show evidence of increased attention to that task relative to when those participants are assigned to conditions of low engagement.

Research in cognitive psychology has focused on the area of human attention, and memory is one way to concretely measure the extent to which a participant is engaging in a particular task or goal. The more attention an individual pays to a focal goal (i.e. the more a participant is engaged in a task), the less attention she is able to pay to information that is unrelated to that goal (James, 1890; Treisman, 1969). This basic proposition allows us to examine memory results in order to make inferences about the way participants allocate their attention across tasks. To the extent that a person shows evidence of being aware of, and paying attention to irrelevant or distracting stimuli that occur in the background during a goal pursuit activity, that person can be said to be less engaged in the focal goal pursuit activity. RET postulates that when people are strongly engaged in what they are doing, they are limited in their ability to attend to irrelevant events happening outside of the primary activity.

RET is set up to capitalize on the characteristics human memory in order to measure engagement in different kinds of tasks. When people complete tasks and perform activities, there are always distractions happening in the background, outside of a person's focal activity. Given the way RET defines engagement, it can use the amount of attention paid to these distractions as a continuous measure of the extent to which a person is engaged in a task. By discovering the potential to measure engagement in any task at any time as long as we know about what kind of distractions are present in the environment, RET suggests that it may be possible to develop a continuous online measure of engagement, concurrently with many experimental tasks. The critical issue is developing the right kind of tool for use in the lab, one that is compatible with a broad range of studies and that can demonstrate the kinds of effects RET predicts will be mediated by sustained attention to the focal task at the expense of distracting information.

We have chosen to measure participants' differential allocation of attention to a focal goal vs. a distraction from that focal goal by using earphones to present distracting sound information to participants while participants are engaged in a lexical problem solving task. We will present participants with this audio background information during the anagram task, and explicitly instruct them to ignore this irrelevant distraction while they are working on the anagrams. To the extent that participants are strongly engaged in the focal anagram task, they should attend fully to the anagram activity, and they should not pay attention to the distracting audio information. Furthermore, they should have difficulty recalling that peripheral, distracting information when quizzed on it after the completion of goal pursuit. Participants should pay less attention to that distraction when they are strongly (vs. weakly) engaged in the focal task. Since memory for events is driven

by attention paid to those events, by the logic of RET, individuals' memory for distracting information presented during goal pursuit should correlate negatively with engagement in the focal task. Participants should show poorer memory for distracting information presented during goal pursuit conditions in which participants are randomly assigned to conditions of strong engagement compared to when participants are assigned to conditions of weak engagement.

In order to exert experimental control over the amount of attention participants pay while completing a goal pursuit task, we will use Regulatory Fit to manipulate engagement differentially in different parts of the participants' focal activity. In this paradigm we can use the knowledge that regulatory fit increases memory for the focal aspects of a goal pursuit tasks (Bianco et al., 2003) in order to predict poorer memory for external distracters in conditions of regulatory fit.

Manipulating Engagement: Regulatory Fit

Evidence from the literature in Regulatory Fit, scarcity and value, as well as Experiments 1 and 2 of this paper suggest that *sustained attention* plays a role in intensifying evaluative responses to stimuli. If increased attention is the mechanism helping to support bidirectional value intensification as found in Experiments 1 and 2 and the other literature, it should be possible to manipulate engagement while participants are performing a task, and measure the extent to which participants attend to that task as a function of their induced level of engagement in the central activity. In order to determine whether participants in the high engagement (*vs.* low engagement) condition pay more attention to the focal task, we used regulatory fit to manipulate participants' level of engagement in the task.

Although most of the research in Regulatory Fit has performed between-subjects analyses to measure behavior under conditions of strong vs. weak engagement, we attempt to develop a new, more powerful paradigm in order to measure engagement *continuously* as participants are performing different parts of a task. By creating trials that are high vs. low in strength of engagement in different parts of one goal pursuit task, we can compare a participant's behavior under conditions of strong engagement to the same participant's behavior under weak engagement, in the very same task.

We aimed to create alternating conditions of regulatory fit (strong engagement) and regulatory non-fit (weak engagement) within each participant as they completed a goal pursuit task. In order to do this, we used a paradigm adapted from one used by Shah et al. (1998). In this study, as in the previously mentioned study by Forster et al. (1998), participants were induced either into a *promotion*, gain/non-gain focus condition, or a *prevention*, loss/non-loss focus condition through a framing of the experimental compensation participants would receive. Forster et al. (1998), told participants in the prevention focus condition that they would be paid \$5 for their participation, but that they would lose \$1 if they failed to find more than 10% of all anagram solutions. Researchers told participants in the *promotion focus condition*, on the other hand, that they would be paid \$4 for their participation in this study, but that if they were able to find 90% of all anagram solutions, they would earn an extra \$1.

Independent of this compensation framing, the experimenters manipulated the *means* by which participants completed different blocks of anagrams. Instructions told participants that there would be two kinds of anagram trials. For *green anagram blocks*, participants would *gain* a point for each correct anagram solution, and they would *not gain*

a point for each incorrect anagram solution. Participants were told that for each *red anagram block*, on the other hand, they would *lose* a point for each *incorrect* anagram solution but they would not *lose* a point for each *correct* anagram solution. In this point structure, solving the green anagrams was using *eager* means of goal attainment, focused on gains vs. non-gains, whereas solving the red anagrams was using *vigilant* means of goal attainment, focusing on losses vs. non-losses. In this study by Forster et al. (1998), participants were more engaged, and completed more anagrams during trials that fit with their initial motivational orientation framing, that is, when participants in the promotion-focused compensation frame condition completed green anagram blocks, and when participants in the prevention-focused compensation frame condition completed red anagram blocks.

By using this experimental design in order to manipulate regulatory fit and regulatory non-fit, assigning participants to alternating conditions of strong and weak engagement within their goal pursuit task, we will measure participants' recognition memory for years presented in participants' earphones during conditions of fit (participants in the promotion compensation framing condition completing green anagram blocks and participants in the prevention compensation framing condition completing red anagram blocks) and compare that recognition memory with the same participants' memory for years read during conditions of non-fit (promotion-framed participants completing red anagram blocks and prevention-framed participants completing green anagram blocks.) RET predicts that participants should be more engaged during regulatory fit anagram blocks, and should therefore allot less attention to the irrelevant distractions heard in their earphones during those trials when compared to the years read during the

completion of non-fit, weak engagement anagram trials. Participants should show poorer memory for years presented to participants during fit, vs. non-fit, anagram blocks.

Experiment 3

Method

Fifty-nine members (23 Male, 36 Female) of the Columbia University community participated for pay. Participants entered the lab, and were randomly assigned to one of two task frame conditions (promotion gain/non-gain vs. prevention loss/non-loss). Participants in the *promotion gain/non-gain focus* group were told that they would be paid \$5 for their participation, but that they would earn an extra \$1 if they found 90% or more of all possible anagram solutions. Participants in the *prevention loss/non-loss focus* group were told that they would be paid \$6 for their participation, but that they would lose \$1 if they missed more than 10% of all anagram solutions. Participants then placed earphones over their ears and read instructions introducing them to the experiment.

The instructions informed participants that they would be completing an anagram task composed of two different types of anagrams, each with a different reward structure. Participants read that they would encounter four alternating blocks containing four anagrams each, and each block of four anagrams would be the same color, either red or green. Participants read that, during each block of 4 green anagrams, they would *gain* a point for each correct anagram solution and they would *not gain* a point for each incorrect anagram solution (a regulatory fit of *eager* means of goal pursuit for the promotion gain/non-gain focused group). Participants read that during each block of red anagrams, on the other hand, they would *not lose* a point for each correct anagram solution but that they would *lose* a point for each incorrect anagram solution (a regulatory fit of *vigilant* means of

goal pursuit for the prevention loss/non-loss focused group). Lastly, participants read that some noise would be coming through their headphones during the experiment that was irrelevant to their goal of solving anagrams, and was simply meant to simulate everyday distractions common during real world goal pursuit. Participants were explicitly instructed to ignore these irrelevant distractions.

While solving the anagrams, participants had 30 seconds to list as many solutions as possible to each anagram; there were four blocks containing four anagrams each, two blocks of four green anagrams, and two blocks of four red anagrams. All anagram blocks were counterbalanced for color and order. During each anagram, as part of the task-irrelevant distraction, participants heard three years played, each year played ten seconds after the previous year (e.g. "1969," "2001"). We presented participants each year twice, both times either in the fit or non-fit condition. After participants had completed the four blocks of anagrams, we presented them a surprise recognition memory test in order to assess their memory for years presented in their earphones during fit and non-fit anagram trials. We presented participants with 24 years they heard, as well as 24 years we had not presented to participants during the experiment (novel years), randomly intermixed. We asked participants to identify, for each year presented to them during the recognition test, whether or not they remembered hearing that year presented in their headphones during the experiment. We then debriefed, thanked, and paid participants \$6 for their participation.

Results

In order to determine whether participants had better memory for years read during non-fit anagram trials vs. fit anagram trials, we calculated each participant's hit rate

for years presented to them in the experiment. In order to calculate hit rate in fit and non-fit conditions, we divided the number of hits, or years that were actually presented to participants through their headphones and which participants *correctly responded* that they were presented with, by the total possible number of hits in that condition (fit or non-fit). While this measure does not explicitly account for response bias, our within-subjects design allows for each participant to be her own control, as the hit rate score in both fit and non-fit, which is our critical comparison, incorporates the participant's bias.

We used a repeated-measures ANOVA to compare the hit rate values of recognition memory for years presented during strong engagement anagrams compared with memory for years presented during weak engagement anagrams. In order to ensure that anagram performance (number of solutions found) could not explain our memory results, we included this variable as a predictor in all of our analyses; the pattern of results was the same whether or not we controlled for anagram performance. In both studies, we have presented the statistics obtained when controlling for performance.

Surprisingly, we found no significant difference on the number of years correctly recognized between fit and non-fit conditions $F(1,56) = .028, p = .867$. However, we found a significant interaction between gender and memory for years presented in fit vs. non-fit conditions, $F(1,56) = 6.59, p = .013$. While there was no significant difference between memory for years presented in non-fit (HR = .49) vs. years presented in fit (HR = .55) for male participants in the study $t(56) = 1.55, p = .13$, the effect was significant for female participants $t(56) = 2.21, p = .03$ (see Figure 4); females remembered significantly more years that were read during non-fit anagrams (HR = .57) than read during fit anagrams (HR = .50). There was no main effect of gender on memory, $F(1,56) = .17, p = .68$. This

demonstrated preliminary support for our hypothesis that some participants were increasingly engaged in the fit trials, and were thus less able to attend to distracting elements being read in the background, external to the focal task.

Experiment 4

In order to determine whether the effect found for females in Experiment 3 would be found for *both* females and males, we replicated Experiment 3 using a more challenging version of the task, presenting participants with a wider variety of distraction items. Instead of presenting participants 24 years, and presenting each year twice, we presented participants 48 years, and participants heard each year only once. All other aspects of the procedure were the same.

Method

Forty-eight members (18 men, 30 women) of the Columbia University community participated for pay. The procedure was identical to experiment 3, except that we used twice as many years as distracters, and we played each year to participants only once. This time, in the surprise recognition section of the experiment, we presented participants with 48 years they heard (which were themselves presented randomly during fit and non-fit trials) and 48 years they did not hear (novel years) in a randomized order.

Results

We found that participants in regulatory non-fit performed significantly better at discriminating between years they were presented with vs. years they were not presented with ($HR = .431$), when compared to those participants' performance in regulatory fit ($HR = .392$), $F(1, 47) = 5.415$, $p < .03$.

Discussion

With initial evidence from Experiment 3 that for female participants, those who were strongly engaged in the focal task showed poorer memory for irrelevant distractions compared to those who were weakly engaged, the first goal of Experiment 4 was to replicate these results of Experiment 3 for *both* females and males by using a more challenging recognition task. In order to ensure that the effect was not driven by the specific years we used, we also wanted to replicate the effect with a different set of years.

Experiments 3 and 4 were an attempt to develop a completely new kind of behavioral measure of engagement strength. They yielded the first evidence that participants pay more attention to their focal goal pursuit task at the expense of irrelevant distracting information when they are strongly engaged with the focal task from regulatory fit than when they are weakly engaged from regulatory non-fit. This evidence, in addition to giving early support for a mechanism underlying the effects found in Experiment 1 and 2, gives a completely new way to conceptualize and measure the extent to which an individual is involved with a goal pursuit task, as well as a way to understand the consequences of that engagement for attention allocation outside of the task. Understanding that engaging with an activity can be captured by the extent to which a person pays attention to that activity helps us understand not only the subjective experience of engagement, but also helps us to measure, concretize, and move forward with further understanding of, the concept of engagement.

General Discussion

Target Valence X Individual Engagement

By independently manipulating an object's valence and an actor's strength of engagement, RET tries to understand how these two elements work together to affect a

person's experience of value. By doing this, RET makes the statement that an attempt to describe or predict the experience of value without one of these two components would be incomplete. Rather than locating value in the person or in the object alone, our approach explores the way different aspects of a situation can intensify the value experience associated with different stimuli *through* their effects on the individual, and therefore have stronger effects than either force would have on its own. Valence, for example, becomes even more important in determining value because of the intensifying effect of engagement. Accounting for the interactive effect of strong engagement is a way of understanding that valence, while not the only determinant of value, can be even *more* important than we've known, since it can be intensified by sustained attention. Each force is essential not at the exclusion of the other, but instead only *because of* its interaction with the other.

This model encourages us to think of a new psychological force acting on many different kinds of situations. We argue that, in order to know how the characteristics of a stimulus will affect a person's evaluation of something within any kind of context, we must know about the conditions in the environment that are affecting a person's perception of the valence of an object, as well as that person's strength of engagement with the evaluative target.

Secondly, the conceptualization of value as an experience, an interaction between person and stimulus, allows for a more flexible way of thinking about the components of the value experience. Just as scientists have argued that humans' tendency to approach pleasure and avoid pain is insufficient for capturing the complexity of human behavior, we believe that knowing about the level of personal engagement alone is insufficient for

understanding human value experiences. Specifically, we've learned that value is not simply an *additive element* representing the sum of the number of positive characteristics of an object plus the degree to which a person engages with those positive characteristics. RET retains the benefits of both kinds of predictive models by locating control in the individual, while preserving the importance of the hedonic properties of a stimulus. This feature allows the theory to make predictions not covered by these other models.

Using RET to Extend Work In Scarcity And Value

The application of RET to work in scarcity and value has produced several new predictions and discoveries. Drawing on the emerging explanation across several domains in the scarcity literature that we can explain scarcity's effects on value by measuring how participants pay attention to stimuli, RET makes predictions for extending research on scarcity that no other model has suggested. Across two studies, RET proved to generate new research questions that revealed the consequences of taking seriously increased attention as a cause of scarcity's effects on value.

First, RET predicts that the same manipulation of scarcity will increase the value of positive objects and will decrease the value of negative objects. We found support for this prediction, showing intensification of negative value, which hasn't appeared in the scarcity literature prior to these studies. The second direct contribution of applying RET to work in scarcity and value is RET's prediction that manipulations of scarcity, in creating *situations of strengthened engagement*, can influence the value of subsequently presented stimuli that are unrelated to the manipulation of scarcity. Making one object scarce can intensify not only the value of several different items within the induced situation of scarcity, but also the value of a *completely different* object that was not part of the scarcity manipulation. This

contribution, in addition to opening new areas of investigation of given the broad and previously unknown effects of scarcity, also informs the extant scarcity literature in understanding that scarcity effects may not, as previously thought, come only from manipulating the scarcity of one object, and evaluating the effect of scarcity on that single object. Instead, RET's prediction and our test of this prediction have provided support that what increases attention paid to stimuli is a *situation of scarcity*, and therefore, the value experience associated with many stimuli, instead of merely the one used to manipulate scarcity, can be intensified as long as a participant remains within the same psychological situation.

Furthermore, the novel paradigm used in Experiments 1 and 2 help to reflect on previous work in scarcity to understand that *solitariness* is not the main driver of scarcity's effects on the value of a broad range of evaluative targets. Instead of relying on the visual representation of solitude, presenting a solitary and therefore visually scarce item, our paradigm presents participants with an array of several choices, including a visually solitary item in both conditions, which will (Abundant condition) or will not (Scarce condition) be replaced. This has the primary advantage of being able to predict the same effects for participants who choose the solitary *or* the abundant object, demonstrating that the effect is independent of manipulating the scarcity of one solitary object. The second advantage, however, is that we have created a choice *situation* we can use to manipulate scarcity, which helps to understand the power of scarcity as a power very similar to other kinds of psychological situations that exert strong forces on human behavior. This finding suggests that more research should test for these effects, effects that might be occurring in many experiments that manipulate not only scarcity but also manipulate engagement by

other means, but whose guiding theory or set of hypotheses don't predict the generalization, so that researchers don't look for it.

Taken together, using the RET perspective to advance scarcity research has generated the first kind of experiment in this area that induces a psychological state at time 1 using the manipulation of a *positive* situation of scarcity, and finds intensification of a *negative* stimulus evaluated in time 2, simply as a result of the unrelated item being a part of the same psychological situation of scarcity.

Engagement Memory: A New Measure

Another contribution of RET is its suggestion that we use sustained attention to operationalize engagement strength. This enables researchers to measure engagement using a low-level phenomenon that requires little interpretation. This also has the advantage of being a basic *cognitive* mechanism for the *motivational* process of value creation. By measuring motivational force using cognitive measures and mechanisms like memory and attention, we emphasize that using the terms *motivation* or *cognition* without the other is unhelpful, that in fact motivation and cognition are not distinct forces.

In working to develop a new measure of engagement, we have set up what we believe is the most powerful test yet of the predictions of RET, using an implicit, within-subjects memory measure that takes advantage of information presented in the background of a focal task in order to measure engagement across different sections of one overall task. This measure, which takes advantages of the unique setup of the regulatory fit paradigm but can work in a variety of experimental contexts, is original in several ways, and provides a unique opportunity to understand the nature of engagement and its various effects on the value experience associated with different kinds of stimuli. As an implicit

measure, it has the advantage of capturing participants' engagement using a low level, strictly behavioral measure, instead of relying on a participant's interpretation and report of her internal states.

The critical insight provided by RET in developing this measure is that there are always distractions going on in the background of a focal goal pursuit task. We think of engagement with respect to a particular activity, so that any attention a participant pays to a distraction occurring outside of that activity *by definition* detracts from the participant's engagement in the focal task. By recognizing that it's possible to control the distracting information that occurs simultaneously with the focal task in an experiment, and measuring the amount of attention a participant allocates to that extraneous information, we can use this technique to measure engagement in any experiment. For example, in future research, we can use the measure of memory for years presented through headphones in order to directly test whether the scarcity manipulation from Experiments 1 and 2 reduces memory for distractions presented during the experiment.

In future research, we plan to use our scarcity manipulation in a computer program environment in order to replicate the bidirectional intensification and transfer effects of scarcity on the value of objects. While participants are choosing and evaluating products under situations of scarcity or abundance, we will present years in their headphones just as we did in Experiments 3 and 4. We will predict that participants' ability to discriminate between years they heard and years they didn't hear during the experiment will predict the intensity of participants' liking for positive and negative objects. Participants in the Scarce condition should be poorer at discriminating between years presented and not presented during the experimental session as a result of being more strongly engaged in the focal goal

of evaluating the products, and should therefore evaluate the products within that situation more extremely. According to RET, participants' memory score should mediate the intensity of their evaluation of the products.

Non-replenishment vs. Other Kinds of Scarcity

In our manipulation of scarcity, we isolated a very specific and powerful aspect of the experience of scarcity in order to manipulate the situation of scarcity. By manipulating whether or not we would replenish the participant's choice after a participant chose one of the items, we isolated what we believe is the most striking characteristic of scarcity, that scarce items are those which will not be replaced. Using this central characteristic of scarcity, we hope to establish a standardized way to carefully manipulate situations of scarcity in the lab, making a small change in the perception of a choice set, and observing wide ranging changes from that subtle and specific manipulation of scarcity. It would be interesting for future research to investigate the effects of other manipulations that might be associated with scarcity, while slightly different, such as *rarity*, a condition that is potentially a more stable characteristic of a target than scarcity, and therefore may produce subtly different effects on the experience of value associated with a target.

Charity and Everyday Understandings of Strength of Engagement

Charities commonly present extremely 'up-close' portraits of struggles in given areas of the world or sections of the population, in order to solicit charitable donations from viewers. These appeals attempt to increase engagement with a particularly dire situation in order to cause potential donors to feel more involved with the people or causes in need of aid. RET would predict that increasing engagement with these situations,

sustaining attention on the negative conditions of these various crises, would indeed intensify how negatively viewers perceive these situations.

This implicit understanding of the way engagement relates to value seems to be accurate given the current studies. Unfortunately, whether a person acts on this intense negative feeling in a case like this, whether a person makes the decision to give, or to call, is quite difficult to predict. A feeling of extremely intense negativity may lead potential donors to disengage from these appeals in order to avoid intensely negative emotions. In experiencing that this disengagement seems to de-intensify the negativity associated with that stimulus, viewers may make a rule of withdrawing whenever they feel themselves becoming engaged in one of these appeals for help. It might be useful to disengage in order to de-intensify negative value in order to make sure these causes remain salient in the minds of potential donors. By attempting to help potential donors maintain neutral or positive affect toward these causes rather than fear the intense negative emotionality induced by their appeals, we might encourage more favorable attitudes toward charitable appeals in general, and increase the likelihood of giving over time.

Choice and Engagement

One advantage of the experimental paradigm we used to investigate the effects of scarcity on value is that participants have a choice between several items, all of which are part of a situation of either Scarcity or Abundance, rather than participants being asked to evaluate one item that is itself either scarce or not scarce, as in the previous literature. This paradigm has some important implications for understanding engagement and the role of sustained attention in work on scarcity and value, and the way different experiments have manipulated scarcity differently. Specifically, given that choices call for human agency, the

presence of a choice probably increases engagement in both the Scarce and Abundant conditions. We think this effect adds to scarcity's tendency to strengthen engagement in this situation, and it would be worthwhile for future research to separate out these effects by randomly assigning one of the several products to participants for them to evaluate, instead of asking participants to choose. By measuring the size of the scarcity effect in the random assignment condition and comparing it to the size of the effect in Experiments 1 and 2, we will be able to determine what portion of the increased engagement and intensification of value is due to the situation of scarcity itself, and what portion is due to the engagement require when an individual acts on the world and makes a choice among various options within that situation of scarcity.

Generalization of Engagement Effects

Perhaps the most pressing question raised by these studies is the question of how exactly it is that engagement effects can be generated using one product, and can spill over to intensify the value of a separate item later in the experimental session. More specifically, under what conditions will engagement effects generalize to affect evaluative responses to other stimuli, and under what conditions will those effects not generalize? Experiments 1 and 2 tell us that thinking about this question is important not only for work in RET but also for understanding and using scarcity to increase the value of targets like the charitable causes mentioned above. By understanding scarcity manipulations as manipulations of situations that induce psychological states, instead of just as manipulations of the scarcity and value of single objects, we have found support for the prediction that this situation intensifies evaluative responses to items that are unrelated to the scarcity manipulation, as long as these objects are presented as a part of the same psychological situation in which

scarcity was induced. In Experiment 2, for example, participants were part of a single experiment in which they evaluated several different products, so participants evaluated the product and the drink within the same psychological situation of scarcity. Although the drink is a completely different product, and the value experience a completely different one (taste) from the products we used to manipulate scarcity, the situation of scarcity created by the pens and notebooks generalized to the experience of value in tasting the drink because participants were still within this one marketing experiment, a single situation that was defined by evaluating several different kinds of things.

It would be interesting to replicate this experiment, but changing the way we frame the experimental situation for participants. For example, we could run the same experiment, but tell participants that they will be asked to participate in *two separate experiments*, during the experimental session. In the first experiment participants would choose and evaluate a product from an array that will be replaced or not. In the second experiment, participants would taste a drink. This is one way of altering the perception that participants are behaving as part of one single situation. Given that there are different ways people can represent a given situation as psychologically distinct from a previous situation, there are many factors we could manipulate between these two experiments in order to investigate the exact constraints of these generalization effects. For example, creating a greater distance in time separating the different evaluations and the physical location of the different products may create two psychologically distinct situations, and we would therefore predict little transfer of value intensification on the product evaluated at time 2 as driven by the manipulation at time 1. We would predict that, to the extent to which participants experience these two experiments as distinct psychological situations,

activities, or events, we would see diminished effects of the manipulation of scarcity at time 1 on the intensification of value of the separate product at time 2.

Implications For Work In Construal

Researchers in psychology have understood that individuals engage with stimuli differently depending on the psychological meaning those stimuli have to the individual (Bruner, 1957; Kahneman & Tversky, 2000; Kretch & Krutchfield, 1948; Neisser, 1976; Ross & Nisbett, 1991; Schachter & Singer, 1962; Weber, 1967). Thinkers in different research areas have taken advantage of the latitude this allows for humans to subjectively interpret stimuli. Given that a mental representation intervenes between stimuli and a person's experience of those stimuli, some thinkers have reasoned that it should be possible to intervene in a person's experience with a stimulus by changing the way that person represents the stimulus, rather than attempting to change aspects of the stimulus itself.

For example, the work of Jean Paul Sartre demonstrates one way we might intervene at the level of our personal representation, the meaning we each personally react to after assigning that meaning to a stimulus. Sartre highlights the individual's power to represent stimuli and understand those stimuli in light of her particular representation, and Sartre discusses the individual's power to intentionally re-orient herself toward a given stimulus, generating a different kind of representation and understanding of that stimulus.

Sartre (1964; 2001) explains the difference between what he calls *facticity* and *transcendence*. A person's facticity, for example, refers to the person's objectively verifiable characteristics, such as skin color, hair color, and height; a person's facticity is made up of

the *facts* of that person. *Transcendence*, on the other hand, describes the way human perception goes beyond this basic facticity. Using transcendence, we take the facts of a person and give meaning to those facts, we interpret the facts in light of some goal or project. For example, a person's extraordinary height has meaning, in that it facilitates her ability to play basketball, while it inhibits her from being a coxswain; her height *means* something. Transcendence is what allows us to go beyond the facts and interpret them in a particular way with respect to some other motivation or goal. Sartre argues that, due to this human capacity for transcendence, stimuli in the world have a quality he calls *nothingness*. By nothingness he means the meaning of these stimuli is not fixed, that rather than the meaning being a well-defined fact representing that concrete *thing*, stimuli are all characterized by a no-thingness, their meanings are not bound to the basic facts about them, instead, stimuli afford interpretation and lend themselves to different meanings depending on the person interpreting the stimuli. In this line of thought, humans are not beholden to the properties that *exist within* individual objects, but instead people have the constructive power to assert their consciousness on their representation of objects in constructing the experience of value with those objects.

Social psychology has also recognized the potential to change a person's representation, or interpretation of a stimulus, as a way to change a person's experience of that stimulus's value. In fact, researchers have tested these questions in the laboratory, capitalizing on this active function of the human brain to manage the perception of the properties of objects. Investigating the human power to influence the value of stimuli humans perceive, psychologists started to study the way people can intervene to change the way they represent stimuli, and can form more adaptive representations of stimuli as a

way to help in the regulation of emotional responses to stimuli, using a technique known as *reappraisal*. Reappraisal operates under the assumption that the meaning and value of stimuli are not fixed, and involves changing a person's appraisal of stressful stimuli or events, allowing her to construct more positive interpretations of them (Gross, 1998).

The RET approach builds on this innovative knowledge of the human representation of valence, suggesting new ways in which subjective interpretations of a stimulus can affect an individual's experience of value with that stimulus. RET suggests that the most effective method of reconstrual may not be to re-label an object's valence in order to simply reconstrue the stimulus and change the mental representation to a more positive one. Instead, RET points out that construals always include information about the valence of an object, while *simultaneously* providing information inviting, or cueing, a particular level of engagement from the individual, and that cues about the level of engagement with a stimulus are as important as cues about the stimulus's hedonic valence.

Understanding that all stimulus representations carry information about how strongly a perceiver should engage with that stimulus can have powerful effects on human behavior. One important implication of these findings is that, since engagement intensifies value instead of merely enhancing it, increased engagement is not desirable in all situations. Classic research on resisting temptation has demonstrated that participants are better able to resist a tempting treat when they create a mental representation of the treat that *disengages* them from that treat, suggesting that disengagement de-intensifies the value of the treat (Mischel, 1961), as RET would predict. Further, decreasing engagement with a treat, that is, taking away a child's ability to pay attention to the attractive and tempting treat during a waiting period, de-intensifies the attractiveness the treat (Mischel

& Ebbesen, 1970). In this case, the positivity of a liked stimulus is being de-intensified by decreased engagement, manipulated by decreasing the amount of attention focused on this tempting treat.

To the extent that a stimulus affords different engagement-strength construals, or hints about how strongly a person should engage with this stimulus, less engaging construals of negative stimuli should result in less negative evaluations of, and less extreme behavioral responses to, those stimuli. In the area of emotion regulation and reappraisal, in fact, it has become clear that generating a more adaptive response to a negative stimulus involves disengaging from that stimulus (Ayduk & Kross, 2010).

RET suggests that this kind of reappraisal, or reconstrual, may be as important as changing a person's representation of the object's valence. In the case of framing a task as 'work' (Sehnert & Higgins, 2011), for example, we see that task labels and frames often include signals about valence and engagement, as mentioned above. In this case, changing the hedonic representation of a task simultaneously alters the strength of participants' engagement in the task. Adding a label of "work" to a task tends to communicate that the task is negative, but it also identifies the task as something that requires increased engagement. As a result, participants show increased levels of negativity and engagement when tasks are called 'work' compared to when the same tasks are not labeled as 'work'. As RET predicts, this research finds that strongly engaging with a negatively-labeled stimulus leads to intensely negative responses, and results in poorer performance on the task. In this case, an adaptive reconstrual of the task would not simply comprise altering an individual's perception of the valence of the task. Instead, we might try orienting a person toward the task in a way that decreases engagement with the negative stimulus.

Other stuff about tradeoffs and interacting with the world

In a busy world, it remains tempting to evaluate stimuli based on their apparent positive and negative properties. However, one consequence of using this hedonic point of view to guide our choices is that this system paints a strange picture of what it means to effectively self-regulate in the world. Most actors will find that this way of thinking about value is unhelpful in actually figuring out how to behave in the face of life's most important decisions. Is it that we are supposed to estimate which option has the most *value*, and wait for these value scores to be unveiled and calculated? Are we supposed to cover our eyes and cross our fingers and choose, wait until the dust settles and peek timidly through our fingers to see whether we ended up making the right choice? This sounds like a difficult way to live.

However, it's equally silly to think we can simply determine the value we would like to give to an option and engage with it accordingly. Thinking we can manipulate the value of everything we experience is just a different way of failing to respect and take seriously the circumstances of the world. Value creation is no more caused by engagement alone than it is caused by valence alone. We would like to emphasize that we think this work helps demonstrate that the way people engage with stimuli is a part of the value equation. That is, the aspects of behavior that are directly under a person's control, the repertoire of behaviors she can decide to execute, these behaviors will help to influence and predict her evaluative reactions to things in our world. They will not allow her to engineer every experience.

There are aspects of choice situations, and ultimately our value experience, that we can control through our own behavior, but our ability to exert causal influence over our

value experience will always rely on our understanding of the valence properties of the decision. It is as important to respect our reactions to stimuli and realize that there are some aspects of the value equation we cannot control, as it is to assert ourselves over those aspects we can control. We cannot change our experience with stimuli in the world with a quick shift in labeling or construal, just because it would be beneficial for our temporary psychological state. Nor would we want this. Our behaviors both affect and are constrained by the world; our behavior interacts powerfully with our perception of the world.

Just as we wouldn't want to systematically eradicate disengagement by engaging strongly in everything, we wouldn't want to eliminate negativity by constantly reinterpreting stimuli and re-engineering our perceptions and telling ourselves creative stories in order to avoid unfavorable reactions to stimuli.

Living a meaningful life is about experiencing different parts of the world and having a rich and healthy relationship with it, it's about understanding the different kinds of experiences the world affords and embracing all of them, it's about negotiating with the world, not circumnavigating it. A consideration for the qualified power of our own behavior can allow a more harmonious relationship with the world, it can help us build a life in which we work *with* the world, accepting it and dignifying the experience it offers.

Life doesn't only happen when we're inspired and ecstatic; life doesn't only happen when we're strongly and positively engaged. Life is happening all the time.

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Appendix

Figure 1: Experiment 1 payment offered for a disliked yogurt as a function of condition (Scarce or Replenish) and yogurt chosen by participant (Solitary or Abundant).

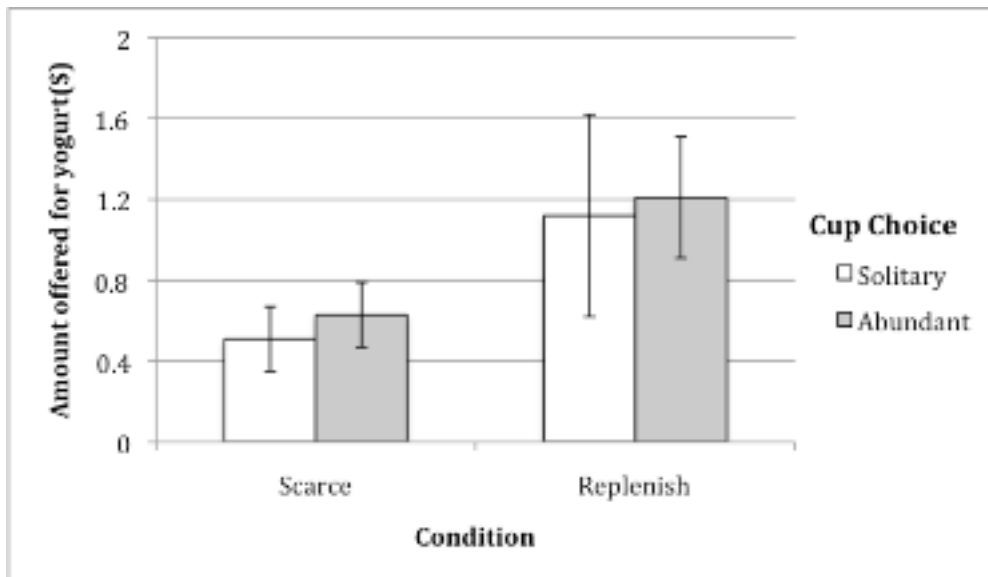


Figure 2: Experiment 2 payment offered for a liked product as a function of experimental condition (Scarce or Replenish) and product chosen by participant (Solitary or Abundant).

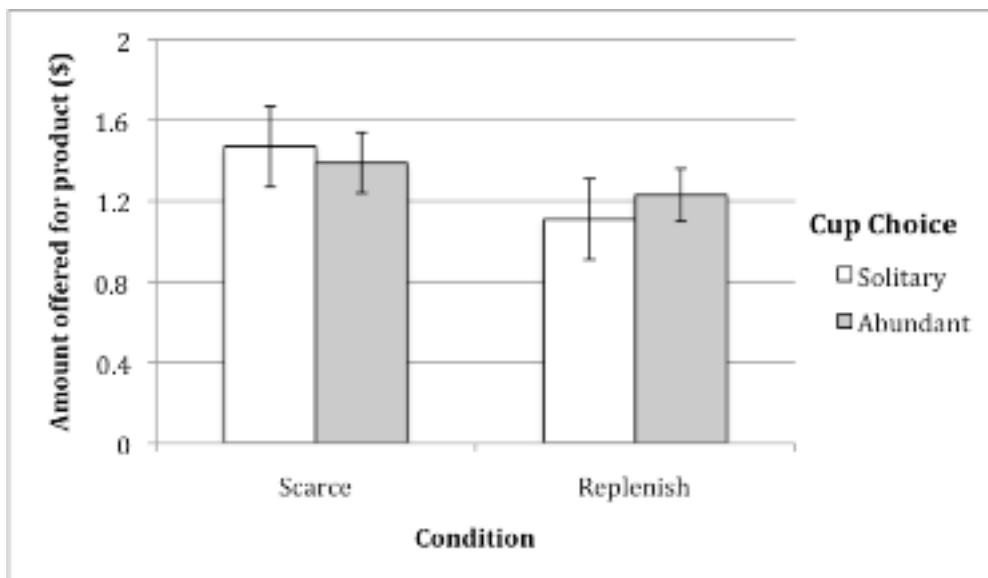


Figure 3. Experiment 2 milliliters of disliked drink consumed as a function of experimental condition (Scarce or Replenish) and drink chosen by participant (Solitary or Abundant).

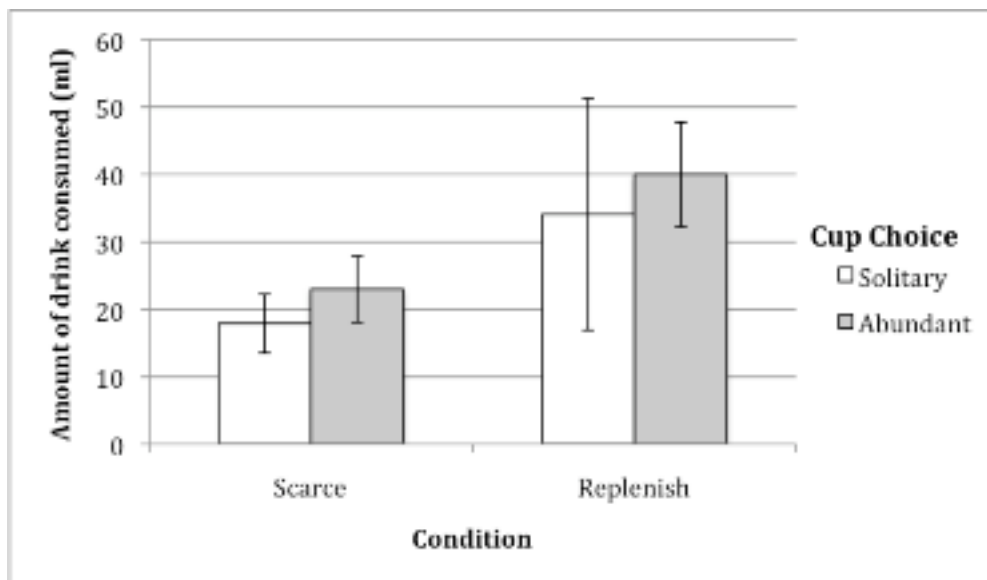


Figure 4: Experiment 3 recognition memory (hit rate) as a function of regulatory fit (females)

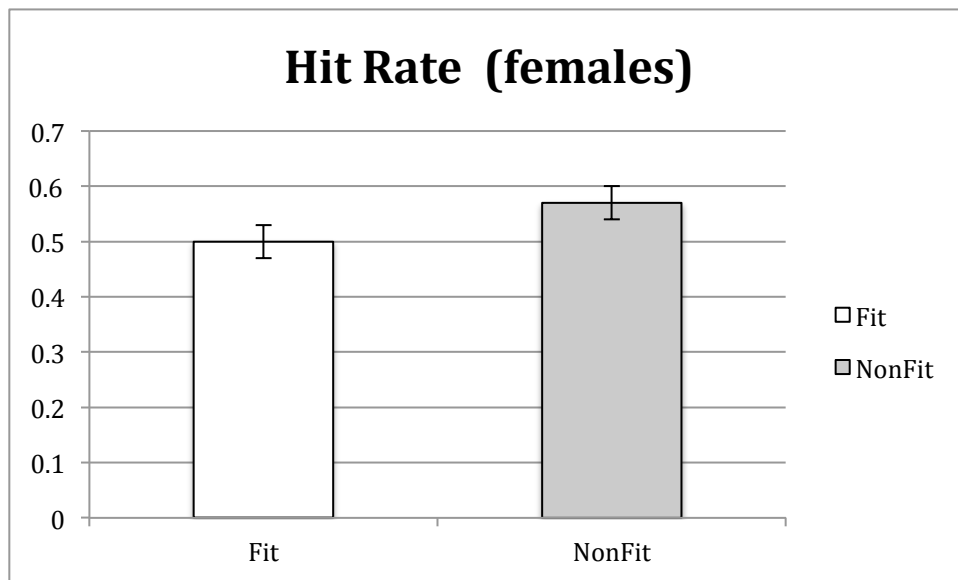


Figure 5: Experiment 4 recognition memory (hit rate) as a function of regulatory fit (overall)

