BEYOND PLEASURE AND PAIN

Value From Engagement

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ABSTRACT

The hedonic experience of pleasure and pain is a major contributor to the experience of value. But it is not the whole story. In this chapter, I describe a new theory that proposes that *strength of engagement* also contributes to experienced value by intensifying the force of attraction to or repulsion from a value target. Moreover, the factors that strengthen engagement also go beyond pleasure and pain. People not only want to have desired outcomes (value effectiveness), like pleasure and no pain. They also want to manage what happens (control effectiveness) and establish what's real (truth effectiveness). These additional control and truth sources of engagement strength include: (1) regulatory fit between the orientation and the manner of goal pursuit; (2) using the right or proper means of goal pursuit; (3) opposing something that interferes with the goal pursuit; and (4) experiencing an upcoming event (relevant to the current goal pursuit) as being real because of its high expressed likelihood. I present evidence showing how each of these control and truth sources of engagement strength contributes to value intensity.

Where does value come from? What do people want? We all know the answer to these questions. It's all about pleasure (good/want) and pain (bad/don't want). The ancient Greeks gave us this answer centuries ago in the hedonic principle, and there are dozens of recent books on "happiness" that agree with them. Indeed, this answer also underlies the common assumption that the best way to motivate others is with "carrots" (promising pleasure) and "sticks" (threatening pain). But if having a life of pleasure (and no pain) is the answer to what people want and what makes life valuable, how do we explain what happened in the Garden of Eden? The Genesis story of Adam and Eve as told in the *Bible* story is as follows:

And out of the ground made the Lord God to grow every tree that is pleasant to the sight, and good for food; the tree of life also in the midst of the garden, and the tree of knowledge of good and evil....And the Lord God commanded the man, saying, Of every tree of the garden thou mayest freely eat: But of the tree of the knowledge of good and evil, thou shalt not eat of it: for in the day that thou eatest thereof thou shalt surely die.

Genesis 2: 8-9, 16-17 (King James Version)

Adam and Eve were blessed by God in being placed in *the* original paradise—the Garden of Eden. This was a place of all pleasure and no pain, a place in which grew "every tree that is pleasant to the sight, and good for food". Moreover, in the midst of the garden was the *tree of life*, and Adam and Eve knew, from God's command, that they could eat the fruit of *every* tree in the garden, except the *tree of knowledge*, which meant that they had permission to eat from the *tree of life* and thereby have a life of all pleasure and no pain *forever*. All they had to do was enjoy the fruit of the *tree of life* and the other abundant pleasures in this paradise. But we all know that Adam and Eve chose instead to eat the forbidden fruit from the *tree of knowledge*.

What could possibly motivate Adam and Eve to make this choice when, by making it, they would lose an everlasting life of pleasure and no pain? If what people really want is to maximize pleasure and minimize pain, Adam and Eve would never have made this choice. I believe that this story is telling us that there is more to human motivation than maximizing pleasure and minimizing pain. What else is there? The answer lies in why Adam and Eve would want to eat the fruit of the tree of knowledge. The tree of *knowledge* is the tree of *truth* and a central motivation of humans is to *establish what's real*, to distinguish between truth and falsehood, between reality and fantasy. This motivation for the truth can be as important to humans as life itself (see Higgins, 2012). Moreover, the tree of knowledge is not just any knowledge—it is the *"tree of the knowledge of good and evil".* This means that eating the fruit of this tree also satisfies another central human motivation, the motivation to *manage what happens*, the motivation to control our lives. Only when humans have the knowledge of what is good and what is evil can they be in control of their lives. And when you combine truth and control—when truth and control *work together* as in the tree of the knowledge of good and evil—then humans can live a life in which they *"go in the right direction."*

Importantly, Adam and Eve's life in the Garden of Eden has little need for truth or control because everything is provided for them in this paradise; whatever benefits and pleasures they enjoy are not due to their being effective in obtaining them. Thus, Adam and Eve cannot really be effective at having truth or control, at living a life in which *they* go in the right direction, unless they eat from the tree of the knowledge of good and evil. What the Genesis story captures is that there is more to human motivation that just having pleasure, just having desired outcomes. It is not just the destination that matters. It is also the journey. Humans want to go in the right direction, and this requires being effective in truth and in control (see Higgins, 2012).

Importantly, when people are effective in truth and control their *engagement* in their goal pursuits is strengthened. Stronger engagement in goal pursuit activities makes people “feel alive” and contributes to well-being. And it does something else as well. It intensifies the value experience itself. It makes attractive things even more attractive, and it makes repulsive things even more repulsive. Thus, there is an irony here. Being effective in truth and control not only contributes to well-being beyond the value that derives from having desired outcomes, it also independently contributes to the experienced value of objects and activities beyond their hedonic properties. Not only is the journey itself worthwhile, but it impacts the value intensity of the destination itself. To understand how this happens, I need to introduce *regulatory engagement theory*.

Regulatory Engagement Theory

Jeremy Bentham made an influential early statement on the importance of hedonic experiences to both ethical and non-ethical value (Jeremy Bentham, 1781/1988, p. 1): “Nature has placed mankind under the governance of two sovereign masters, *pain* and *pleasure*. It is for them alone to point out what we ought to do, as well as to determine what we shall do. On the one hand the standard of right and wrong, on the other the chain of causes and effects, are fastened to their throne.” In the voluminous literature on emotions and affect, hedonic experience has again been given a central role. Early on, Benedict de Spinoza, the great 17th century Dutch philosopher, proposed that all emotions can be reduced to some form of pleasure and pain (Spinoza, 1677/1986). Although differing in several respects, the two best known models of emotional experiences, the appraisal and circumplex models, as well as other influential models, universally agree in proposing a basic dimension that distinguishes between pleasant and painful emotions (e.g., Frijda, Kuipers, & ter Schure, 1989; Feldman Barrett & Russell, 1998; Larsen & Diener, 1985; Ortony, Clore, & Collins, 1988; Roseman, 1984; Watson & Tellegen, 1985). The bulk of research in social psychology that is concerned with value experiences has also emphasized hedonic experiences, such as the basic distinctions in the attitude literature between good and bad moods or between liking and disliking something (see Eagly & Chaiken, 1993). Influential theories and findings in decision science have also emphasized basic hedonic experiences, such as the pleasure of gains and the pain of losses or the pleasure of hope and the pain of fear (see Kahneman & Tversky, 1979; Lopes, 1987).

Despite this historical emphasis on hedonic experience, there are common sayings or maxims that suggest that the contribution of experience to value is not restricted to the pains and pleasures of goal pursuit outcomes: “It is not enough to do good; one must do it in the right way”, “What counts is not whether you win or lose, but how you play the game, “The ends don’t justify the means”, and “Never good through evil”. What these maxims are saying is that there is something else about the process of goal pursuit, about *how* goals are pursued, that contributes to value experience beyond hedonic experience. This extra something has been usually understood in terms of moral or ethical factors, but might there be more to the story than that? Might there be something else about the goal pursuit process that contributes to value experience beyond hedonic experience that need not even involve ethical considerations? The answer is “Yes.” There are process factors involving truth and control that can *strengthen engagement* in goal pursuits, and stronger engagement can then intensify our positive or negative reactions to something.

Figure 1 provides an overall illustration of what *regulatory engagement theory* proposes as contributors to value experience (for a fuller discussion of regulatory engagement theory, see Higgins, 2006; Higgins & Scholer, 2009). Hedonic experience is one contributing factor but there are other factors as well, including those like need satisfaction and standards that contribute to value experience through their impact on engagement strength. In discussing this proposal, I begin with the value experience itself on the far right side of Figure 1. What exactly is the nature of this value experience?

Insert Figure 1 about here

For Lewin (1951), value related to *force*, which has direction and intensity. Lewin's concept of "force" can be extended to personal experiences that have direction and intensity. Experiencing something as having positive value corresponds to experiencing a force of attraction toward it, and experiencing something as having negative value corresponds to experiencing a force of repulsion from it. Value experiences vary in intensity. The experience of a force of attraction toward something can be relatively weak or strong (low or high positive value), and the experience of a force of repulsion from something can be relatively weak or strong (low or high negative value).

The factor of engagement strength is shown on the bottom left of Figure 1. The state of being engaged is to be involved, occupied, and interested in something. Strong engagement is to concentrate on something, to be absorbed or engrossed with it (Higgins, 2006). Strength of engagement alone does not make something attractive or repulsive; that is, it does not have direction. Instead, strength of engagement contributes to the *magnitude* of positivity or negativity—intensifying the force of attraction toward something or intensifying the force of repulsion away from something.

As illustrated in Figure 1, value creation mechanisms such as need satisfaction, hedonic experience, and standards of different kinds all contribute to the direction of the motivational force, to whether the value force is positive attraction or negative repulsion. These mechanisms also contribute to the intensity of the motivational force, to how attractive or how repulsive something is. In contrast, strength of engagement, as illustrated in Figure 1, only contributes to the intensity of the value experience. However, this contribution can be important. In the subsequent sections I will describe collaborative research that illustrates how different truth and control factors can contribute to the intensity of the value experience through their impact on engagement strength—regulatory fit, use of proper means, opposing interfering forces, and likelihood (for a fuller review, see Higgins, 2006, 2012).

Strengthening Engagement By Creating Regulatory Fit

People experience *regulatory fit* (Higgins, 2000) when their goal orientation is sustained (*vs*. disrupted) by the manner in which they pursue the goal. For example, some students working to attain an "A" in a course are oriented toward the "A" as an accomplishment or an aspiration, as a grade that they ideally want to attain (a *promotion* focus). Others are oriented toward the "A" as a responsibility or as security, as a grade that they believe they ought to attain (a *prevention* focus). As a way to attain the "A", some students read material beyond what has been assigned (an eager strategy) whereas others are careful to make sure all course requirements are fulfilled (a vigilant strategy). Pursuing the goal of attaining an "A" with an eager strategy sustains a promotion focus (a fit) whereas pursuing it with a vigilant strategy disrupts a promotion focus (a non-fit). In contrast, pursuing the goal of attaining an “A” with a vigilant strategy sustains a prevention focus (a fit) whereas pursuing it with an eager strategy disrupts a prevention focus (a non-fit). Regulatory fit represents *effective contro*l of the goal pursuit that strengthens engagement in the goal pursuit process. According to regulatory fit theory and regulatory engagement theory (Higgins, 2000, 2006), this should intensify the value of what one is doing. This prediction was tested in two different research programs—one examining the value of the object of goal pursuit and one examining the value of the goal pursuit activity itself.

Buying a Chosen Object: The Mug and the Pen Study

In an early test of this regulatory fit effect on value (Higgins, Idson, Freitas, Spiegel, & Molden, 2003), undergraduates at Columbia University were given the choice of deciding whether they preferred a Columbia coffee mug or an inexpensive pen. A measure taken at the beginning of the experimental session indicated that some of the participants had especially strong concerns with accomplishments and advancement (i.e., a predominant promotion focus) whereas other participants had especially strong concerns with safety and security (i.e., a predominant prevention focus). The study found that this personality difference by itself did not affect participants’ preference, which was overwhelmingly the Columbia coffee mug (as expected), nor did it affect how much they were willing to pay to buy the chosen mug (when they were later given the opportunity to buy the mug with their own money). The manner in which they made their decision was manipulated by giving them different instructions prior to making their choice. Half of them were told to think about what they would *gain by choosing* the mug and what they would gain by choosing the pen—an *eager* manner of choosing that ensures advancement. The other half were told to think about what they would *lose by not choosing* the mug or what they would lose by not choosing the pen—a *vigilant* manner of choosing that ensures against making mistakes.

Like their promotion or prevention predominant personality, the eager or vigilant manner of making the choice did not influence participants' preference nor the amount they were willing to pay to buy the chosen mug. What did matter was whether the manner of making the choice was a fit or non-fit with participants' regulatory focus orientation. Predominant promotion participants who made their decision eagerly and predominant prevention participants who made their decision vigilantly (the two effective control conditions) offered much more money to buy the mug than predominant promotion participants who made their decision vigilantly and predominant prevention participants who made their decision eagerly—almost 70% more money for the exact same mug!

Choosing to Perform an Activity Again: Fun Versus Importance

In another regulatory fit research program (Higgins, Cesario, Hagiwara, Spiegel, & Pittman, 2010), participants were initially asked to perform an activity, and they were told that if their performance was good enough they would receive a reward (an instrumental or reward contingency goal pursuit). Indeed, all of the participants were told after completing this activity that they had done well enough to receive the reward. Before leaving the room for several minutes, the experimenter told the participants that they could spend their time doing any of the activities that were available in the room, which included performing again the activity they had just completed or playing computer games or reading magazines. This was the *open period*. The study examined the participants' interest in doing the completed activity again rather than the alternative activities, which measured how much they valued the activity they had performed earlier.

These parts of the experimental procedure were the same for everyone. Other parts varied. At the beginning of the study, some participants were assigned to perform a fun "Shoot-the-Moon" activity while others were assigned a non-fun but important "Financial Duties" activity. "Shoot-the-Moon" is a game where the player manipulates a pair of parallel metal rails in order to slowly force a steel ball as far as possible up an inclined plane. Underneath the rails are holes that the ball falls into. The further the player gets the ball to travel before it falls through the rails and into a hole, the more points he or she earns. In the "Financial Duties" task, each participant plays the role of a student advisor who rates the financial standing of other students based on their management of three types of financial transactions—checking accounts, savings accounts, and credit card payments.

In addition to manipulating which activity participants were given to perform, there were two other experimental manipulations. First, the participants were told to think of the reward they could receive either as an *enjoyable reward* "like a prize you win at a carnival" or as a *serious reward* "like the salary you receive at work". Second, the participants had the open period introduced to them either as an *enjoyable "free time" period* or as a *serious "time management" period*.

"Shoot-the Moon" is a fun task, for which an enjoyable surrounding situation is a fit and a serious surrounding situation is a non-fit. The opposite is true for the "Financial Duties" task because it is an important task rather than a fun task. When doing this important activity, a serious surrounding situation is a fit and an enjoyable surrounding situation is a non-fit. The study found that participants with a fit (*vs*. a non-fit) were more interested in doing the completed activity again during the open period.

What happened for the “Financial Duties” activity is especially interesting. Making the surrounding situation more enjoyable *reduced* rather than enhanced subsequent interest in doing that activity again because performing an important task in an enjoyable way is a non-fit that weakens engagement and thus deintensifies attraction toward the task. Moreover, adding a contingent reward for performance neither generally increased nor generally decreased subsequent interest in the completed activity. It was the fit between the nature of the reward (enjoyable or serious) and the activity (important or fun) that mattered.

These findings have implications for previous classic research on “undermining intrinsic motivation” (e.g., Deci, 1971; Kruglanski, Friedman, & Zeevi, 1971; Lepper, Greene, & Nisbett, 1973). In the Lepper et al. (1973) study, for example, children who liked to draw were promised an award for helping out an adult by drawing pictures. This study found that the children in this instrumental reward condition later spent less time drawing in an open period than other children. Drawing pictures for these children would be a fun task, but receiving an award from an adult for drawing would be a serious surrounding situation. This would be a non-fit that could have decreased interest in doing more of the task during the open period. However, what the “Shoot-the Moon” results show is that introducing an extrinsic, instrumental reward need not undermine interest in an intrinsically fun task *if* a fit is created by making the reward an enjoyable surrounding situation rather than a serious one. Moreover, introducing an extrinsic, instrumental reward *and* having a serious surrounding situation also need not undermine interest in re-doing a task *if* a fit is created by the task being important rather than fun.

Strengthening Engagement By Using Proper Means

Regulatory fit represents one kind of control effectiveness that strengthens engagement—effective use of a manner of goal pursuit that sustains one current goal orientation (e.g., eager manner for a promotion orientation). Another kind control effectiveness that strengthens engagement is the use of proper or appropriate means when pursuing a goal—pursuing the goal in the *right way*. As I mentioned earlier, there are common maxims that suggest that pursuing goals in the right way contributes to value beyond the pains and pleasures of goal pursuit outcomes: “It is not enough to do good; one must do it in the right way” or “What counts is not whether you win or lose, but how you play the game. But the use of proper means need not involve behaving in a moral or ethical way in order for it to contribute to value. For example, James March (1994), a major figure in organizational decision making, has proposed that pursuing goals in an appropriate or proper way has its own relation to value creation, separate from just hedonic outcomes (rational instrumentality).

Consider, for instance, what happens when individuals choose between a coffee mug and a pen. Some people might believe that the proper or right way to make this choice would be to list the positive and negative properties of the mug, then list the positive and negative properties of the pen, look over each list, and then make the choice. Making the choice in this way would not traditionally be considered a moral or ethical issue. But it does involve our doing something in a proper or right way, and this can strengthen engagement in what we are doing. This stronger engagement in turn can intensify our attraction toward our ultimate choice—independent of the inherent properties of that choice.

In recent studies we have investigated this possibility (see Higgins, Camacho, Idson, Spiegel, & Scholer, 2008). Columbia undergraduates were asked to express their preference between a Columbia coffee mug and an inexpensive pen. As in our regulatory fit mug and pen study described earlier, we were only concerned with those participants who made the *same* choice—overwhelmingly the coffee mug.

In one study, before the participants actually made their choice, they were randomly assigned to two different conditions that varied in what was emphasized about the decision. One condition emphasized the "Right Way"; it began with the title, "Making Your Decision in the RIGHT WAY!", and then continued as follows: "You need to make your decision in the *right way*. The right way to make a decision is to think about which choice has the better consequences. Think of the positive and negative consequences of choosing the mug. Think of the positive and negative consequences of choosing the pen. Please write down your thoughts on the lines below." The second condition emphasized the "Best Choice"; it began with the title, "The BEST CHOICE!", and then continued as follows: "The *best choice* is the choice with the better consequences. Think of the positive and negative consequences of owning the mug. Think of the positive and negative consequences of owning the pen. Please write down your thoughts on the lines below." Note that in both conditions the specific behaviors requested of the participants were exactly the same. What varied was whether those behaviors were perceived by the participants as making their decision in the right way or as leading to the best future outcomes.

After considering the two options and expressing their preference, the participants were given the opportunity to buy the mug that they preferred. The study found that the participants in the *Right Way* condition offered much more money to buy the same chosen mug than participants in the *Best Choice* condition. But that was not all. This study also asked participants how much they agreed with three cultural maxims concerning the importance of pursuing goals in a proper way: "The end does not justify the means"; "What counts is not whether you win or lose, but how you play the game."; and (reverse coded) "To do it this way or that, it does not matter– results are all that count". An index of "strength of belief in the importance of pursuing goals in a proper way" was computed by combining these three items. The more strongly individuals believed in pursuing goals in a proper way, the more strongly they should engage in the decision process when they are, indeed, behaving in the proper way, and this stronger engagement should intensify the value of the mug. In fact, for those participants with only weak beliefs in pursuing goals in a proper way, there was no significant difference between the *Right Way* condition and the *Best Choice* condition in the money offered to buy the mug. But for those participants who strongly believed in the importance of pursuing goals in a proper way, the money offered to buy the mug was much higher in the *Right Way* condition than the *Best Choice* condition— $6.35 in the *Right Way* condition versus $2.61 in the *Best Choice* condition. The findings from this research are consistent with the idea that pursuing goals in the right or proper way strengthens engagement in what we are doing, which intensifies attraction toward a positive value target.

Strengthening Engagement By Opposing Interfering Forces

We have now considered two different kinds of control effectiveness that strengthens engagement and intensifies value—regulatory fit from pursuing goal pursuit in a manner that sustains one's current goal orientation, and using proper means or the right way to pursue a goal. There is a third kind of control effectiveness that can strengthen engagement and intensify value that my collaborators and I have investigated—*opposing interfering forces*. We investigated this mechanism by examining different ways of dealing with adversity.

It is common for people to confront difficulties while they pursue their goals. Obstacles in the path toward a goal have to be removed. Forces pushing back from the goal have to be resisted. Aversive background conditions must be dealt with. In another research program (Higgins, Marguc, & Scholer, 2012), my collaborators and I investigated whether the direction of change in the value of a positive goal pursuit object (more attractive *vs*. less attractive) would depend on how people dealt with an adversity. When people encounter adversity in goal pursuit, they can either redouble their focus on the task at hand—the kind of response to difficulty that Woodworth (1940) described as resistance, as illustrated by leaning into a wind that is impeding one's progress—or they can direct their attention away from the task at hand and attend instead to something else, such as their unpleasant feelings. When people focus their attention on the task at hand, they will be more engaged in the focal goal pursuit, whereas when people attend to their feelings, the will be less engaged in the focal goal pursuit.

More specifically, while working on a task, one way of dealing with an unpleasant background noise is to represent it as something that is interfering with the goal pursuit that must be overcome in order to succeed on the focal task—responding to the difficulty as opposing an interfering force by redoubling focus on the task. This response to difficulty should strengthen engagement with the focal task activity, which would increase attraction toward a positive goal object. But another possible response is to represent the background noise as an aversive nuisance which produces unpleasant feelings that must be coped with—responding to difficulty as *coping with a nuisance*. By reducing focus on the task in order to cope with the unpleasant feelings created by the nuisance, this response to difficulty should weaken engagement with the focal task, which would *decrease* attraction toward a positive goal object. A recent study provides evidence that supports both of these predictions.

Supposedly to simulate real-world conditions in which people have to deal with unpleasant ambient noise while they are working, participants worked in the presence of an aversive background noise to solve enough anagrams to receive a prize. The noise was the same for everyone and consisted of a series of 12 different animal sounds (e.g., birds, sheep, horse, bear). The participants were randomly assigned to one of two instructions for how they should deal with the background noise they would hear while working on the task. Participants in the "*opposing*" condition were told, "the background noise is something you will have to overcome in order to attend to the task", and "to do well on the task, you will need to overcome the distraction and oppose its interference." Participants in the "*coping*" condition were told, "the background noise is a bit of a nuisance to cope with. It is something that may cause you to feel a bit unpleasant—a feeling that you'll need to cope with." After ostensibly checking their solutions, the experimenter told all participants they had won the lottery ticket for the prize. Participants then indicated how much they valued this prize.

At the end of the study, there was a surprise recognition task for the content of the background noise that served as our measure of attention to dealing with adversity as instructed. In this task, participants were presented with each of the twelve animal sounds that had been played during the anagram task and an equal number of animal sounds that had not been played before. For each sound, participants indicated whether or not they had heard it before. For both the "opposing" condition and the "coping" condition, the more that participants dealt with the background noise as instructed, the worse their memory would be for the background sounds because, instead of paying attention the sounds, they would be paying attention to either opposing or coping. For those participants who paid more attention to either opposing or coping as instructed, the value of the prize changed in opposite directions as predicted: for those who paid attention to opposing the background noise as an interfering force (strengthening engagement in the focal anagram task), the positive value of the prize increased (intensified attraction); for those who paid attention to coping with the unpleasant feelings created by the background noise (weakening engagement in the focal anagram task), the positive value of the prize decreased (deintensified attraction).

What this research highlights is that adversities, although unpleasant, do not necessarily make positive things in life less positive. Adversities can have this diminishing effect when people deal with them by disengaging from what they are doing in order to cope with the unpleasant feelings produced by the adversities. Such disengagement would decrease the positivity of positive things. But if people instead oppose adversities as interfering forces and redouble their focus on what they are doing, i.e., strengthen their engagement, then dealing with adversities can actually make positive things in life even more positive. These findings extend current models of how obstacles affect goal value by providing evidence that *how* adversity is dealt with plays a critical role in whether adversity increases or decreases value.

Strengthening Engagement By Using High Likelihood Expressions

Thus far I have considered how mechanisms of *control* effectiveness can intensify (or deintensify) the positive value of something through strengthening (or weakening) engagement. In this section I will describe how a mechanism of *truth* effectiveness can both intensify the positive value of one object *and* intensify the negative value of another object by strengthening preparatory engagement for something that will *really* happen.

The concept of likelihood, and related concepts such as probability and expectancy, holds a special place in psychology and other disciplines studying judgment and decision-making. In psychology and economics, the concept of likelihood is perhaps best known for its role within the model of *subjective expected utility* (SEU). The model assumes that the possible outcomes from taking some action are disjunctive; that is, the outcomes are *mutually exclusive* alternatives, joined by “or”. In addition, the outcomes are *exhaustive*, capturing all of the possible outcomes. In the simple case of succeeding or failing on a task, success and failure as outcomes are mutually exclusive and exhaustive. There is a subjective probability of success and a subjective probability of failure, summing to 100% (see Atkinson, 1957).

In a SEU model, beliefs about the probability of a specific outcome are important because of the *information* they communicate about whether a particular future outcome is likely to occur, with the only motivating force (the pull) coming from the subjective value of that future outcome. In the SEU model, for example, when there are two possible future outcomes—“I will have cereal instead of eggs this morning” and “I will have eggs instead of cereal this morning”—a high probability of one outcome (e.g., 80% likelihood of having cereal) is *equivalent* to a low probability of the alternative outcome (e.g., 20% likelihood of having eggs). In this model, it is the future outcome that matters, and the probabilities are providing the *same information* about what will happen in the future; i.e., my having cereal is more likely to happen than my having eggs.

But what if subjective likelihood has a motivational force in its own right because it concerns another way of being effective (i.e., truth effectiveness)? What if, as James (1948/1890) suggested, high subjective likelihood establishes something as real rather than imaginary? If this were the case, then a subjective likelihood about a future event could contribute to value not only by providing information about whether *that* specific future outcome is likely to happen, but also by affecting strength of engagement now— *preparatory engagement for a future reality*. And this preparatory engagement could affect the value of something *else* in the *present* by intensifying current evaluative reactions. When individuals experience high likelihood, future outcomes feel real. And because they need to prepare now for something that will really happen, their engagement in what they are doing in the present is strengthened. And stronger engagement will intensify evaluative reactions to what they are doing now.

From this perspective, then, experiencing high likelihood of some future outcome, by strengthening engagement now, could affect the value of something else in the present. But if this is the case, then experiencing a high likelihood of my having cereal this morning is *not* equivalent to experiencing a low likelihood of my having eggs this morning because the high likelihood experience *strengthens* engagement by initiating preparation for having cereal, whereas the low likelihood does not do so because there is no need to prepare for having eggs. A recent research program has investigated these implications (Higgins, Franks, Pavarini, Sehnert, & Manley, 2012).

In one study, undergraduates believed that they were participating in a marketing study for a new dairy company that was trying to decide what would become their newest flavor of yogurt. The participants were told that in the first part of the study, they would taste two yogurt flavors that each represented a general flavor category (labeled A or B). Unbeknownst to participants, one yogurt was pre-tested to be good-tasting (flavored with sugar & nutmeg) and the other yogurt was pre-tested to be bad-tasting (flavored with clove). They were also told that in the second part of the study they would try more concentrations within just one of the two original general flavor categories. In the *expressed high likelihood* conditions, participants were told either that they had an 80% chance of later trying more yogurt concentrations from A or that they had an 80% chance of later trying more yogurt concentrations from B. In the *expressed low likelihood* conditions, participants were told either that they had a 20% chance of later trying more yogurt concentrations from A or that they had a 20% chance of later trying more yogurt concentrations from B.

In two experimental conditions, then, there was a high probability for later trying various concentrations of the *good* yogurt flavor— the 80% sugar & nutmeg condition and the 20% clove (and thus 80% sugar& nutmeg) condition. From a SEU perspective, these two conditions are equivalent. In the two other experimental conditions, there was a high probability for later trying various concentrations of the *bad* yogurt flavor— the 80% clove condition and the 20% sugar & nutmeg (and thus 80% clove) condition. From a SEU perspective, these two conditions are also equivalent. According to the SEU model, the high probability of later tasting sugar & nutmeg concentrations (and low probability of later tasting clove concentrations) would intensify positive anticipations of later trying more yogurt concentrations of the good yogurt, and the high probability of later tasting clove concentrations (and low probability of tasting sugar & nutmeg concentrations) would intensify negative anticipations of later trying more yogurt concentrations of the bad yogurt.

Strictly speaking, these anticipations of later tasting in the second part of the study either different concentrations of the good yogurt or different concentrations of the bad yogurt are irrelevant to evaluating now, in the first part of the study, one concentration of each of the two yogurts. But perhaps looking forward to tasting more of the good yogurt later would make people feel good now, and being upset about tasting more of the bad yogurt later would make people feel bad now, and these good or bad moods could affect evaluations of the two yogurts now. Possibly, but note that if there were such an effect of mood in the present from anticipating tasting future concentrations of either the good yogurt or the bad yogurt, this mood effect would be *opposite* for a high probability of the *good* yogurt versus a high probability of the *bad* yogurt. In addition, this mood effect, according to the SEU perspective, would be the same in the 80% sugar & nutmeg condition and the 20% clove condition because they are equivalent in anticipating tasting more of the good yogurt as the probable future, and it would be the same in the 80% clove condition and the 20% sugar & nutmeg condition because they are equivalent in anticipating tasting more of the bad yogurt as the probable future.

None of these possible mood effects were actually found in the study. Instead, what was found was an *expressed likelihood effect*. Regardless of whether the probability was about tasting the good yogurt in the future or the bad yogurt in the future, describing the future activity as a 80% likelihood intensified evaluative reactions to both yogurts in the present more than describing the future activity as a 20% likelihood. Despite the 80% sugar & nutmeg condition and the 20% clove condition referring to the *same* probable future activity (a high probability of tasting different concentrations of the good sugar and nutmeg yogurt in the future), participants given the 80% sugar & nutmeg future description currently evaluated the *good yogurt as better* and the *bad yogurt as worse* than participants given the probabilistically equivalent 20% clove future description. Similarly, despite the 80% clove condition and the 20% sugar & nutmeg condition referring to the *same* probable future activity (a high probability of tasting different concentrations of the bad clove yogurt in the future), participants given the 80% clove future description currently evaluated the *good yogurt as better* and the *bad yogurt as worse* than participants given the probabilistically equivalent 20% sugar & nutmeg future description.

In the expressed 80% likelihood conditions, then, the motivational system begins to prepare for something that is likely to happen in the future, which strengthens engagement in the present, and this in turn intensifies positive reactions to the good yogurt and negative reactions to the bad yogurt. Let us consider one implication of this expressed likelihood effect by reconsidering Atkinson's classic SEU model of achievement motivation (see Atkinson, 1957). Like other SEU models, this model is concerned with the probability of some future outcome; in this case, the probability of succeeding on a future achievement task. Because the probability of success and the probability of failure must sum to 100%, the probable future event can be expressed either in terms of the likelihood of success, such as “the likelihood of success is 80%”, or the likelihood of failure, such as “the likelihood of failure is 20%”. According to Atkinson’s theory, *both* the (subjective) likelihood of success and the likelihood of failure contribute to overall achievement motivation by combining with the (subjective) value of success and the value of failure.

Because the likelihoods of success and failure necessarily move in opposite directions, when the probability of one is high the probability of the other is low. From the perspective of the expressed likelihood effect, if the high probability were expressed as high likelihood and the low probability were expressed as low likelihood, the forces from these two expressed likelihoods on engagement strength would work in opposite directions and cancel each other out. But the expressed likelihoods could instead be manipulated independent of probability, such that the same probable future event, such as a high probability of future success, could be expressed either as “there is an 80% likelihood of success on the future task” or as “there is a 20% likelihood of failure on the future task”. Compared to the latter low likelihood expression, the former high likelihood expression for future probable success should induce a stronger experience of what’s real and thus strengthen engagement, which should in turn increase mobilization of resources for the upcoming event (i.e., preparation) that should enhance performance.

Concluding Remarks

People want to be effective not only at having desired outcomes (value effectiveness), like having pleasure and not pain, but also at managing what happens (control effectiveness) and establishing what's real (truth effectiveness). Not only do control and truth effectiveness themselves contribute to our overall well-being independent of value, they can contribute to value as well through strengthening our engagement in goal pursuit activities (Higgins, 2012). Stronger engagement intensifies value, making attractive things more attractive and making repulsive things more repulsive (Higgins, 2006).

Our research has demonstrated such effects of control effectiveness (regulatory fit; use of proper means; opposing interfering forces) and truth effectiveness (expressed likelihood). As mentioned earlier, there are clear benefits to well-being from such mechanisms because individuals "feel alive" when they are strongly engaged in what they are doing and feel strongly about things in their life. And when control and truth *work together* effectively, we experience our life as *going in the right direction*.

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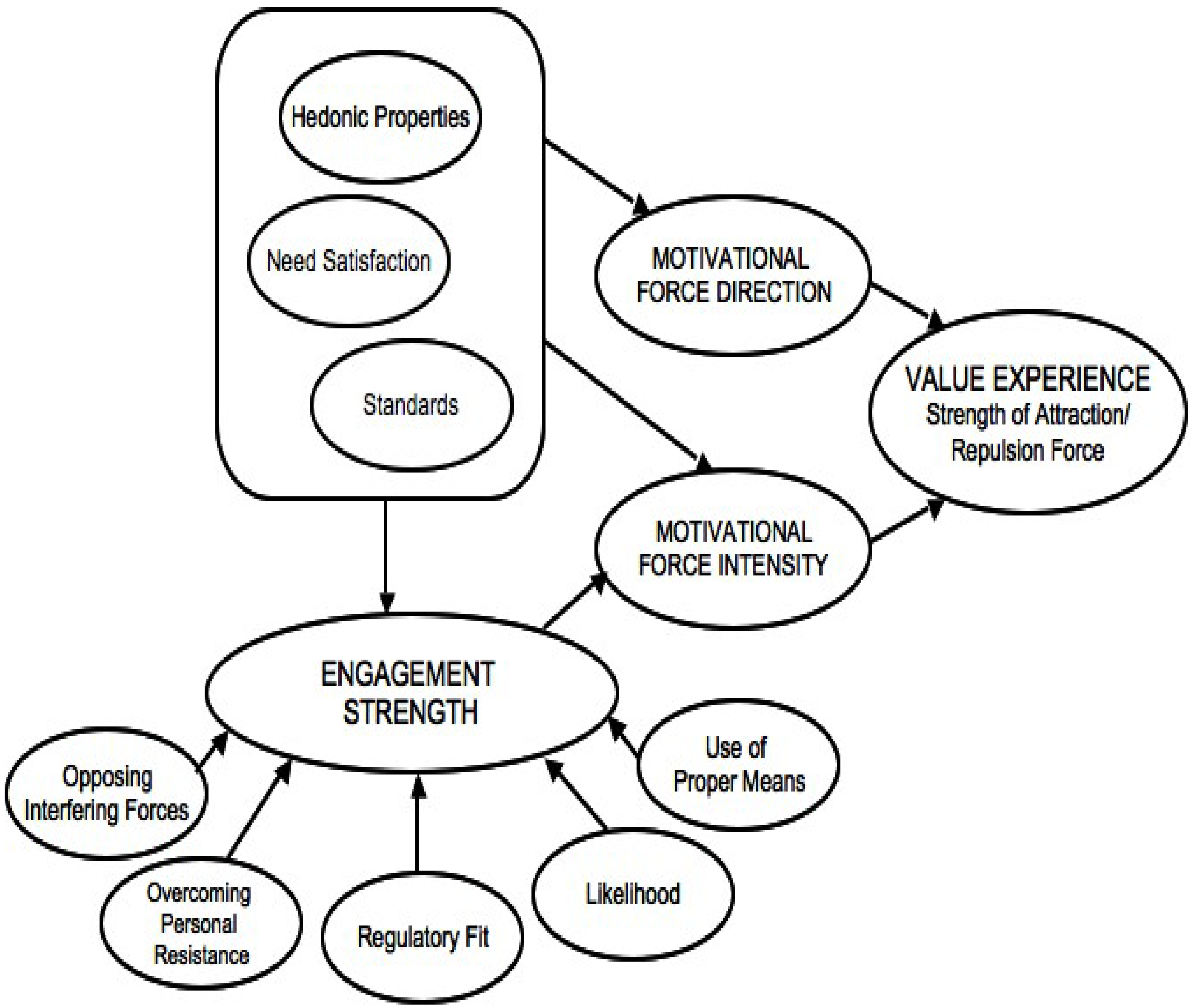
Figure 1


Hedonic Properties
Need Satisfaction
Standards
MOTIVATIONAL FORCE DIRECTION
MOTIVATIONAL FORCE INTENSITY
VALUE EXPERIENCE
Strength of Attraction/ Repulsion Force
ENGAGEMENT STRENGTH
Opposing Interfering Forces
Overcoming Personal Resistance
Regulatory Fit
Likelihood
Use of Proper Means