# THE INFLUENCE OF GOALS ON VALUE AND CHOICE

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## I. Goals, Value, and Choice

Many theorists have pointed out that the economic foundations of psychological research on decision making have had a profound impact on the way that research is carried out (e.g., Medin & Bazerman, in press; Goldstein & Weber, 1995; Kahneman & Tversky, 1984). This foundation set an important research agenda in which psychologists assessed human rationality. Whereas it has long been known that people do not live up to normative economic ideals (e.g., May, 1954), many years of research have been devoted to detailing the ways that people's choice behavior diverges from the predictions of economic models (e.g., Arkes & Blumer, 1985; Nisbett, Krantz, Jepson, & Kunda, 1983; Tversky & Kahneman, 1986).

Although psychology has advanced significantly because of the connection between choice research and economic models, critics have charged that this focus has outlived its usefulness. Goldstein and Weber (1995) pointed out that testing models derived from economics often involves studies in which people select one of a set of gambles. This focus on gambles naturally leads to a concentration on factors that influence the weights or probabilities of outcomes as well as the value or goodness of properties. Furthermore, it ignores factors that influence how the set of options is itself constructed. Medin and Bazerman (in press) suggest that a concentration

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on normative ideals has led to a research program that focuses more on negative aspects (i.e., what people cannot do) than on positive aspects (i.e., how people actually make choices).

Another way that economic models have constrained psychological research is by reducing the perceived importance of goals in choice. In a typical model, a person is expected to select the option that maximizes utility. Utility is the goodness or usefulness of an object for a particular individual. Utility implicitly includes a goal, because an object cannot be useful for someone unless the person has some goal that an object can satisfy (or help to satisfy). The centrality of goals to the determination of value is kept implicit in most studies of choice, however. When the materials in a study are gambles, then goals are relegated to the background, because it is assumed that most subjects have the goal to maximize the amount of cash they have, and that more money is perceived as better than less money. In other settings, where cash is not both the stake to be gambled and the prize to be won, items are typically selected that will be desirable to the population (e.g., Kahneman, Knetsch, & Thaler, 1991). Thus, few studies have explicitly addressed the influence of goals on choice.

In this paper, we suggest a role for goals in choice processing and in the perception of value of objects. We begin by defining goals and the activation of goals. Then, we present evidence that people habitually associate goals with objects in the world. Next, we describe studies of the influence of goals on how information about options is processed. Finally, we discuss the role of goals in the evaluation of objects. In particular, we focus on how the evaluation of objects can change as a function of the active goal, and how the perceived value of an object is affected by its relationship to the active goal. We believe this work makes a positive statement about the processes of decision making.

## II. Goals and Their Relationship to Objects

Cognitive systems can be characterized as cybernetic systems that pursue desired states of the world through feedback loops (Miller, Galanter, & Pribram, 1960; Powers, 1973). Goals are representational structures that guide the system in its pursuit of an end state or a reference state. When the end state associated with a goal is desired, the goal is an approach goal; that is, the feedback loop aims at reducing the psychological distance of the organism to the end state. However, when the end state associated with a goal is undesired, the goal is an avoidance goal. In this case, the system is geared to increase its psychological distance to the end state, which can be represented as a feedforward loop (Carver & Scheier, 1990). In other

words, the end state may be a state of the world that the system wishes to bring about (making the goal an *approach* goal) or a state of the world that the system does not wish to bring about (making the goal an *avoidance goal).* When a goal is adopted by a cognitive system, that goal is *activated.* Active goals continue to influence the behavior of a system until they are satisfied (i.e., the end state of the goal is achieved) or until they are abandoned (Atkinson & Birch, 1970; Lewin, 1926; for evidence, see Bargh & Gollwitzer, 1997; Ovsiankina, 1928; Zeigarnik, 1927).

Goals are critical aspects of a choice situation. If a cognitive agent has no goals that are unsatisfied, then there can be no choice situation. Instead, choice situations require both a goal that is not satisfied and at least two options for satisfying the goal [although one of those options may be to defer the decision to a future date (Tversky & Shafir, 1992)].

Examining the influence of goals on choice allows us to examine the interface between motivation and cognition. Goals are representational structures, and so they are cognitive objects that can be reasoned about. Goals are also motivational structures. They influence how the cognitive agent evaluates the world around it, and what resources the agent is willing to commit to a given task. The distinction between states to be approached and states to be avoided has been a core construct in the study of motivation (Atkinson, 1957; Lewin, 1935; Lewin, Dembo, Festinger, & Sears, 1944; Miller, 1959; Mowrer, 1960), and continues to play a central role in current theories (Brendl & Higgins, 1996; Carver, 1996; Gray, 1987; Higgins, 1997; Lewicka, 1986; Norem & Cantor, 1986; Schwarz, 1990).

Goals become associated with objects in the world when the goal is often active in the presence of that object. Huffman and Houston (1993) suggest that goals can be associated both with specific features of objects (i.e., there are *feature-to-goal associations)* and also with categories of objects such as brands of consumer products (i.e., there are *category-to-goal associations).* Assessing the goals that people associate with particular objects and features is not easy, however. Although goals are a critical component for making choices, people are often not aware of the goals they hold when making a choice. Thus, it is difficult to ask people about the goals they associate with an object. Indeed, early studies in which we attempted to assess the goals associated with the features of brands of products met with little success.

There are, however, indirect methods for assessing both the strength of active goals and the specific goals that people associate with objects. One example of a method for measuring the strength of active goals comes from a classic study by Bruner and Goodman (1947), who showed that poor children estimate coin sizes as larger than well-to-do children. This study demonstrates an effect of motivation on the mental representation of sizes for physical objects. In collaboration with Claude Messner, we conducted

a conceptual replication of this classic study by depriving or not depriving cigarette smokers of smoking and then having them judge the length of a cigarette. On average, deprived smokers (i.e., smokers with an active goal to smoke) judged the length of a cigarette to be longer than did nondeprived smokers. In other words, the degree of a need or goal to smoke could be derived from its effect on the perception of relevant objects. As in Bruner and Goodman's (1947) study, people's memory for a familiar object was influenced by the strength of an active goal.

One might reasonably think that we should just have asked smokers how badly they felt they needed a cigarette rather than relying on this indirect measure. In fact, we did ask people to rate their need to smoke a cigarette, and found that this direct measure was not correlated with the indirect measure. In accordance with this finding it has been suggested in memory research (Roediger, 1990) and in research on attitudes and subjective evaluation (Greenwald & Banaji, 1995) that indirect measures tap a different source of information than explicit judgments. Consistent with this hypothesis, we replicated the cigarette study, and asked people to rate their need to smoke. This time, however, they were asked to respond quickly. Previous research suggests that time pressure often leads to greater use of the same information tapped by indirect measures (Jacoby, Yonelinas, & Jennings, 1997; Wilson & Schooler, 1998). In this study, a small but significant correlation was found between the judged length of a cigarette and the ratings given in the speeded judgment.

An indirect methodology can be used when the goal people have is known (e.g., to smoke a cigarette) but the strength of the goal is not known. How can we determine the goals people associate with an object when the goals themselves are not known? This task is difficult, because it also requires an indirect method. When people are simply asked to list the goals they associate with an object, they typically do not say much. It seems as though they do not know what goals they think are relevant to different objects. As an alternative to this direct measure, we showed lists of familiar brands to participants and asked them to list both positive and negative features and then explain why each feature was positive or negative (i.e., justify their evaluations). These justifications typically mention goals that the person has for an object. For example, one individual listed as positive features of the sugar-coated chocolate drops "Smarties" that they have bright colors.[1] When asked to justify why bright colors are positive, this person wrote that they increase the fun one has when eating. From this justification, we can infer that the end state of the underlying goal is to

[1] This study was conducted in Germany, and so all of the products were brands available in Germany. The study was conducted by Myriam Bell as part of her thesis in partial fulfillment of the degree "Diplom Psychologin."

have fun and that this end state is made present by the Smarties product feature "bright colors."

In our initial explorations with this methodology, we tested a suggestion by Carver and Scheier (1996) that avoidance goals are only adaptive if they serve more abstract approach goals. On their view, if there are no abstract approach goals, then an individual will not know what direction to avoid or when to stop an avoidance action. We focused on particular kinds of approach and avoidance goals: promotion and prevention goals. According to Higgins (1987), promotion goals are part of a motivational system that is concerned with aspirations and nurturance; they regulate behavior in reference to positive outcomes, either by maximizing the presence of positive outcomes (e.g., gains) or by minizing the absence of positive outcomes (e.g., nongains). For promotion goals, the reference point of the behavior is always a positive outcome. In contrast, prevention goals are associated with a motivational system that is concerned with responsibilities and security, and they regulate behavior in reference to negative outcomes, either by minimizing the presence of negative outcomes (e.g., losses) or by maximizing the absence of negative outcomes (e.g., nonlosses). For prevention goals, the reference point of behavior is always a negative outcome.

Because of the link to positive outcomes the strategies people typically use to reach promotion goals are approach strategies. In contrast, because of the link to negative outcomes, the strategies that people typically use to reach prevention goals are avoidance strategies. In sum, then, promotion goals are associated with approach strategies and the presence or absence of positive outcomes. Prevention goals are associated with avoidance strategies and the presence or absence of negative outcomes (Higgins, 1997). Thus, if we knew the kind of outcome that a person associates with an object we could infer whether the object was associated with prevention or promotion goals and thus with approach or avoidance strategies.

This analysis suggests that prevention goals-because of their association with avoidance strategies-should be relatively more numerous when the goals are specific than when they are abstract. Promotion goals-because of their association with approach strategies-should be relatively numerous when the goals are abstract. This view makes no specific prediction about the relative number of promotion goals for specific categories. If brands are associated with goals, then it seems plausible that abstract brands (e.g., Kellogg's) will be associated with abstract goals and the specific brands (e.g., Frosted Flakes) will be associated with specific goals.

We got justifications of valence ratings for a number of abstract and concrete brands. Each brand was associated with promotion and prevention goals, and thus with approach and avoidance strategies. In the "Smarties" example presented earlier, "bright colors" is viewed as the presence of a

positive outcome (because it leads to fun) and thus is a promotion goal. A product feature can also make a positive end state absent, in which case the goal is still promotion focused but the feature now has a negative valence: For example, one person said that a negative feature of the TV channel "ZDF" is its programming. She justified this negative feature in terms of there being no variety in the programming. We inferred that the end state of the underlying goal was to have variety and that this end state was made absent by the product feature "programming." Thus, we coded ZDF's programming as the absence of a positive outcome (promotion focus).

Evaluations involving prevention goals can also be given to positive and negative features. As an example, one person listing properties of Smarties listed the coating on the candy as a negative feature. He justified this evaluation by explaining that the coating already melted in one's hand (implying that it should not melt until it is in one's mouth). The end state of the goal was the negative state of "melting in one's hand." The product feature "coating" of Smarties makes this negative end state present and is therefore the presence of a negative outcome (prevention focus). Thus, this person wanted to prevent the sugar coating from melting in his hand, but the coating was not sufficient to allow this prevention goal to be reached. In contrast, reaching a prevention goal-like reaching any other goal-results in a positive product feature. For example, a person described the "Volkswagen Golf" (the VW Rabbit in the United States) as being a reliable car. She justified this positive feature in terms of not wanting to drive a "lemon." The end state of the goal was a "lemon."* The VW Golfs product feature "reliability" was a positive feature because it led to the absence of a negative outcome.

Consistent with our hypothesis, when participants justified positive features, they said that a brand was positive because negative brand features were lacking (i.e., the goals were phrased as prevention goals) more often when the brands were specific than when they were abstract. In contrast, they justified brand evaluations because positive features were present or absent (i.e., the goals were phrased as promotion goals) equally often when the brands were abstract versus specific. In other words, we found evidence that avoidance strategies are relatively more often associated with specific than with abstract brands whereas approach strategies were equally often associated with specific than with abstract brands.[3]

[2] Actually, this subject's response translates literally as "rattle box," but "lemon" seems like a good colloquial substitute.

[3] Independent of the interaction of level of abstraction of brand with type of goal, we found that people justified their evaluations more often in terms of the presence of a feature (i.e., the presence of a positive or negative feature) than in term of the absence of a feature (i.e., the presence of a positive or negative feature). This result was expected on the basis of similar previous results (Brendl, Higgins, & Lemm, 1995) and is not germane to our hypothesis. It is probably the result of the fact that it is much easier for people to process the presence than the absence of information.

This result was not replicated for justifications of negative product features. There was no difference in the relative number of goals phrased as approach or avoidance goals was not influenced by the level of abstraction of the brand. Thus, unlike for positive features, people justified negative features using avoidance goals equally often using the presence of a negative property for both abstract and specific brands. An examination of the justifications suggests a reason for this discrepant result. In this study, 5 out of the 12 abstract brands were company names (e.g., Kraft), whereas specific brands were always product names (e.g., Philadelphia). Many of the negative properties listed for the abstract brands (i.e., companies) treated the brand as a stand-in for the company, and suggested negative properties of the company such as treating its workers poorly. In contrast, people did not treat specific brands as metonymic stand-ins for the company, and so there were no properties of this type listed for the specific brands. Future research must investigate the association of objects with goals without using company brand names. Nonetheless, these data do suggest that brand names provided a convenient method of activating goals at different levels of abstraction. Research of this type is increasingly important as studies of choice move away from gambles toward more naturalistic choices.

## III. Goals and the Processing of Choice

An important influence of goals is to determine how people process information during choice. Evidence that bears on how goals are used when determining value has been collected using process tracing techniques. In this section, we review evidence for two primary points. First, there is evidence suggesting that active goals filter the information used during choice, so that information relevant to a goal is used, but information that is not relevant to goals is not. Second, there is evidence that people process information in a manner that facilitates the evaluation of options relative to active goals.

The first prediction is straightforward. People should focus their processing on attributes that are relevant to their goals and should tend to ignore attributes not relevant to their goals. This possibility was tested by Huffman and Houston (1993). They presented people with choices between sets of electric guitars. People buying electric guitars often want a guitar that is comfortable to play or one that is musically versatile. People were told prior to the decision that they had one of these goals, both, or neither. They viewed the attributes of the brands using an information board system. In an information board, attributes of options are presented in a grid, and the subject can select the information they would like to see and choose the order in which they view the information. In general, people processed information relevant to their

goals more often than information not relevant to their goals (see also, Huffman, 1996; Shen, Markman, & Krantz, in preparation).

Presumably, people are focusing on goal relevant attributes of products, because they want to evaluate the degree to which the product satisfies an active goal. On this view, when people have more than one active goal, they should systematically examine the attributes of each goal individually. They should only move on to attributes relevant to the next goal when they have finished evaluating the attributes relevant to the first goal. This process continues until the decision maker has evaluated the options relative to all of the active goals. This hypothesis suggests that evaluating objects during choice involves deciding how well the objects satisfy the active goals. An alternative way of processing information about properties would be to evaluate the information only relative to an abstract criterion like utility, to lump all properties into one group of general utility. On this view, people would *not* distinguish among attributes associated with different goals when processing choices and each attribute should. Instead, they would try to assess the overall utility of the objects. In this case, when processing the attributes of an option, there would be no reason to distinguish among attributes relevant to different goals, because all attributes are relevant to an abstract scale like utility.

This possibility was tested in a series of studies by Shen, Markman, and Krantz (in preparation) using the Mouselab system (Payne, Bettman, & Johnson, 1992, 1993). As shown in Fig. 1, Mouselab presents an information grid on a computer screen. Initially, all of the information is covered. The participant can uncover information by moving the mouse over it. The information remains uncovered until the mouse is moved off of the information. The computer tracks the sequence of information acquisitions and the time spent examining each piece of information.

Shen et al. presented people with choices between four cars, each described by six attributes. The attributes could be relevant to one of three different goals: comfort, safety, and power/performance. On each trial, there were three attributes relevant to one of the goals, two attributes relevant to a second goal, and one attribute relevant to a third goal. Feature to goal associations were established by giving people a reference sheet that described the attributes used in the study. The reference sheet was organized around the comfort, safety, and power/performance goals, and made clear the connection between each feature and the goal to which it was associated.

In this study, all three goals were active at all times.[4] People were told explicitly to play the role of someone who cared about the comfort, safety,

[4] In another study in this line of research, some trials had only one or two active goals. In a replication of Huffman and Houston's (1993) work, people generally disregarded attributes that were not relevant to the goal.

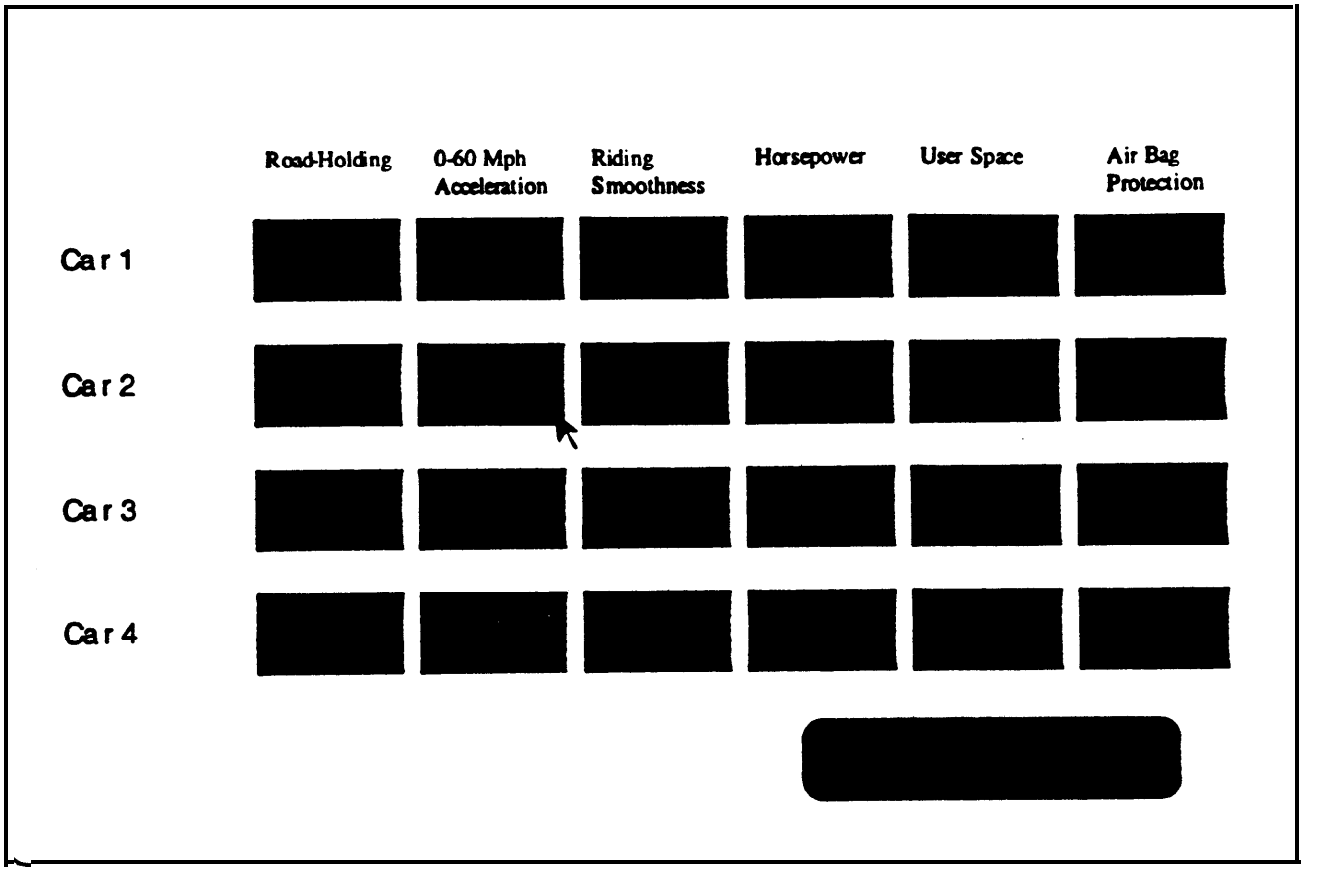


Fig. 1. A sample screen from a Mouselab information board. Initially, all of the information in the grid is covered over. Moving the mouse over a piece of information and clicking the mouse button causes the information to be uncovered while the button is held down. The computer can then track the order of information acquisition as well as the amount of time each piece of information is uncovered.

and reliability of the car. Prior to being shown the information matrix, people were presented with a value between 0 and 10 for each of the three goals that indicated the weight they were to give to that goal on that trial. Thus, although all three goals were always active, people were supposed to weight them differently on each trial. After seeing the goal weights for the trial, they were shown the Mouselab information board matrix and were allowed to acquire as much information about the options as they wanted and then make a selection.

The results of this study support the prediction that people focus their processing within goals rather than across goals. Specifically, when people made two acquisitions in a row from within a single brand, they were more likely to look at two attributes that were both relevent to the same goal than to look at one attribute relevant to one goal and another attribute relevant to a second goal. For example, people were more likely to examine two attributes both relevant to the comfort goal on sequential acquisitions

than they were to look first at an attribute relevant to the comfort goal and then one relevant to the power/performance goal. This pattern is consistent with the claim that people first evaluate an object relative to one active goal by processing the attributes relevant to that goal, and then evaluate the object relative to the next active goal by processing the attributes relevant to the goal and so on. Because processing is focused on information relevant to one goal at a time, this suggests that people are not evaluating objects relative to an abstract standard like utility for which all of the attributes would be relevant.

## IV. Goals and the Determination of Value

How do goals influence the perceived value of objects? A simple answer is that objects are valued to the extent that they help to satisfy active goals. This simple answer contains two important components. First, objects are evaluated in light of active goals. Second, the value of an object depends on its relationship to the active goals. We have elaborated this simple answer into a *goal compatibility* view of value. We begin with a presentation of this framework. Then, we describe data demonstrating that a goal must be active to influence value. Next, we discuss studies that support the idea that value depends on the relationship of an object to an active goal. Finally, we examine the implications of this view for self regulation.

### A. The Goal Compatibility Framework

The goal compatibility framework suggests that people evaluate objects relative to active goals. Thus, not only are properties of objects grouped by goals (as discussed in the previous section), but whole objects are also assigned to goals. Thus, like mental accounting frameworks (Heath & Fennema, 1996; Thaler, 1985; Tversky & Kahneman, 1981), this view assumes that people assign objects to different classes and segregate valued objects into different mental accounts. Unlike mental accounting frameworks, which do not suggests how the mental accounts are created, the goal compatibility view suggests that the mental accounts are organized around active goals. While a goal is active, an object is given value relative to that goal. Changes in the set of goals that are active changes the basis of the evaluation of objects. On this view, one important factor that influences the segregation of values of objects is that people's goals change over time, and so the evaluation criteria for objects also change over time.

A goal can be activated in a number of different ways. First, there are goals that are chronically active. For example, for many people the goal

to maximize the amount of cash they have is generally active, presumably because there is social pressure (in Western culture) to attain and preserve wealth. Chronically active goals will be used to evaluate objects in the absence of other strongly active goals. There are also goals whose activation cycles as a result of changes in internal bodily states. For example, the goal to eat food is driven by factors including hunger (as part of a homeostatic motivational system), and so it waxes and wanes over the course of a day. Other cyclic goals include sex and smoking a cigarette (for habitual smokers).

Aspects of the environment may lead to goal activation and can also contribute to cyclic activation patterns (cf. Schacter, 1971). One important environmental aspect is the current situation. For example, you might have the desire to have a drink while standing at a party, but not while standing in your own living room. Goals may also be activated by specific objects in the perceptual environment. One of the authors (CMB), for example is convinced that a bowl of peanuts can play tricks on his self-control. Even when peanuts are not at all in his thoughts, the sight of a bowl seems to attract his hand toward it. Something similar-albeit less difficult to resist-may also happen with less need-driven goals. For example, seeing a picture of a check in a window ad at your local bank may prompt you to make plans to write out a check for your overdue rent as soon as you come home. Indeed, advocates of situated action suggest that goals are frequently activated by the presence of goal-relevant objects in the environment (e.g., Hutchins, 1995; Patalano & Seifert, 1997). Typically, goals activated by objects and situations will be stronger than goals that are just chronically active, allowing temporarily activated goals to control the determination of value while they are active.

The waxing and waning of goal activation not only affects the assignment of values of objects to mental accounts, it also changes the value of a single object within a mental account. Our central thesis is that the value *of an object is a function of the compatibility of that object to the active goal. The* object may be more or less substitutable with an object in the reference state of the goal. In most cases, substitutability correlates with similarity to a goal's end state, because it is frequently the case that objects that are similar to the reference state of a goal will satisfy the goal. Consistent with this view, Lewin (1935) suggested that the substitutability of two actions is not determined by their similarity to each other, but rather by their similarity to an underlying goal. Because similarity is easier for people to determine than substitutability, the goal compatibility framework hypothesizes that people use the similarity of the object to an object in the goal's end state as a proxy for the substitutability of the two objects. *Decreasing*

*the similarity of an object to an goal's end state should, then, decrease the object's subjective value.*

Similarity, then, is one way in which people determine the compatibility of an object to a goal. For example, if someone has the goal to maximize the amount of cash they have, then cash (which is, of course, identical to cash) will be highly valued. Gambling chips, which are less similar to cash, will be considered less valuable than cash in this context. This effect should be obtained even though chips can be converted to cash with a relatively simple transformation. On the surface, this role of compatibility seems reasonable, because it assumes people are giving value to objects as a function of their relationship to a desired state of affairs (see Shafir, 1995, for a discussion of other influences of compatibility on choice). At a deeper level, however, this view implies that objects with equivalent objective value with respect to a goal may be treated very differently. As we just discussed, a gambling chip has a particular cash value and can be exchanged for cash with a relatively simple transformation, and yet the goal compatibility view suggests people will treat gambling chips as less valuable than cash, simply because of the similarity of a chip to cash.

## B. The Role of Active Goals in Choice

One central tenet of the goal compatibility view is that objects are evaluated relative to active goals. This view suggests that the same object will be valued differently depending on the goals active at the time the evaluation is made. This hypothesis was tested in two field studies. The first varied goal activation by the location in which the object was evaluated. The second varied activation by manipulating the strength of a partly physiologically based need.

In the first study (Brendl, Higgins, Markaman, & Messner, in preparation), students at Columbia University were told that the school was thinking of offering a lottery to raise money. They were asked how much they would be willing to pay for a ticket to win a chance at a $1000 waiver on their bursar bill. A second group was asked about the amount they would be willing to pay for a chance to win $1000 in cash. All participants were screened to ensure that they had at least $1000 in university fees outstanding at that time. As a manipulation of goal activation, half of the participants were approached while they stood on line at the bursar's office waiting to pay their bill. The other half were approached while sitting in a cafeteria on campus. It was expected that people at the bursar's office would have a strongly active goal of paying their university bills. In contrast, people at a university cafeteria would likely have a chronically active goal to maximize the amount of cash they have.

Consistent with the goal compatability view, people approached in the bursar's office were willing to pay more for a ticket if they were asked about the bill waiver lottery *(m* = $1.52) than if they were asked about the cash lottery *(m* = $0.93). In contrast, people approached at a university cafeteria were willing to pay more for a ticket if they were asked about the cash lottery *(m* = $1.44) than if they were asked about the bill waiver lottery *(m* = $1.12). The interaction of lottery type and survey location was significant in a 2-way ANOVA. This finding suggests that the goal that is active in a choice situation strongly influences the perceived value of an ‘object. Furthermore, this study provides preliminary evidence that objects are more valuable to the extent that they are more compatible with a goal. In this case, a bill waiver is more similar to the desired end state of the goal of having a zero-balance on that bill than is cash.

A critical element of this study is that it was carried out at the bursar's office, while people were lining up to pay their bills. Thus, the goal of paying a university bill was strongly activated, because people were in the process of paying their bill. The goal compatibility framework suggests that active goals are necessary for the determination of value. In support of this idea, a conceptual replication of the bursar bill study was carried out in the lab. People were told to imagine that two students each had to pay a $5000 university bill and that they could participate in a lottery for a prize of $5000. For one student, this prize would be given in the form of a cash award, and for the other in the form of a tuition waiver. Participants were told either that both students were in lime at the bursar just about to pay their bills or that they were sitting in university cafeterias. Participants were asked to predict which of the two students would be more likely to gamble. They indicated that the student who could win cash rather than a tuition waiver would be more likely to gamble independent of whether the gambling decision was being made when the students were described as being just about to pay their bills or when the students were described as sitting in cafeterias. Thus, their judgments contrast with those of the students in the field study who preferred the bill waiver lottery to the cash lottery when standing in the bursar's office.

The key difference between this study and the one just described is that participants were not themselves standing in the bursar's office. The results suggests that people did not correctly predict their own evaluations that they would have when standing at the bursar. As discussed previously, goals can be strongly activated by situations, and so people standing in the bursar's office should have the goal to pay their university bills. In contrast (as discussed previously), people in the lab are more likely to be influenced by their chronically active goal to maximize cash. This finding suggests that a goal must be active-either temporarily or chronically-for it to influence

the preception of value. This result is compatible with other research indicating that people are bad at predicting their own future preferences and affective states (Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998; Kahneman & Snell, 1992). The goal compatibility framework makes specific prediction about when people do and do not predict their own future evaluation and choices accurately. When a relevant goal is temporarily active either during prediction or choice, then the prediction will likely deviate from the choice. In our lab study, participants have the chronically active goal to maximize cash, which leads to different predictions than we obtain with participants in the bursar's office who have the strong (but temporary) goal to pay a bill.

To further assess the influence of active goals on the perception of value another study was conducted (Brendl, Higgins, Markman, & Messner, in preparation). Goal activation was manipulated through the strength of a physiological need. This study examined habitual smokers in Germany, where smoking in much more common among college students than it is in the United States. After long lecture classes, smokers typically congregate outside the classroom to smoke a cigarette. Presumably, these students have a goal to smoke a cigarette in part because they have a physiological need for nicotine (which is an addictive substance) and in part because there is a social norm to smoke after class. Thus, we can reasonably expect students to have the goal to smoke a cigarette after class.

Students who just had a 90-minute (smoke-free) class were either asked to participate in our study before or after they had their postclass cigarette. To assess the strength of the need to smoke at the outset of the experiment, as their first task the students were shown a scale with pictures of 14 cigarettes ranging in length from 80 to 90 mm. They were asked to circle the picture that reflected the true length of a standard cigarette. Consistent with the results of the studies with this scale described previously, participants who had just smoked their postclass cigarette judged a real cigarette to be shorter than participants who had not had their postclass cigarette (who were smoke deprived). These results confirmed the difference in need to smoke between these two experimental groups. The expectation is that subjects who have not smoked their postclass cigarette and who therefore have stronger *need* to smoke also have a more strongly active goal to a smoke a cigarette than would subjects who have not smoked their postclass cigarette. Because of its indirectness, this measure allowed a manipulation check of the goal manipulation before our participants made a choice without drawing their attention to the issue of goal activation.

After this preliminary measure, subjects were offered the opportunity to buy lottery tickets, worth about $0.15 each. They could purchase as many tickets as they wanted. Subjects were told that the lottery consisted of a

drawing on a specific day. This day was at least 9 days after each participant's experimental session. Three tickets, each winning a prize, would be drawn from a bowl containing all of the tickets purchased. For half of the subjects the lottery prize was 50 DM (about $30), and for half of the subjects the prize was presumably a carton of cigarettes (worth 50DM).[5] Thus, this study is analogous to the one performed at the bursar's office, except that the goal is smoking a cigarette, and the prizes are now cash and cigarettes.

The choice data replicate the basic pattern of results obtained in the bursar bill study. Participants who had not yet had their postclass cigarette (and thus are hypothesized to have had an active smoking goal) bought more lottery tickets that could win cigarettes than tickets that could win cash. In contrast, subjects who already had their postclass cigarette (and thus should have had only a weakly active goal to smoke) bought more lottery tickets that could win cash than tickets that could win cigarettes. Because the lottery drawing was held at least 9 days after participants' decision to buy lottery tickets, we rule out the explanation that people purchased lottery tickets to satisfy their current need. In other words, buying lottery tickets was not instrumental for the current goal to smoke, and therefor any alternative explanation based on actual instrumentality can be ruled out by these results.

Both the results of this study and those of the bursar bill study described previously rely on people having a chronically active goal to maximize cash. That is, in the absence of other strongly active goal, we assume that people's default goal is to maximize the amount of cash they have. This assumption seems plausible, and it is consistent with the observation that people in situations that do not suggest particular goals (like the lab, a hallway, or a university cafeteria) prefer cash prizes to other prizes. We do not yet, however, have independent evidence for this point.

This study presents another situation in which people did not accurately predict their own choices. In this case, the choice was strongly influenced by whether people had just smoked, even though the outcome of the lottery would not be known until much later (when people's motivational state would likely be different). Thus, people who were smoke-deprived appeared unaware that their motivational state would change as soon as they had their postclass cigarette.

The findings in this section are particularly important because of their implications for laboratory studies of choice. As mentioned before, people do not appear to be able to mentally simulate motivational states. In particular, a mismatch between prediction and choice is likely to be obtained when a subject's motivational state during prediction is different from their

[5] Although we really conducted the lottery, the people who had won cigarettes also received cash, and the lottery stakes were returned to all participants.

motivational state during choice. It is particularly difficult for people to predict their future motivational states, because goal activation is influenced by situational cues (e.g., the end of a lecture, other students smoking) and by changes in internal states (e.g., blood nicotine level) that are hard for people to foresee. It is not that people are just unaware of the factors that might influence their motivational states, but rather that they are unable to determine the influence of these factors. This point is supported by the simulated bursar bill study, in which participants, were told that the lottery would be carried out at the bursar's office. In this case, subjects were unable to predict the influence of this factor on their choices. Many studies of choice cater to people's chronically active goals by focusing on winning and losing cash (or other chronically active goals like maintaining positive self-image). The studies reviewed in this section, however, suggest that laboratory studies performed with materials that do not tap into people chronically active goals must be interpreted in light of the difficulty of activating other goals in laboratory settings. Simply telling people about these settings might not be sufficient.

The findings described in this section support our hypothesis that information is weighted into a decision to the degree that it is compatible with the goal active during the choice situation. This basic principle can also be extended to framing effects (for reviews, see Brendl, in press; Shafir, 1995). For this purpose, we must assume that positive information is more compatible with approach goals than with avoidance goals, and that negative information is more compatible with avoidance goals than with approach goals. The framing of a choice situation can induce an approach goal by asking people to select an option they want to accept or can induce an avoidance goal by asking people to select an option they want to reject. We suggest that people given an approach frame should give more weight to positive information than negative information, whereas people given an avoidance frame should give negative information more weight than positive information.

Evidence for this prediction was obtained by Shafir (1993) in a vignette study in which each participant was asked to decide which of two parents in a divorce should get custody of the couple's only child. One parent was described only in terms of neutral features (e.g., reasonable rapport with the child, average working hours), and the other parent was described in terms of both positive and negative features (e.g., very close relationship with the child, lots of work-related travel). For half of the participants, the question was framed as awarding custody to one parent, and for the other half it was framed as rejecting one parent's claim for custody. In the approach framing, people tended to award custody to the parent described by the positive and negative features rather than to the parent described

by neutral features. Interestingly, in the avoidance framing, participants tended to reject the claim of the parent described by positive and negative features for custody. This finding suggests that in the approach framing, people focused on positive features, and hence preferred the parent with positive and negative features, whereas in the avoidance framing people focused on the negative features, and thus did not like the parent with the positive and negative features.

### *1. Temporal Aspects of Goal Activation*

The previous section demonstrated that it is important to know the activation level of goals in order to predict choice. Aside from mentioning cyclic goal activation, we have not discussed the effect of time on goal activation. Classic work in social psychology on *goal gradients* is relevant to this issue. A goal gradient measures the strength of a goal as a function of the distance of an organism to a goal (Lewin, 1935; Miller, 1959). It was generally assumed that the activation of a goal gets stronger as the organism gets closer to a goal (see Hull, 1932). Distance was conceptualized as physical distance; for example, the distance to a location where a rat had been shocked, or in terms of similarity; for example, the similarity of the color of the walls of a current runway to the color of the walls were a rat had been shocked.

Miller and colleagues (1960) found that the gradient of avoidance motivation was steeper than the gradient of approach motivation. For example, they measured the strength with which rats pulled away from a location where they had previously received an electric shock (avoidance). They also measured the strength with which the rat pulled towards a location where they had previously been fed (approach). These strength of pull measures were taken at different distances from these locations. The closer the rats were to these locations, the stronger they pulled. However, this increase in pulling strength as a function of decreasing distance to the location was larger for avoiding shock than for approaching food. Although Miller (1959) explicitly described conditions under which the relation of gradient steepness could reverse, the literature thereafter assumed (incorrectly) that the Miller Thesis was that avoidance gradients are steeper than approach gradients. This thesis led to intense research on the relative steepness of the gradients, although a review of this literature is beyond the scope of this chapter. [6]

[6] To summarize the work that has been done, in some paradigms it is observed that avoidance gradients are steeper than are approach gradients. However, there are some studies where no such difference was found and where approach gradients were actually steeper than avoidance gradients (Heilitzer, 1977). As with most behavioral phenomena, however, it appears that the steepness of avoidance gradients relative to approach gradients is not a main effect, but rather is contingent on other factors.

Some investigators have extended the concept of distance to a goal to the amount of time until the outcome of choice. In this section, we review some evidence about this specific application of the research on goal gradients. Thus, although we do not draw conclusions about the goal gradient research in general, we do draw conclusions about goal gradients as a function of time. In this research, the shorter the time an individual has until the results of a choice become known, the closer the goal state should be perceived to be. Figure 2 shows two different gradients for the assumption that gradients of avoidance are steeper than gradients of approach in *the choice-time domain. The* abscissa depicts the time until the result of the choice becomes known. On the graph, a short time (near the origin) means that the outcome of a choice is immanent and a long time means that the outcome is far in the future (far from the origin). In general, it is assumed that goals become more active the closer in time an outcome draws, as symbolized by the negative slope of both the approach and avoidance gradients. If, in the time domain, the avoidance gradient is steeper than the approach gradient, then this increase in goal activation as the execution of the goal draws nearer should be larger for avoidance goals than for approach goals (see Fig. 2). For example, all else being equal, according to Fig. 2, a risky investment will seem more appealing if its value will be determined 5 years from now than if its value will be determined 1 week from now. Finally, the degree of anticipative positive or negative

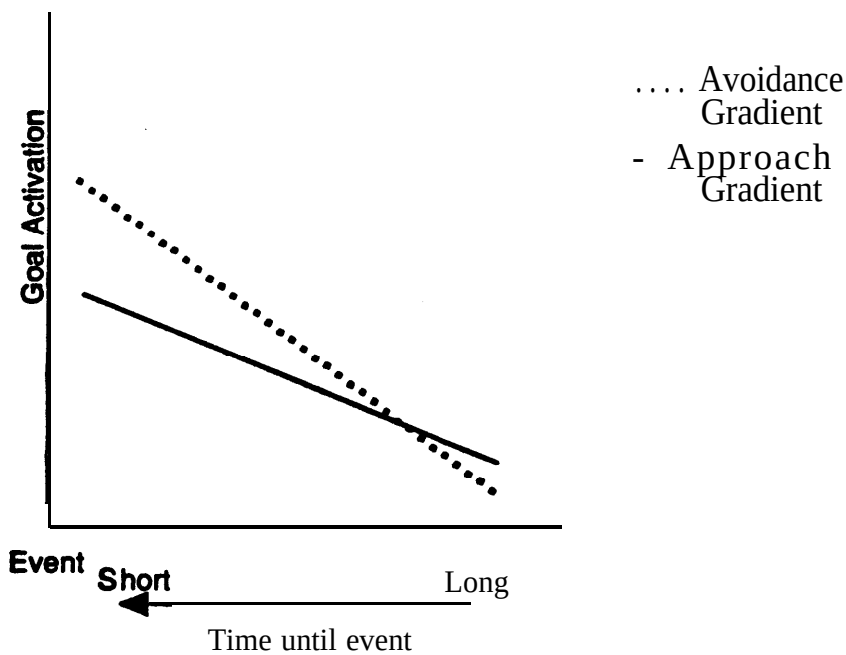


Fig. 2. Sample goal gradients. Activation of goals increases as the reference event gets closer. Avoidance gradients are steeper than approach gradients. The origin represents the time of the reference event.

feelings of a future event (e.g., savoring or dread) can be modeled as some function of the integral of the gradient between the points for the beginning and end of the interval.'

There is some evidence in favor of the thesis that avoidance gradients over time are steeper than approach gradients. Shelley (1994) had her participants evaluate a set of monetary investments differing in their size of gain or loss, probabilities associated with each outcome and time until the gain or loss would be realized (immediate, 6 months, 1 year, 2 years). Shelley then fit competing models of time discounting to these preference data. She found that the discount rate for losses was larger than that for gains. In other words, the rate with which the subjective value of a future monetary transaction is decreased because it takes place in the future is larger for losses than for gains. This, finding is consistent with the goal gradient hypothesis. The further a payment is in the future, the further the distance to the goal, the more the goal of avoiding losses should lose in strength compared to the goal of approaching gains.

The relative activation of goals as a function of time is evident in people's tradeoffs between short- and long-term goals. A number of researchers have pointed out that people have difficulty satisfying long-term goals, because competing short-term goals often have stronger activation, and hence command resources (e.g., Baron & Spranca, 1997; Brendl, Markman, & Higgins, 1998; Thaler, 1985). For example, people often have long-term environmental goals like a cleaner environment, preserved rainforests, or saving for their children's college education. Unfortunately, short-term goals, such as purchasing a gas-guzzling luxury car, which may conflict with the goal of a cleaner environment and college savings, are likely to be more strongly active because the reference event is closer. Thus, these active short-term goals will thwart people's attempts to satisfy long-term goals.

In another set of studies, Liberman and Trope (1998) asked people about a number of activities that they might perform either in the near future or in the distant future, such as attending a lecture on campus or going to a show. For events occurring in the near future, feasibility concerns (e.g., will the lecture fit into the person's schedule) were considered more important than desirability concerns (e.g., is the speaker likely to be interesting). For events that will occur in the distant future, the reverse pattern was

[7] Loewenstein (1987) discusses the use of the integral of the utility function as a measure of dread or of savoring, and suggests that the value of savoring or dreading and event is only a fraction of the whole integral. The use of a fraction of the integral is justified because the value of savoring an event is typically small relative to the event itself. That is why people often have difficulty with delay of gratification. Loewenstein points out that for simple positive events of short duration (like a kiss from a favorite movie star), the savoring may actually be worth more than the event itself, leading people to delay the onset of the event. General principles for setting the weight of dread or savoring have not been established.

obtained, with desirability concerns outweighing feasibility concerns. The difference in weight given to desirability and feasibility also influenced people's choices of the activities they would be willing to participate in and their estimates of how much time they would budget for those activities in the near and far term.

These findings suggest that people are more concerned with what they *ought* to do in the near term (i.e., feasibility is important) and what they would ideally like to do in the far term (i.e., desirability is important). Higgins (1987, 1997) suggests that "ought" concerns are associated with safety and responsibilities, and thus with avoidance strategies. In contrast, "ideal" concerns are associated with aspirations, and hence with approach strategies. Thus, this work suggests that people in Liberman and Trope's (1998) studies focus on feasibility in the near term because these goals are associated with strategic avoidance motivation, whereas they focus on desirability in the long term because these goals are associated with strategic approach motivation. As shown in Fig. 2, as the event in question becomes closer in time, avoidance motivation is likely to be stronger than approach motivation.

One final aspect of the temporal activation of goals is that people have a mental model of how time affects goals, and this model affects their choices beyond the factors considered so far. For example, we have pointed out earlier that a goal that has just been satisfied will be deactivated (Atkinson & Birch, 1970; Lewin, 1926; for evidence, see Bargh & Gollwitzer, 1997; Ovsiankina, 1928; Zeigarnik, 1927). People appear to have a good grasp of this property, as they sometimes act as if their mental model of goals assumes a refractory period after a goal has been satisfied. For example, Loewenstein and Prelec (1993) explored people's preferences for the timing of events. They found that people preferred to have positive events spread out over time. For example, people judged that it is better to schedule a fancy French dinner for this week and then a fancy fish dinner for a month from now then to schedule the two dinners one week after the next in the middle of the month.

This observation suggests that there are at least two fundamentally different situations involving choice and time. In *the fixed-time case,* people are given a choice of whether to participate in an event whose outcome will become evident at some fixed time in the future. In the *variable-time case,* people have the choice of when in time to experience some outcome, given that the outcome is going to be experienced. From the standpoint of the decision maker, only the latter situation involves the possibility of choosing the timing of the event, because in the former situation the timing is fixed. For example, the fixed-time situation could involve the decision of whether to have a painful medical procedure.

People may be more likely to have the procedure when it is to be scheduled a week from now instead of a day from now. In contrast, the variable-time situation involves choosing a time for an option that has been accepted. Here, people who are going to have a painful medical procedure are choosing between having it a day from now or a week from now. In this situation, people may prefer the early option to the delayed option. This conjecture is based on the assumption that people in the variable-time situation are likely to focus on how the timing of an outcome will affect their goals. Thus, in the variable-time situation they will weight dread more heavily than will people in the fixed time situation. In particular, whereas the negative event may be evaluated as a worse prospect when it is near than when it is distant, the degree of dread (i.e., a function of the integral of the gradient from the present until the event) may be worse than the strength of the negative event in the present.

Why do we suggest that dread, savoring, and other anticipatory emotions will affect choices more in the variable- than tied-time situations? Although we are not aware of any evidence for this proposition, it is suggested by goal compatibility. There is evidence that the more compatible information is with a response, the more it will be weighted into a choice (Slovic, 1975). Elsewhere we have suggested that this input-to-response compatibility is actually an input-to-goal compatibility (Brendl, in press). In the fixed-time situation, a decision maker's goal is to accept or reject an action alternative. In this case, choice is not between one time and another. However, in the variable-time situation, the goal is to choose experiencing an outcome at one time or another. Information about how time affects the decision maker (e.g., dread) is more compatible with this goal than with the former goal, and should thus be weighted heavier into the choice.

In sum, there are three central aspects of the temporal dynamics of goal activation. First, the nearer a reference event becomes, the more strongly activated are goals that are compatible with that event (goal gradient as a function of time). Second, the goal gradient for time until an event appears to increase more sharply for avoidance goals than for approach goals. Finally, people act in accord with a model that suggests that after an approach goal has been satisfied once, there is a refractory period during which the goal is less active. Thus, people prefer to spread positive events out over time rather than massing them together.

### C. Active Goals and the Segregation of Values

Earlier we suggested that when goals change, people will make subsequent evaluations relative to the new goals. This new set of evaluation criteria leads to a segregation of evaluations that took place before and after the

goal change. From a normative economic standpoint, segregation of values leads to suboptimal behavior because people should focus on the total utility of a set of objects and not simply the utility of individual objects or collections of objects related to a common goal.

The danger of segregating values can be seen in Kahneman and Tversky's (1984) classic jacket scenario. In this study, participants were told that they were purchasing a calculator and a jacket from a store. The calculator cost $25, and the jacket cost $120. Some participants were told that if they drove 20 minutes to a new store, they could save $15 on the calculator. Other participants were told that if they drove 20 minutes to a new store, they could save $15 on the jacket. Participants were more likely to decide to go to the new store to save money on the calculator than on the jacket. This finding only makes sense if the costs of the jacket and the calculator are being segregated and the savings is being applied only to the item receiving the discount. This concept that values are mentally segregated as if "into different mental accounts has been explored by a number of researchers (e.g., Heath, 1995; Heath & Fennema, 1996; Thaler, 1985).

In the jacket scenario, people focus either on the purchase of the jacket alone or on the purchase of the calculator alone. Thus, people are treating the value of the calculator separately from the value of the jacket. The two situations in this scenario are identical (the person stands to save $15) on the total cost in each case. Nonetheless, the framing of this problem leads to differences in behavior. It is possible to interpret the results of this scenario as evidence that different goals (i.e., purchasing a jacket vs. a calculator) lead to different evaluation criteria. However, this study was not designed with a goal-based view of evaluation in mind, and so a more direct test of this view is needed.

To this end, we conducted the following vignette study in which the active goal changes halfway through the study (Brendl, Markman, & Higgins, 1998).

> Imagine two college students are visiting a gambling casino. In front of the casino, Student *A* finds $25 cash and puts the money in his wallet. Student A and Student B pay the $25 entrance fee and enter the casino. Inside the casino, Student *B* finds $25 cash and puts the money in his wallet.
>
> **Both students do not know yet whether to gamble. Both students consider the following gamble: You put $25 on the gambling table. You have a 50% chance of losing and a 50% chance of winning. If you lose, your money goes to the casino. If you win, you get $25 in cash in addition to getting back the $25 you put on the table.**
>
> **In your opinion, who is more likely to accept this gamble?**

In this vignette, we expected that the students would initially be seen as having the goal to enter the casino. Thus, the money found by Student A

(who found the money before paying the entry fee) would be applied toward that goal. After entering the casino, students have the goal to gamble, and so we expected that the money found by Student B (who found the money after paying the entry fee) would be applied toward that goal. Consistent with this interpretation, 14 participants suggested that Student A would be more likely to gamble, whereas 37 suggested that Student B would be more likely to gamble. This finding suggests that changing an active goal can lead the same object (e.g., a $25 windfall) to be placed into different mental accounts.

A detailed exploration of the role of goals on the value and perception of money has been undertaken by sociologist Viviana Zelizer (1994). As one example, she explores the way money was transformed into an acceptable gift in the early twentieth century. For example, employers could give their employees Christmas bonuses that were separate from the employees' regular pay. These gifts were often given at parties to ensure that they were considered separately from wages. When money was given as a gift, it was presented in special envelopes or other packaging to distinguish it from ordinary money. This distinction was particularly important in cases where the giver and recipient were of unequal social or economic class, because if the money were presented in plain wrapping (like a regular envelope), it would be interpreted as a handout, and would therefore be seen as demeaning.

Gift money typically comes with restrictions about how it is to be spent as well. Zelizer points out that that money given for a birthday was supposed to be spent on something the recipient wanted rather than on necessities such as groceries or debts. Indeed, the etiquette in early twentieth-century America was for recipients to state how they spent gift money explicitly in thank-you notes in order to let the giver know that it was used appropriately. This discussion of differences in the perception of money is particularly enlightening, because money is designed to be fungible. Thus, it should be straightforward to combine all moneys together into a single mental account. Instead, it is clear that people go to great lengths to distinguish money for different purposes both mentally (e.g., gift money must be used for a want rather than a need) and also physically (e.g., new bills given in a card).

These observations are particularly interesting from a psychological standpoint. Governments create fungible currency in order to ease transactions across situations. Once a standardized currency has been created, every object and service in a society can be given a value on a common scale. The aim of the government is to standardize value, but people are psychologically unable to standardize values across situations (Simon, 1956). Thus, they create special forms of currency across situations in order

to make money more compatible with their goals. Gift money is separated from other money because it is supposed to have a different psychological force from wages and from charity. Likewise, in early twentieth, century America, women's wages were treated differently by families than were men's wages, and were expected to be spent differently. Similarly, money given as charity is often separated from other currency. Thus, the intention of the government is to streamline economic transactions, but people's natural tendency to segregate values around active goals leads to subtypes of money that break the uniformity of a standardized currency.

### D. Value and the COmpatibility of Objects to Goals

The goal compatibility framework predicts subjective value of objects as a function of the object's compatibility to active goals. The studies discussed so far have focused on the influence of the activation level of goals on the perception of value. In this section, we focus on the second aspect of goal compatibility; that is, the compatibility relationship between the goal and the value of an object. As discussed previously, an evaluated object that is similar to an object in the end state of the goal will be perceived as substitutable and therefore compatible with it. The more compatible an object is with the end state of a goal, the greater its perceived value.

As a demonstration of the role of compatibility in evaluation, we presented college students with the following vignette (Brendl, Higgins, Markman, & Messner, in preparation).

> Three college students are visiting a gambling casino. Each has won $25 in the same gamble. *Student A* received $25 in cash. *Student B* received a gambling chip worth $25 that he can cash at the casino's cashier booth at any time. *Student C* received a cash voucher, worth $25 that he can cash at the casino's cashier booth at any time.
>
> Now, all three students are considering another gamble. Each student would put a stake worth $25 on the gambling table. Student A would put cash on the table, Student B a gambling chip, and Student C a cash voucher. There is a 5096 chance of losing and a 50% chance of winning. If a student loses, his $25 stake goes to the casino. If he wins, he gets $25 in cash and gets back his $25 (cash, gambling chip, or cash voucher).

Participants were asked to rate the likelihood that each student would accept the gamble on a scale ranging from 0 to 100 in 5-point increments.

We assumed that the students would be viewed as having the goal to maximize their cash. In this scenario, we expected participants to rate the students as least likely to gamble cash, most likely to gamble a gambling chip, and intermediate in likelihood to gamble a cash voucher. This prediction is based on the compatibility relation of cash, a cash voucher, and a gambling chip to cash (the object in the end state). As an independent measure of compatibility, we gathered similarity ratings from other subjects.

Obviously, cash is identical to cash, and so it should be most compatible with cash. A gambling chip was rated as least similar to cash, and hence should be least compatible with the end state of the goal. A cash voucher, was rated as intermediate in similarity to cash between cash and a gambling chip, and hence should be intermediate in its compatibility to the goal.

The results support the predictions of the goal compatibility view of value. Student B, with the gambling chip, was rated as most likely to gamble (M = 71), presumably because a gambling chip is least similar to cash and therefore involved the smallest subjective loss. Student A, with cash, was rated as least likely to gamble (M = 43), presumably because cash is most similar to cash and therefore involved the largest subjective loss. Finally, Student C, with the cash voucher was rated as intermediate in likelihood between the other two to gamble (M = 60), presumably because a cash voucher is intermediate in similarity to cash and therefore intermediate in terms of the size of the subjective loss.

As another demonstration of the role of compatibility, we gave students the following scenario:

> Imagine two college students are visiting a gambling casino. In front of the casino, each student finds $25 cash and puts the money in his wallet. Each student pays the $25 entrance fee to enter the casino. Student *A* pays with check and Student B pays with *cash.* Neither student has decided yet whether to gamble. Both students consider the following gamble: You put $25 in cash on the gambling table. You have a 50% chance of losing and a 50% chance of winning. If you lose, your money goes to the casino. If you win, you get $25 in cash in addition to getting back the $25 you put on the table.
>
> In your opinion, who is mote likery to accept this gamble?

In this scenario, subjects are likely to assume that the students have the goal to maximize the cash they have (as in other studies we have discussed that involve gambles). Subjects should assess the compatibility of the amount spent on the entry fee to cash, which is the end state of the active goal. Cash is, of course, more compatible with cash than is a check, and so cash should be more valuable. Thus, the person who paid with cash should feel like they have already lost something more valuable than the person paying with a check, and so they should be less likely to gamble. Consistent with this explanation, 32 subjects given this scenario suggested that the person paying by check (Student A) would be most likely to gamble, and only 14 subjects suggested that the student paying with cash (Student B) would be most likely to gamble.

The importance of compatibility for determining value suggests that seemingly irrelevant factors can strongly influence people's evaluations. For example, in a jury trial, the testimony of an expert may be perceived as more valuable when given in an authoritative voice than when stated

meekly, even though the tone of voice is not relevant to the content of the message. In contrast, the testimony of a victim is likely to be perceived as more valuable if it is delivered meekly than if it is delivered authoritatively. Similarly, a coupon for a discount furniture store is likely to be perceived as more valuable if it is printed plainly than if it is printed opulently, whereas the reverse is likely to be true for stores that sell expensive furniture. Even adding objective value to a choice option may make it subjectively less valuable if the added objective value makes the option less representative of the underlying goal. For example, if someone has the goal to take a plane flight, the mileage in a bonus program that offers only free flights as incentives might be viewed as more valuable than the mileage in a program that also offers nonrepresentative benefits such as health club memberships or jewelry. Further research should explore this possibility.

The goal compatibility view that we have outlined here is likely to be overly simple because there are probably other sources of compatibility. In particular, goals have two functions: a "why" function and a "how-to" function. Higher-level goals provide the reason why one strives to satisfy lower-order goals. For example, a person might want to buy dining hall tickets because she wants to eat at the dining hall (higher-order goal). Eating at the dining hall can also be a lower order goal: It tells one how to get rid of a feeling of hunger (which is now the higher-order goal). Thus, a goal is often a means for reaching a higher-order goal (Vallacher & Wegner, 1987). Compatibility defined as similarity of an object to an end state of a goal reflects the "why" function of the higher order goal. An object is valuable because it is substitutable with an object in the end state of a goal. We suspect that the "how" function of goals can also lend value to objects. In particular, the more typical an object is of a means of reaching a higher-order goal, the more instrumental the object may be perceived to be, which may increase its value. The relationship between instrumentality and goal compatibility will be the source of further research.

### E. Goal Compatibility and Self-Regulation

Discussions of the effects of goals on choice are often carried out in the context of demonstrating how people fail to obey normative rules of choice. For example, the segregation of values as a function of the active goal has been used as a demonstration of a nonnormative behavior. Indeed, many of the examples selected by psychologists are ones that when all conditions of the experiment are seen together are obvious cases of selecting suboptimal choices. For example, the jacket scenario described earlier is a case where segregating values leads people to drive to another store for a discount only when the discount is a substantial fraction of the price of the

object to which it is applied. Because people are not considering the cost of the combined values of all objects involved in the transaction, they make a suboptimal choice.

Despite this tendency to paint the use of goals as a negative influence on choice, we believe that people generally use their active goals, their beliefs about goals, and the segregation of object values around active goals as a means of efficient self-regulation (see also Brendl, Markman, & Higgins, 1998). For example, earlier we discussed the fact that strongly active short-term goals can outweigh long-term goals in many cases, which can make it difficult to satisfy long-term goals. Normatively, there is no obvious correct course of action because there is no optimal strategy for deciding between competing goals. A strongly active short-term goal has the effect of raising the perceived value of an option to the point where the decision maker may feel that significant resources should be spent to obtain it. The value of a long-term goal may not be evident to the individual for many years.[8]

Often, people have long-term goals that they would like to protect, and there are a number of strategies people adopt that involve aspects of the goal compatibility framework. For example, Zelizer (1994) discusses the rise of Christmas Club savings accounts in the United States in the early twentieth century. These accounts involved depositing a small amount of money each week into an account. The accounts often paid little or no interest. The money was withdrawn just prior to Christmas to be used to purchase presents. These accounts were a method of segregating money from weekly paychecks in order to protect it from short-term goals. In this way, it was preserved for the longer-term goal of purchasing holiday gifts. There are other examples in which people psychologically segregate money for long-term purposes. Shefrin and Thaler (1992) suggested that people may mentally earmark money for savings rather than for consumption in order to save for retirement. Furthermore, they may treat large gains (such as inheritances) as wealth rather than as money to be spent in order to avoid spending it to satisfy only short-term goals.

Psychological segregation may also be used to limit the resources that are assigned to a short-term goal in order to resist the temptation of the short-term goal. In the same way as it is useful for dieters not to stock their house with seductive delicacies, but to rather segregate themselves from tempting foods and limit the foods available for short-term consumption, it can be useful to cognitively segregate monetary resources from the stock of resources available for short-term consumption if long-term saving is a goal. Wertenbroch (1998) reports that some consumers are willing to pay

[8] Indeed, for many long-term goals (such as environmental goals) the benefits of a course of action may not be evident for generations.

more money per item (e.g., per cigarette) if the items come in small instead of large packages. Presumably, this behavior is driven by a desire to limit short-term consumption. A downside of this strategy is that if the protective shield of a psychological segregation is ruptured, the power of the competing goals can burst through disproportionately. This is known as the "What the hell effect" in some dieters. Once they eat more than the daily allowance, they say "What the hell, today's goal of staying below 1000 calories is lost anyhow," and they eat beyond limits for the rest of the day (Polivy & Herman, 1985). Thus, psychological segregation can backfire if a person represents all protection of a long-term goal (e.g., losing weight) only in terms of limiting resources devoted to competing short-term goals (e.g., 1000 calories per day).

Such backfiring can be prevented, but at another cost. A segregation strategy in the service of long term goals is the use of protected values (Baron & Spranca, 1997). A protected value is one for which a person is unwilling to accept tradeoffs against any other dimension. Thus, the person makes the importance of a long-term goal so high that options that are compatible with that option are nearly infinitely valuable. For example, if a person holds saving the rainforest as a protected value, then anything that harms the rainforest, even in a small way, is an unacceptable option. There are no circumstances under which this person will accept an option that involves even small damage to the rainforest in exchange for some other benefits. By increasing the importance of a long-term goal, the individual guarantees that it will not be superceded by a short-term goal. No backfiring in the case of harming the long-term goal is possible here because the long-term goal cannot be violated. However, there is a substantial cost. Although this strategy is clearly effective for protecting a long-term goal, it is inefficient because it does not provide the decision maker with much flexibility, and so it can be expensive to protect a value. Furthermore, if a decision maker has more than one protected value, then there are cases in which these values may come into conflict.

## V. Conclusions and Further Directions

Goals have been neglected in many treatments of decision making. We suggest that goals are critical for the determination of value. In particular, active goals are used to filter the information used during choice. When processing different attributes within an option, people tend to evaluate those attributes relative to active goals rather than using a more abstract evaluation such as utility. Furthermore, an object is valued to the extent

that it is compatible with active goals. An object is compatible with a goal to the degree that it is substitutable with the reference state of the goal.

In this chapter, we provide evidence for the main aspects of this goal compatibility view. Active goals have been demonstrated to influence the way information is processed. Furthermore, the attributes of objects themselves are associated with goals. These feature-to-goal associations may activate these goals in the presence of the object. Finally, we have empirical evidence that the value of objects depends on the relationship between the object and the active goals. This evidence is in accord with sociological observations of the use of money in early twentieth-century America.

Although we view this chapter as a promising start, much important work remains to be done to further clarify the issues raised here. The mechanisms that determine compatibility of options to goals are not completely specified. We have not investigated the role of compatibility to schemata for determining value.

We know surprisingly little about the dynamics of goal activation, yet the evidence is strong that it is especially active goals that affect value and choice. In the present studies, we made assumptions about the goals subjects would have active based on the location in which the study was carried out and the task the subject was performing. We also provided some principles of goal activation. These principles seem plausible and are consistent with the studies, but there is no independent evidence for them. Further research should examine the aspects of tasks and situations that lead to goal activation as well as the way goal activation changes over time and following goal satisfaction.

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