

## Promotion and Prevention Strategies for Self-Regulation

---

### *A Motivated Cognition Perspective*

E. TORY HIGGINS  
SCOTT SPIEGEL

Research on motivated cognition has typically examined how *motives to arrive at certain conclusions* affect people's *judgmental processes* (cf. Dunning, Leuenberger, & Sherman, 1995; Ford & Kruglanski, 1995; Sanitioso, Kunda, & Fong, 1990; Thompson, Roman, Moskowitz, Chaiken, & Bargh, 1994). In this chapter, we extend the study of motivated cognition in two directions. First, we examine how, in addition to motives to arrive at certain outcomes, *motives to adopt certain strategies* affect people's judgmental processes (for a more general review of cognitive effects of strategic preferences, see Higgins and Molden, 2003; Molden & Higgins, in press-b). Specifically, we examine how having a promotion or a prevention focus—as well as having “regulatory fit” (Higgins, 2000) between one's promotion or prevention focus and the manner in which one pursues a goal—can affect people's judgmental processes. Second, we examine how motives to adopt certain strategies affect people's *behavior*, which can be not only the behavioral product of their judgmental processes but can also be independent of judgment. Specifically, we examine how having a promotion or a prevention focus, and having strategic “fit” with these foci, can affect behavior.

### PROMOTION AND PREVENTION STRATEGIES FOR SELF-REGULATION

Regulatory focus theory (Higgins, 1997) proposes that self-regulation operates differently when serving fundamentally different needs, such as the distinct survival needs of *nurturance* (e.g., nourishment) and *security* (e.g., protection). The theory assumes that nurturance-related regulation involves a *promotion focus*, which is a regulatory state concerned

with *ideals*, advancement, aspiration, and accomplishment (more generally, the presence or absence of positive outcomes). In contrast, security-related regulation involves a *prevention focus*, which is a regulatory state concerned with *oughts*, protection, safety, and responsibility (more generally, the absence or presence of negative outcomes.) *Promotion*-focused people prefer to use *eagerness*-related means, the type of means most suited to a concern with advancement, aspiration, and accomplishment (Crowe & Higgins, 1997). In contrast, *prevention*-focused people prefer to use *vigilance*-related means, the type of means most suited to a concern with protection, safety, and responsibility (Crowe & Higgins, 1997). Thus, regulatory focus theory goes beyond the basic, widely accepted hedonic principle that people approach pleasure and avoid pain, to an examination of people's strategic choices and manner of pursuing their goals. Notably, the theory proposes that differences in judgmental processes and goal pursuit can occur depending on regulatory focus above and beyond such fundamental factors as expectancy and value of attainment.

Regulatory focus has been studied both as a temporary, situationally induced orientation and as a chronic, individual-difference variable. When studied as a situationally induced orientation, regulatory focus has been manipulated either by framing an identical set of task payoffs for success or failure as involving "gain-nongain" (promotion) or "nonloss-loss" (prevention) (e.g., Shah & Higgins, 1997; Shah, Higgins, & Friedman, 1998), or by priming ideals or oughts (Higgins, Roney, Crowe, & Hymes, 1994; Liberman, Molden, Idson, & Higgins, 2001). When studied as an individual-difference variable, regulatory focus has been assessed using the Self-Guide Strength Measure (e.g., Higgins, Shah, & Friedman, 1997; Shah & Higgins, 1997), which measures the chronic accessibility of people's ideals and oughts (Higgins, 1997).

Chronic regulatory focus has also recently been studied by using the Regulatory Focus Questionnaire (RFQ; Higgins et al., 2001), which assesses people's subjective histories of effective promotion and prevention self-regulation. The RFQ distinguishes between "promotion pride"—a subjective history of success with promotion-related eagerness that orients individuals toward using eagerness means to pursue new goals—and "prevention pride"—a subjective history of success with prevention-related vigilance that orients individuals toward using vigilance means to pursue new goals. It should be noted that the RFQ measures two types of success-related pride, namely, promotion pride and prevention pride, rather than measuring success-related pride and failure-related shame. Furthermore, both promotion pride and prevention pride are positively, reliably, and independently correlated with achievement motivation (Harlow, Friedman, & Higgins, 1997); that is, both variables involve pride in success, but through different motivational orientations involving either eagerness or vigilance.

Research on regulatory focus theory has uncovered distinct patterns of sensitivities (Brendl, Higgins, & Lem, 1995) and emotional reactions to success and failure (Higgins et al., 1997; Idson, Liberman, & Higgins, 2000; for a review, see Higgins, 2001) associated with promotion and prevention orientations. This chapter, however, reviews research that highlights the ways in which regulatory focus affects people's judgmental processes and strategic behavior (i.e., the more active components of self-regulation). In summary, we have known for some time that a promotion focus is associated with *eagerness* to find means of advancing success (i.e., ensure "hits"), whereas a prevention focus is associated with *vigilance* to reject mistakes that could produce failure (i.e., "correct rejections"). The question addressed in this chapter is, how do these strategic differences influence judgmental processes and behavior?

In attempting to answer this question, we view our work as falling within the broader context of motivated cognition (see Kruglanski, 1996; Kunda, 1990, for reviews), which emphasizes the ways in which motives to arrive at certain conclusions affect people's judgmental processes. As mentioned earlier, this chapter reviews evidence that people's judgmental processes, as well as their behavior, are affected by not only their preferred conclusions but also their preferred strategies (see also Higgins & Molden, 2003; Molden & Higgins, in press-b). Because regulatory focus is a general principle of self-regulation, examining the strategic effects of promotion and prevention orientations on judgmental processes and behavior serves not only to deepen understanding of regulatory focus effects but also to broaden our understanding of the dynamics of motivated cognition.

## REGULATORY FOCUS AND JUDGMENTAL PROCESSES

Here, we consider how people's *regulatory focus* affects their *judgmental processes*. How does a promotion versus a prevention focus influence individuals' *cognitive processes* when making judgments?

### Expectancy Value Effects on Goal Commitment

Which factors increase people's motivational intensity in goal pursuit? Expectancy  $\times$  value (or subjective utility) theory provides a classic answer to this question (e.g., Feather, 1982). According to this theory, both higher expectancy and higher value of goal attainment increase motivational intensity. Beyond these main effects, motivational intensity is highest when the product of expectancy and value is highest. As people's expectancy for or value of goal attainment increases, the effect of the other variable on commitment also increases. For example, the high value of a goal should affect commitment more when the expectancy of goal attainment is high, rather than low.

Whereas expectancy  $\times$  value models have received some empirical support, not all studies have revealed a positive multiplicative interaction between expectancy and value on goal commitment. Shah and Higgins (1997) proposed that chronic or temporary variability in people's strategic preferences may determine how expectancy and value interact to affect goal commitment. In particular, they proposed that promotion-focused people—who pursue their goals using eager strategies that involve ensuring hits and advancement—attempt to maximize their outcomes, and are thus especially motivated by a high expectancy of goal attainment when attainment is highly valued (or vice versa). Promotion-focused people, therefore, should demonstrate the classic expectancy  $\times$  value effect on goal commitment.

In contrast, prevention-focused people—who pursue their goals using vigilant strategies that involve ensuring correct rejections and safety—view their goals as *necessities* when success is highly valued. It should matter less to prevention-focused people how likely they are to achieve such goals, which must be attempted regardless of difficulty or likelihood of success. Prevention-focused people are thus expected to demonstrate a *negative* expectancy  $\times$  value multiplicative effect on goal commitment, such that the effect of expectancy on commitment (while continuing to have an impact) becomes smaller as the value of goal attainment increases.

These predictions were tested in a series of studies in which participants were asked

to decide whether or not to take a particular class in their major (Shah & Higgins, 1997). In one study, participants' subjective expectancies and the value of success in the class were assessed; in two other studies, expectancy and value were experimentally manipulated. In addition, two of these studies manipulated participants' regulatory focus by framing the goal either as an accomplishment or as a safety concern, whereas the third study measured participants' chronic ideal and ought strength (see Higgins et al., 1997). Across all three studies, the predicted positive interactive effects between expectancy and value were found to be stronger for participants with a stronger promotion focus. In contrast, the predicted *negative* interactive effects between expectancy and value were found to be stronger for participants with a stronger prevention focus. Thus, regulatory focus as a strategic preference was found to have a profound impact on goal commitment, whereby promotion strength increased the classic effect, and prevention strength actually *reversed* it.

### Counterfactual Thinking

Within decision-making contexts, people sometimes imagine, after a failure, how things might have turned out differently had they taken or *not* taken certain actions. Such *counterfactuals* have been shown to be an important judgmental process through which people learn from the outcomes of their decisions (see Roese, 1997). *Additive* counterfactuals are thoughts about what might have happened had one taken a different action. *Subtractive* counterfactuals are thoughts about what might have happened had one *not* taken a particular action. Roese, Hur, and Pennington (1999) tested the prediction that people's regulatory focus would moderate the frequency with which they generated additive versus subtractive counterfactuals in response to a failure. Because additive counterfactuals lead people to imagine how things might have turned out differently had they not missed an opportunity for advancement, they represent an eager strategy of reversing a past error of omission. Thus, additive counterfactuals should be preferred by people with a promotion focus. In contrast, because subtractive counterfactuals lead people to imagine how things might have turned out differently had they avoided a mistake, they represent a vigilant strategy of reversing a past error of commission. Thus, subtractive counterfactuals should be preferred by people with a prevention focus.

In one study conducted by Roese and colleagues (1999), participants read hypothetical scenarios involving either promotion failures (i.e., failures to attain accomplishment-related goals) or prevention failures (i.e., failures to attain safety-related goals). For each scenario, participants were then asked to expand in writing on a counterfactual stem reading, "If only. . ." As predicted, participants who had received promotion-framed scenarios were more likely than those who had received prevention-framed scenarios to generate additive counterfactuals, whereas the reverse was true for subtractive counterfactuals. These results were conceptually replicated when other experimenters induced a promotion or prevention focus in participants by having them think of a negative experience they had had within the past year that involved feeling either *dejected* (promotion failure) or *agitated* (prevention failure) (see Higgins et al., 1997). The experimenters then asked participants to complete "If only. . ." sentences about their experiences. As predicted, promotion-focused participants were more likely than prevention-focused participants to generate additive counterfactuals, whereas the reverse was true for subtractive counterfactuals. Thus, regulatory focus has been found to have a strong influence on which information people judge to be most important about their past experiences in considering future action.

## Generation of Alternatives

An important component of judgment and decision making is the generation of alternatives. Crowe and Higgins (1997) obtained evidence that regulatory focus moderates the criteria individuals use to *sort* or *describe* objects, two examples of generating alternatives in decision making. In one task, participants sorted a number of fruits and vegetables into categories, using whichever criteria they deemed appropriate. In another task, participants presented with the names of some objects of furniture were asked to list as many characteristics of each object as they could. Prior to both tasks, the experimenter induced either a promotion or a prevention focus in participants through the task-framing technique.

Because the criteria for generating categories for fruits and vegetables, and for choosing characteristics to list about furniture, were not well specified, it was possible for strategic preferences to affect the criteria people judged to be appropriate. Specifically, it was possible for participants to (1) generate few or many criteria in sorting fruits and vegetables, (2) list few or many characteristics of the furniture, and (3) use the same or different criteria to sort fruits and vegetables (e.g., color vs. shape) and to characterize the furniture (e.g., function vs. size). Generating many criteria for sorting and characteristics for description, and using different criteria and characteristics for different classes of objects represent an eager strategy, because they maximize the opportunity for "hits" by ensuring that all of the variability within and among objects is captured. In contrast, generating few criteria for sorting and characteristics for description, and using the same criteria and characteristics for different classes of objects represent a vigilant strategy, because they increase the opportunity for "correct rejections" by ensuring that one does not make a mistake in misclassifying objects. As predicted, promotion-focused participants generated more criteria and characteristics than prevention-focused participants, and they were also more likely to use different criteria and characteristics.

Two other examples of judgment contexts in which the generation of alternatives plays a fundamental role are the categorization of social behaviors, and the generation and endorsement of hypotheses about (or explanations for) social behavior. In a series of studies on regulatory focus and the resolution of uncertainty, Molden and Higgins (in press-b) demonstrated differences in promotion and prevention-focused people's generation of alternatives to categorize a target person's behavior. In one study, participants were given a *vague* behavioral description, with many possible categories in which to ascribe the behavior. In this context, generating many alternatives for classifying the behavior represents an eager strategy, because it maximizes the opportunity for selecting the correct category. In contrast, generating few alternatives represents a vigilant strategy, because it increases the opportunity for rejecting wrong categories. As predicted, promotion-focused participants endorsed more alternative descriptions of the vague behavior than did prevention-focused participants.

The generation of alternatives also plays a fundamental role in the generation and endorsement of hypotheses about social behavior. To examine this role, Liberman and colleagues (2001) primed participants with either a promotion or a prevention focus, then had them read about the helpful behavior of a target person. Participants were then asked to select possible causes for this behavior from among a set of provided alternatives. As predicted, promotion-focused participants selected more hypotheses about the causes of the target person's behavior than did prevention-focused participants. Another measure was participants' willingness to generalize from the one instance of helpful behavior they were given to the target person's future behavior in new situations. An im-

portant component of the causal attribution process is the *discounting principle*, whereby one possible cause of some behavior, such as a person's helpful disposition, is seen as less likely to the extent that other possible causes of the behavior exist (Kelley, 1973). By this logic, promotion-focused participants—who selected more possible causes of the helpful behavior than did prevention-focused participants—should have been less likely to generalize about the target person's helpful behavior in future situations. This prediction was supported.

### Appraisal Efficiency

Another example of the influence of regulatory focus on judgmental processes lies in the domain of object appraisal. A promotion focus involves a concern with the presence and absence of positive outcomes, which correspond to feeling cheerful and dejected from success and failure, respectively (Higgins et al., 1997). In contrast, a prevention focus involves a concern with the absence and presence of negative outcomes, which correspond to feeling quiescent and agitated from success and failure, respectively (Higgins et al., 1997). Given this, promotion-focused people should be more efficient in appraising themselves or other attitude objects along cheerfulness- and dejection-related dimensions than along quiescence- or agitation-related dimensions, and the reverse should be true for prevention-focused people. In support of these predictions, Shah and Higgins (2001) found that both a chronic and a situationally induced promotion focus led to faster self and object appraisal for cheerfulness and dejection emotions, whereas both a chronic and a situationally induced prevention focus led to faster self and object appraisal for quiescence and agitation emotions.

### Probability Estimates

Previous research suggests that people both overestimate the likelihood of conjunctive events, in which each of several preconditions must be met for the event to take place, and underestimate the likelihood of disjunctive events, in which only one of several preconditions must be met for the event to take place (see Bazerman, 1998). Brockner, Paruchuri, Idson, and Higgins (2002) proposed regulatory focus as a moderator of people's ability to estimate accurately the probability of conjunctive and disjunctive events. Because promotion-focused people use an eager strategy of looking for hits and any possible means of advancement, they should be more sensitive to the (sufficiency) notion that only one out of several preconditions must be met for a disjunctive event to occur, and should be less likely to underestimate the probability of such an event. In contrast, because prevention-focused people use a vigilant strategy of making correct rejections and avoiding impediments, they should be more sensitive to the (necessity) notion that only one out of several preconditions need go unmet for a conjunctive event not to occur, and should be less likely to overestimate the probability of such an event.

In support of these predictions, Brockner and colleagues (2002) found that people's degree of congruence between their ideal and actual selves (Higgins, 1987; Higgins et al., 2001)—that is, the extent to which they had previously experienced success in using eager means to attain their promotion goals—was positively related to their degree of accuracy in estimating the probabilities of disjunctive events, whereas congruence between ought and actual selves was unrelated to accuracy for these events. In contrast, people's degree of congruence between their ought and actual selves (Higgins, 1987; Higgins et al., 2001)—that is, the extent to which they had previously experienced success using vig-

ilant means to attain their prevention goals—was positively related to their degree of accuracy in estimating the probabilities of conjunctive events, whereas congruence between ideal and actual selves was unrelated to accuracy for these events.

### **“Risky” and “Conservative” Response Biases**

As noted earlier, promotion-focused people prefer to use eager strategies in goal attainment, whereas prevention-focused people prefer to use vigilant strategies. In signal-detection terms (Tanner & Swets, 1954; Trope & Liberman, 1996), an eager strategy involves a concern with achieving “hits” and ensuring against “misses.” In contrast, a vigilant strategy involves a concern with achieving “correct rejections” and ensuring against “false hits.” Thus, promotion-focused people should demonstrate a “risky” response bias, whereas prevention-focused people should demonstrate a “conservative” response bias. These predictions were tested in a recognition memory study by Crowe and Higgins (1997), in which participants first viewed a series of letter strings, then were presented with a series of old and new letter strings, and were asked to respond “Yes” or “No” with respect to whether they had previously seen the letter strings. The memory task had been framed beforehand with either a promotion or a prevention focus. As predicted, promotion-focused participants demonstrated a risky bias for saying “Yes” in the recognition memory task, whereas prevention-focused participants demonstrated a conservative bias for saying “No” (see also Friedman & Förster, 2001).

Levine, Higgins, and Choi (2000) extended this research to examine whether risky or conservative strategic norms could develop within group settings over time. The authors asked three-person groups to perform a recognition memory task similar to the one used by Crowe and Higgins (1997), and had participants state their “Yes” or “No” responses aloud (so that other group members could hear them). Participants were told that their group would earn \$6 if the group members answered correctly 80% or more of the time, but only \$3 if they answered correctly less than 80% of the time. This contingency was framed with either a promotion or a prevention focus; specifically, promotion-focused groups were told that they would begin with \$3 and had a chance to earn \$3 more, whereas prevention-focused groups were told that they would begin with \$6 and had a chance to lose \$3.

As predicted, most of the groups (27 out of 34) converged in their recognition responses from the first to the second block of the task, as reflected by decreasing within-group variance in “Yes”–“No” responses. More importantly, among those groups that converged, promotion-focused groups converged in such a way as to reflect a greater risky bias in Block 2 than in Block 1, whereas prevention-focused groups converged in such a way as to reflect a greater conservative bias in Block 2 than in Block 1. Thus, whereas Crowe and Higgins (1997) showed that people’s regulatory focus affects their judgmental processes in individual settings, Levine and colleagues (2000) showed that *group*-level preferences for one strategy over another (i.e., promotion or prevention) affect group-level judgmental processes.

In summary, the research cited in this section indicates that regulatory focus as a strategic preference can have a profound effect on various judgmental processes. From expectancy  $\times$  value effects on goal commitment to counterfactual thinking, from the generation of alternatives to the evaluation of attitude objects, from probability estimates to the individual and group formation of risky and conservative response biases, having a promotion versus a prevention focus has been found to be a critical determinant of people’s cognitive processes while making judgments.

## REGULATORY FOCUS AND STRATEGIC BEHAVIOR

In this section, we examine how people's *regulatory focus* affects their *behavior*, which can be thought of as the behavioral product of their judgmental or decision processes. How does a promotion versus a prevention focus influence individuals' behavior in the pursuit of goals?

### Initiating Goal Pursuit

An important strategic component of goal pursuit is determining when to initiate activity toward a goal—or, within some contexts, when to initiate one activity over another. It should be noted that goals can be represented as either *minimal* goals that people *must* obtain, or *maximal* goals that they *hope* to attain. Regulatory focus theory predicts that because a prevention focus reflects a tendency to view goal pursuit as a necessity, a prevention focus should engender pressure to pursue goals quickly to meet the minimum standards required by these goals. In contrast, because a promotion focus reflects a tendency to view goal pursuit as progress toward some ideal maximum goal, a promotion focus should not engender any particular pressure to pursue goals quickly.

Freitas, Liberman, Salovey, and Higgins (2002) tested these hypotheses in a series of studies on regulatory focus and speed of initiating goal pursuit. In one study, they asked chronically promotion- and prevention-focused participants when they would be likely to initiate action toward applying for a hypothetical academic fellowship. As expected, higher prevention strength predicted more immediate action initiation, whereas higher promotion strength predicted later action initiation. These results were conceptually replicated in two additional studies, in which the goal was framed as being either a promotion-related accomplishment or a prevention-related necessity. As predicted, participants recorded more immediate action initiation times for the prevention-framed than the promotion-framed goal. In a final study, participants were given a \$2 "account" and then completed an anagram task in which different-colored anagrams were framed with either promotion or prevention contingencies—for example, in one condition, participants were told they would gain 10 cents for each white anagram they solved, whereas they would lose 10 cents for each tan anagram they did not solve (color and contingency information were counterbalanced). As predicted, participants solved a greater proportion of prevention- than promotion-focused anagrams during the first 10 trials of the task, and a greater proportion of promotion- than prevention-focused anagrams during the second 10 trials.

### Emphasizing Speed versus Accuracy

Another important strategic component of goal pursuit is people's emphasis on speed (or quantity) of accomplishment versus accuracy (or quality) of their efforts. Regulatory focus theory predicts that because quickly covering ground maximizes the opportunity to achieve "hits," promotion-focused people should be likely to emphasize speed over accuracy. In contrast, because thoroughly scrutinizing task requirements and efforts exerted minimizes the possibility of committing errors, prevention-focused people should be likely to emphasize accuracy over speed. In a pair of studies in which promotion- and prevention-focused participants were asked to complete a series of four "connect-the-dot" pictures, Förster, Higgins, and Bianco (2003) assessed the number of dots that participants connected for each picture within the allotted time frame, which constituted a



measure of speed of goal completion. They also assessed the number of dots participants missed up to the highest dot they reached for each picture, which constituted a (reverse) measure of accuracy of goal completion. As predicted, promotion-focused participants were faster (i.e., got through a greater percentage of the pictures in the allotted time), whereas prevention-focused participants were more accurate (i.e., made fewer errors in the portions of the pictures that they had completed).

Förster and colleagues (2003) also found that promotion-focused participants became faster (i.e., in getting through a greater percentage of the pictures) as they approached the end of the goal (i.e., as they moved from the first to the fourth picture). In contrast, prevention-focused participants became more accurate at goal completion (i.e., made fewer errors) as they approached the end of the goal. These latter findings reflect the "goal looms larger" effect, whereby strategic motivation increases as people get closer to goal completion (see Förster, Higgins, & Idson, 1998). In the Förster and colleagues (2003) studies, this effect translated promotion-focused people's eagerness into greater speed of task completion over time, and prevention-focused people's vigilance into greater accuracy of task completion over time.

### Activity and Object Substitution

Previous research has examined conditions under which people prefer to resume an interrupted activity versus switch to a substitute activity (e.g., Atkinson, 1953; Lewin, 1935, 1951; Zeigarnik, 1938), and to keep an object in their possession versus trade it for an object of equivalent value (i.e., the "endowment effect"; e.g., Kahneman, Knetsch, & Thaler, 1990; van Dijk & van Knippenberg, 1996). Liberman, Idson, Camacho, and Higgins (1999) proposed regulatory focus as a moderator of people's tendency to substitute a new activity or object for an old one. Specifically, in a situation in which an old activity or object is satisfactory, yet a new activity or object is presented for consideration, people's focus should naturally be on the new activity or object, which creates the choice situation, rather than the old activity or object, which functions as a background condition.

In this situation, promotion-focused people's eagerness for hits should make them more open to change than prevention-focused people, and promotion-focused people should be more likely to switch to the new activity or object. These predictions were supported across five studies in which participants' regulatory focus was either measured or manipulated, and their choice of a new or an old activity or prize was assessed; that is, in all five studies, promotion-focused participants were more willing than prevention-focused participants to give up an activity they were currently working on or a prize they currently possessed for a new activity or prize.

### Changing Plans

In contrast to the case of a satisfactory old activity or object, an old activity or object may be unsatisfactory. A well-known example of this is the classic "sunk costs" effect, which refers to the phenomenon of people sticking to some previous plan in which they have already invested time or money (that cannot be returned) despite now having an alternative choice whose benefits they prefer and whose costs would be no greater than sticking to the old plan (see, e.g., Arkes & Blumer, 1985). In the two different versions of sunk costs, one version (see Arkes & Blumer, 1985, Experiment 1) concerns the cost of making an error of omission (i.e., omitting a "hit"): the error of missing a more enjoyable trip to Wis-

consin simply because one has already paid more for a trip to Michigan that would take place at the same time. Another version (Arkes & Blumer, 1985, Experiment 3, Question 3A) concerns the cost of making an error of commission (i.e., saying "Yes" when one should say "No"): the error of wasting additional money on an endeavor, with almost no possible benefit just because one has already spent (i.e., wasted) money on it.

Higgins and colleagues (2001) predicted that regulatory focus would moderate the likelihood of making a sunk costs error, and that the moderation would be different for the two different versions of sunk costs. In the first scenario, in which an error of omission would produce the sunk costs effect, the preference for eagerness means of promotion-focused persons should make them less likely to show this type of sunk costs effect. In the second scenario, in which an error of commission would produce the sunk costs effect, the preference for vigilance means of prevention-focused persons should make them less likely to show this type of sunk costs effect. Both of these predictions were confirmed.

### Motivational Effects of Success and Failure

Receiving success versus failure feedback on early attempts at goal attainment has been found to have different effects on the motivational systems and strategic behavior of people with subjective histories of promotion- versus prevention-related success (i.e., those with high "promotion pride" vs. "prevention pride"). Because people with high promotion pride are motivated through an eager strategy of attaining hits, and success feedback conveys information that they have attained a hit, success feedback maintains their eagerness to try for more hits. On the other hand, failure feedback conveys information that they have not attained a hit, and that their previous strategy of eagerness is not sufficient, thus reducing their eagerness. In contrast, because people with high prevention pride are motivated through a vigilant strategy of avoiding losses, and failure feedback conveys information that they have *not* avoided a loss, failure feedback maintains their vigilance to try to avoid additional losses. On the other hand, success feedback conveys information that they have avoided a loss, and that their previous strategy of vigilance is no longer necessary, thus reducing their vigilance.

Idson and Higgins (2000) tested these predictions and found that, as expected, people with high promotion pride improved their performance on an anagram task over time after success feedback but showed a decline in performance after failure feedback. In contrast, people with high prevention pride improved their performance on an anagram task over time after failure feedback but showed a decline in performance after success feedback. In a similar study, Spiegel and Higgins (2001) found that promotion-focused participants performed better on the second round of an anagram task after receiving success feedback on the first round of the task compared to prevention *or* control participants, whereas prevention-focused participants performed better on the second round of the task after receiving failure feedback on the first round of the task compared to promotion *or* control participants.

The studies described in this section have demonstrated the major influence that regulatory focus can have on people's behavior (i.e., on the behavioral product of people's judgmental processes). Across such important strategic components of goal pursuit as initiating goal-related action, emphasizing speed versus accuracy, substituting current activities or endowed objects with new ones, changing plans, and adjusting motivational intensity in response to success versus failure feedback, regulatory focus has been clearly identified as an important factor affecting people's behavior in goal pursuit.

## REGULATORY FIT AND JUDGMENTAL PROCESSES

In this section, we examine how the presence of *regulatory fit* between one's regulatory focus and strategic means affects people's *judgmental processes*. In statistical terms, we consider the "interactive effects" on judgmental processes of having a promotion versus a prevention focus on the one hand, and using eager versus vigilant means on the other hand. The type of judgmental process considered is evaluating outcomes.

### Value Transfer from Regulatory Fit to Outcomes

Higgins's (2000) theory of regulatory fit proposes that when the manner of pursuing a goal suits (vs. does not suit) people's regulatory orientation, the value of the goal pursuit process increases for them. For example, within the realm of regulatory focus, *promotion*-focused people who use *eager* means should experience greater regulatory fit and, consequently, value the goal pursuit process more than promotion-focused people who use vigilant means. In contrast, *prevention*-focused people who use *vigilant* means should experience greater regulatory fit and, consequently, value the goal pursuit process more than prevention-focused people who use eager means. Moreover, because people may confuse the various sources of value associated with the process versus the outcome of their goal pursuit, it is possible that the increased value of the goal pursuit process for people with regulatory fit might lead them later to evaluate more highly the outcome of their goal pursuit.

In a series of studies on "transfer of value from fit," Higgins, Idson, Freitas, Spiegel, and Molden (2003) tested the hypothesis that regulatory focus interacts with strategic means to influence the evaluative judgment of a chosen object. Across three studies, participants were asked to choose between a coffee mug and a disposable pen. (The coffee mug was more expensive than the pen and was determined by pretesting to be preferred by participants.) Half of the participants were asked to think about what they would *gain* if they chose each object, and the other half were asked to think about what they would *lose* if they did *not* choose each object. In other words, half of the participants were asked to make their choice using an eager strategy, and the other half were asked to make their choice using a vigilant strategy. After making their choice (almost all participants chose the mug), participants were asked to indicate how much they thought the mug was worth and, in one study, were asked how much of their own money they would be willing to offer to buy the mug.

Across the three studies, promotion-focused participants gave higher price estimates and offered more money when they used the eager rather than the vigilant strategy, whereas prevention-focused participants gave higher price estimates and offered more money when they used the vigilant rather than the eager strategy. In one study in which the price of the nonchosen object (i.e., the pen) was also assessed, value from fit effects were even transferred to this nonchosen object. This latter finding rules out a dissonance- (Festinger, 1957) or self-perception-based (Bem, 1967) explanation of the findings, in that these latter theories would predict that the price of the nonchosen object in fit conditions would *decrease* rather than increase.

### Value Transfer from Regulatory Fit to Doing the Task Itself

Freitas and Higgins (2002) proposed that value from regulatory fit could transfer not only to evaluations of the object of a decision process but also to evaluations of the

task activity itself carried out under fit or nonfit conditions; that is, these authors tested the hypothesis that using strategic means that *feel right* while doing a task can also lead people to *feel good* about doing the task. In a series of studies, participants were asked to circle any four-sided figures they found within a larger array of shapes, and to do so using either an eager strategy ("find the helpful elements") or a vigilant strategy ("eliminate the harmful elements"). Participants were subsequently asked how much they enjoyed doing the shape-finding task. As predicted, both chronically and situationally induced promotion-focused participants enjoyed doing the task more in the eager than in the vigilant condition, whereas both chronically and situationally induced prevention-focused participants enjoyed doing the task more in the vigilant than in the eager condition.

### Value Transfer from Regulatory Fit to Moral Judgments

Camacho, Higgins, and Lugar (2003) tested the hypothesis that value from regulatory fit could transfer to the very means used to attain a goal, and that, in the process, use of means that *feel right* can also lead people to believe that what they are doing *is right*. In one study, chronically or situationally induced promotion- and prevention-focused participants were asked to think about a time in the past when they had failed either because of some action they had taken or *not* taken. The authors predicted that promotion-focused participants, because of their strategic tendency to maximize hits and avoid errors of omission, would feel worse about a failure resulting from an action they had *not* taken than from an action they *had* taken. In contrast, the authors predicted that prevention-focused participants, because of their strategic tendency to maximize correct rejections and avoid errors of commission, would feel worse about a failure resulting from an action they *had* taken than from an action they had *not* taken. As predicted, promotion-focused participants felt guiltier about an error of omission than about an error of commission, whereas prevention-focused people felt guiltier about an error of commission than about an error of omission.

In two additional studies involving external judgments instead of self-judgments, Camacho and colleagues (2003) found that "feeling right" from regulatory fit can transfer to evaluations of the rightness of what someone else is planning to do or has done. Participants evaluated a conflict resolution and a public policy as being more right when the described manner of pursuing the resolution or policy goal fit their regulatory orientation (an eager manner for promotion; a vigilant manner for prevention). The conflict resolution study also showed that regardless of whether the resolution occurred in a pleasurable or painful manner at the time it happened, regulatory fit increased evaluations of the resolution being "right." The fit effect was also shown to be independent of just the positivity of the participants' mood. The public policy study demonstrated that regulatory fit can influence a direct and explicit moral evaluation of an object, even when the object itself (i.e., a new afterschool program) is not intrinsically a matter of morality. In summary, in the research described in this section, the presence of regulatory fit between one's regulatory focus and strategic means of goal pursuit has a major effect on people's judgmental processes. Across domains such as rating the value of chosen attitude objects, the enjoyability of a task performed under fit or nonfit conditions, and the morality of one's own and others' actions, the interactive effect of regulatory focus and strategic means has been clearly identified as an important factor affecting the cognitive processes underlying people's evaluations.

## REGULATORY FIT AND BEHAVIOR

In this final section, we examine how the presence of regulatory fit between one's regulatory focus and strategic means affects people's *behavior*, which, again, can be thought of as the behavioral product of judgmental processes. In statistical terms, we consider the "interactive effects" on the *quality of people's performance* of a promotion versus a prevention focus on the one hand, and use of eager versus vigilant means on the other hand.

Higgins's (2000) theory of regulatory fit proposes that the increased sense of value of the goal pursuit process from regulatory fit increases people's motivational intensity during the goal pursuit. Within the realm of regulatory focus, *promotion*-focused people who use *eagerness*-related means should experience greater motivational intensity than do promotion-focused people who use *vigilance*-related means. In addition, *prevention*-focused people who use *vigilance*-related means should experience greater motivational intensity than do prevention-focused people who use *eagerness*-related means. Moreover, the increased motivational intensity resulting from fit can translate into superior goal performance.

Förster and colleagues (1998) obtained evidence for this "performance hypothesis" in a set of studies in which they either measured or manipulated participants' regulatory focus. Participants were asked to perform an arm-pressure procedure while completing a set of anagrams. Half of the participants pressed upward on the bottom of a surface, which involves arm flexion, a motor action previously shown to induce an approach/eagerness orientation (Cacioppo, Priester, & Berntson, 1993). The other half of the participants pressed downward on the top of a surface, which involves arm extension, a motor action previously shown to induce an avoidance/vigilance orientation.

Förster and colleagues (1998) found that promotion-focused participants who engaged in arm flexion found more anagrams than those who engaged in arm extension, whereas prevention-focused participants who engaged in arm extension found more anagrams than those who engaged in arm flexion. In other words, participants who experienced regulatory fit between their regulatory state (i.e., promotion or prevention) and the strategic means induced by the motor action (i.e., approach/eagerness or avoidance/vigilance) found more anagrams than did participants who did not experience regulatory fit. This fit effect was replicated in other studies by Förster and colleagues that used persistence rather than number of correct solutions as the measure of performance.

In another study testing the performance hypothesis, Shah and colleagues (1998) asked participants with a chronic promotion or prevention focus to perform an anagram task framed in either promotion or prevention terms, and also had participants perform this task using either strategic eagerness or vigilance means. The performance hypothesis was supported, in that the highest number of anagrams across all conditions was found among (1) chronic promotion-focused participants who performed a promotion-framed task using eagerness means, and (2) chronic prevention-focused participants who performed a prevention-framed task using vigilance means. In other words, the best goal performance was found for participants who experienced regulatory fit between the means they used, and both their chronic and task-induced regulatory state.

Freitas, Liberman, and Higgins (2002) further tested the performance hypothesis in a study on regulatory focus and the ability to resist distraction. The authors primed participants' regulatory focus by asking them to think either about how their promotion focus aspirations (ideals) had changed over time or about how their prevention focus responsibilities (oughts) had changed over time. They then had participants perform a series of

math problems under either distracting conditions, in which vigilant means had to be emphasized, or nondistracting conditions, in which eagerness means could be emphasized. Freitas and colleagues found that prevention-focused participants outperformed promotion-focused participants when vigilant means were required, but that promotion-focused participants slightly outperformed prevention-focused participants when vigilant means were not required. Again, when the strategic means suited participants' regulatory focus, higher goal performance resulted.

Finally, Spiegel, Grant-Pillow, and Higgins (in press) tested the performance hypothesis with respect to two real-world behaviors—writing a report and changing one's diet. In one experiment, predominantly promotion- and prevention-focused participants were given the goal of writing a report about their leisure time and were assigned either eagerness- or vigilance-framed means. All participants completed the same mental simulation task of imagining when, where, and how they would write their report. However, participants assigned eagerness means focused on taking advantage of good times, places, and methods in writing their reports, and participants assigned vigilance means focused on avoidance of bad times, places, and methods in writing their reports. In support of the performance hypothesis, promotion/eagerness and prevention/vigilance participants were about 50% more likely to mail in their reports than were promotion/vigilance and prevention/eagerness participants.

In a second experiment, participants were asked to read either a promotion- or a prevention-framed health message urging them to eat more fruits and vegetables. Participants were also presented with means they should use to attain this goal, which involved imagining either the benefits of compliance or the costs of noncompliance. Again, in support of the performance hypothesis, promotion/benefits and prevention/costs participants subsequently ate about 20% more fruits and vegetables over the following week than promotion/costs and prevention/benefits participants.

In this final section, the studies we have reviewed demonstrate the substantial influence on behavior of regulatory fit between one's regulatory focus and strategic means (i.e., on the behavioral product of judgmental processes). From laboratory tasks, such as finding anagrams or solving math problems, to real-world tasks, such as writing a report or changing one's diet, the interactive effect between having a promotion versus a prevention focus and the strategic means one uses have been found to be a critical determinant of the quality of people's goal performance.

## CONCLUDING REMARKS

To capitalize fully on the potential of motivated cognition research to uncover basic principles of the motivation-cognition interface, we believe it is necessary to extend such research to encompass a broader perspective than just how preferred conclusions affect people's judgmental processes. In particular, we believe it is useful to examine how preferred strategies affect people's judgmental processes and behavior. Regulatory focus theory is one theory of self-regulation that has the potential to fulfill the goals of one such broader perspective on the study of motivated cognition.

We also believe that motivated cognition, as viewed within the contexts of both preferred conclusions and preferred strategies, constitute complementary perspectives, and that it may be possible to examine the interactive effects of these different types of motivated cognition on judgmental processes and behavior. In a recent study attempting such an integration, for example, Förster, Higgins, and Strack (2000) examined how people's

preferences for particular outcomes (as reflected by high or low levels of prejudice toward outgroup members) and particular strategies (as reflected by promotion and prevention orientations) interact to affect memory for information about a target outgroup member. They found that the frequently obtained pattern of greater recall of stereotype-inconsistent versus consistent information was sharply pronounced for high-prejudiced participants who used (vigilant) prevention-focused strategies to evaluate the target person. This study demonstrates that the traditional view of motivated cognition as reflecting preferences for certain outcomes is complementary to the current perspective of motivated cognition as reflecting preferences for certain strategies. Future research should examine other interactive effects between promotion and prevention strategic preferences and motivations for preferred outcomes.

### REFERENCES

- Arkes, H. R., & Blumer, C. (1985). The psychology of sunk cost. *Organizational Behavior and Human Decision Processes*, 35, 124-140.
- Atkinson, J. W. (1953). The achievement motivation and recall of interrupted and completed tasks. *Journal of Experimental Psychology*, 46, 381-390.
- Bazerman, M. (1998). *Judgment in managerial decision making* (4th ed.). New York: Wiley.
- Bem, D. J. (1967). Self-perception: An alternative interpretation of cognitive dissonance phenomena. *Psychological Review*, 74, 183-200.
- Brendl, C. M., Higgins, E. T., & Lem, K. M. (1995). Sensitivity to varying gains and losses: The role of self-discrepancies and event framing. *Journal of Personality and Social Psychology*, 69, 1028-1051.
- Brockner, J., Paruchuri, S., Idson, L. C., & Higgins, E. T. (2002). Regulatory focus and the probability estimates of conjunctive and disjunctive events. *Organizational Behavior and Human Decision Processes*, 87, 5-24.
- Cacioppo, J. T., Priester, J. R., & Berntson, G. G. (1993). Rudimentary determinants of attitudes: II. Arm flexion and extension have differential effects on attitudes. *Journal of Personality and Social Psychology*, 65, 5-17.
- Camacho, C. J., Higgins, E. T., & Lugar, L. (2003). Moral value transfer from regulatory fit: "What feels right is right" and "what feels wrong is wrong." *Journal of Personality and Social Psychology*, 84, 498-510.
- Crowe, E., & Higgins, E. T. (1997). Regulatory focus and strategic inclinations: Promotion and prevention in decision-making. *Organizational Behavior and Human Decision Processes*, 69, 117-132.
- Dunning, D., Leuenberger, A., & Sherman, D. A. (1995). A new look at motivated inference: Are self-serving theories of success a product of motivational forces? *Journal of Personality and Social Psychology*, 69, 58-68.
- Feather, N. T. (1982). Actions in relation to expected consequences: An overview of a research program. In N. T. Feather (Ed.), *Expectancies and actions: Expectancy-value models in psychology* (pp. 53-95). Hillsdale, NJ: Erlbaum.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Evanston, IL: Row, Peterson.
- Ford, T. E., & Kruglanski, A. W. (1995). Effects of epistemic motivations on the use of accessible constructs in social judgment. *Personality and Social Psychology Bulletin*, 21, 950-962.
- Förster, J., Higgins, E. T., & Idson, L. C. (1998). Approach and avoidance strength during goal attainment: Regulatory focus and the "goal looms larger" effect. *Journal of Personality and Social Psychology*, 75, 1115-1131.
- Förster, J., Higgins, E. T., & Strack, F. (2000). When stereotype disconfirmation is a personal threat: How prejudice and prevention focus moderate incongruity effects. *Social Cognition*, 18, 178-197.

- Förster, J., Higgins, E. T., & Bianco, A. T. (2003). Speed/accuracy decisions in task performance: Built-in trade-off or separate strategic concerns? *Organizational Behavior and Human Decision Processes*, *90*, 148-164.
- Freitas, A. L., & Higgins, E. T. (2002). Enjoying goal-directed action: The role of regulatory fit. *Psychological Science*, *13*, 1-6.
- Freitas, A. L., Liberman, N., & Higgins, E. T. (2002). Regulatory fit and resisting temptation during goal pursuit. *Journal of Experimental Social Psychology*, *38*, 291-298.
- Freitas, A. L., Liberman, N., Salovey, P., & Higgins, E. T. (2002). When to begin?: Regulatory focus and initiating goal pursuit. *Personality and Social Psychology Bulletin*, *28*, 121-130.
- Friedman, R. S., & Forster, J. (2001). The effects of promotion and prevention cues on creativity. *Journal of Personality and Social Psychology*, *81*, 1001-1013.
- Harlow, R., Friedman, R. S., & Higgins, E. T. (1997). *The Regulatory Focus Questionnaire*. Unpublished manuscript, Columbia University.
- Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review*, *94*, 319-340.
- Higgins, E. T. (1997). Beyond pleasure and pain. *American Psychologist*, *52*, 1280-1300.
- Higgins, E. T. (2000). Making a good decision: Value from fit. *American Psychologist*, *55*, 1217-1230.
- Higgins, E. T. (2001). Promotion and prevention experiences: Relating emotions to nonemotional motivational states. In J. P. Forgas (Ed.), *Handbook of affect and social cognition* (pp. 186-211). Mahwah, NJ: Erlbaum.
- Higgins, E. T., Friedman, R. S., Harlow, R. E., Idson, L. C., Ayduk, O. N., & Taylor, A. (2001). Achievement orientations from subjective histories of success: Promotion pride versus prevention pride. *European Journal of Social Psychology*, *31*, 3-23.
- Higgins, E. T., Idson, L. C., Freitas, A. L., Spiegel, S., & Molden, D. C. (2003). Transfer of value from fit. *Journal of Personality and Social Psychology*, *84*, 1140-1153.
- Higgins, E. T., & Molden, D. C. (2003). How strategies for making judgments and decisions affect cognition: Motivated cognition revisited. In G. V. Bodenhausen & A. J. Lambert (Eds.), *Foundations of social cognition* (pp. 211-235). Mahwah, NJ: Erlbaum.
- Higgins, E. T., Roney, C., Crowe, E., & Hymes, C. (1994). Ideal versus ought predilections for approach and avoidance: Distinct self-regulatory systems. *Journal of Personality and Social Psychology*, *66*, 276-286.
- Higgins, E. T., Shah, J., & Friedman, R. (1997). Emotional responses to goal attainment: Strength of regulatory focus as moderator. *Journal of Personality and Social Psychology*, *72*, 515-525.
- Idson, L. C., & Higgins, E. T. (2000). How current feedback and chronic effectiveness influence motivation: Everything to gain versus everything to lose. *European Journal of Social Psychology*, *30*, 583-592.
- Idson, L. C., Liberman, N., & Higgins, E. T. (2000). Distinguishing gains from non-losses and losses from non-gains: A regulatory focus perspective on hedonic intensity. *Journal of Experimental Social Psychology*, *36*, 252-274.
- Kahneman, D., Knetsch, J. L., & Thaler, R. (1990). Experimental tests of the endowment effect and the Coase theorem. *Journal of Political Economy*, *98*, 1325-1348.
- Kelley, H. H. (1973). The process of causal attribution. *American Psychologist*, *28*, 107-128.
- Kruglanski, A. W. (1996). Motivated social cognition: Principles of the interface. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 493-520). New York: Guilford Press.
- Kunda, Z. (1990). The case for motivated reasoning. *Psychological Bulletin*, *108*, 480-498.
- Levine, J. M., Higgins, E. T., & Choi, H. S. (2000). Development of strategic norms in groups. *Organizational Behavior and Human Decision Processes*, *82*, 88-101.
- Lewin, K. (1935). *A dynamic theory of personality*. New York: McGraw-Hill.
- Lewin, K. (1951). *Field theory in social science*. New York: Harper.
- Liberman, N., Idson, L. C., Camacho, C. J., & Higgins, E. T. (1999). Promotion and prevention



- choices between stability and change. *Journal of Personality and Social Psychology*, 77, 1135–1145.
- Liberman, N., Molden, D. C., Idson, L. C., & Higgins, E. T. (2001). Promotion and prevention focus on alternative hypotheses: Implications for attributional functions. *Journal of Personality and Social Psychology*, 80, 5–18.
- Molden, D. C., & Higgins, E. T. (in press-a). Categorization under uncertainty: Resolving vagueness and ambiguity with eager versus vigilant strategies. *Social Cognition*.
- Molden, D. C., & Higgins, E. T. (in press-b). Motivated thinking. In K. Holyoak & R. G. Morrison (Eds.), *Handbook of thinking and reasoning*. New York: Cambridge University Press.
- Roese, N. J. (1997). Counterfactual thinking. *Psychological Bulletin*, 121, 133–148.
- Roese, N. J., Hur, T., & Pennington, G. L. (1999). Counterfactual thinking and regulatory focus: Implications for action versus inaction and sufficiency versus necessity. *Journal of Personality and Social Psychology*, 77, 1109–1120.
- Sanitioso, R., Kunda, Z., & Fong, G. T. (1990). Motivated recruitment of autobiographical memories. *Journal of Personality and Social Psychology*, 59, 229–241.
- Shah, J., & Higgins, E. T. (1997). Expectancy  $\times$  value effects: Regulatory focus as a determinant of magnitude and direction. *Journal of Personality and Social Psychology*, 73, 447–458.
- Shah, J., & Higgins, E. T. (2001). Regulatory concerns and appraisal efficiency: The general impact of promotion and prevention. *Journal of Personality and Social Psychology*, 80, 693–705.
- Shah, J., Higgins, E. T., & Friedman, R. (1998). Performance incentives and means: How regulatory focus influences goal attainment. *Journal of Personality and Social Psychology*, 74, 285–293.
- Spiegel, S., Grant-Pillow, H., & Higgins, E. T. (in press). How regulatory fit enhances motivational strength during goal pursuit. *European Journal of Social Psychology*.
- Spiegel, S., & Higgins, E. T. (2001). *Regulatory focus and means substitution in strategic task performance*. Unpublished manuscript, Columbia University.
- Tanner, W. P., Jr., & Swets, J. A. (1954). A decision-making theory of visual detection. *Psychological Review*, 61, 401–409.
- Thompson, E. P., Roman, R. J., Moskowitz, G. B., Chaiken, S., & Bargh, J. A. (1994). Accuracy motivation attenuates covert priming: The systematic reprocessing of social information. *Journal of Personality and Social Psychology*, 66, 474–489.
- Trope, Y., & Liberman, A. (1996). Social hypothesis testing: Cognitive and motivational mechanisms. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 239–270). New York: Guilford Press.
- Van Dijk, E., & van Knippenberg, D. (1996). Buying and selling exchange goods: Loss aversion and the endowment effect. *Journal of Economic Psychology*, 17, 517–524.
- Zeigarnik, B. (1938). On finished and unfinished tasks. In W. D. Ellis (Ed.), *A source book of gestalt psychology* (pp. 300–314). New York: Harcourt, Brace & World.