

CHAPTER 13

Motivated Thinking

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At one time or another, every one of us has engaged in “wishful thinking,” or “let our hearts influence our heads.” That is, every one of us has felt the effects of our motivations on our thought processes. Given this common everyday experience, it is not surprising that an essential part of early psychological research was the idea that drives, needs, desires, motives, and goals can profoundly influence judgment and reasoning. More surprising is that motivational variables play only a small role in current theories of reasoning. Why might this be?

One possible explanation is that since the cognitive revolution in the 1960s and 1970s, researchers studying motivational and cognitive processes have been speaking somewhat different languages. That is, there has been a general failure to connect traditional motivational concepts, such as *drives* or *motives*, to information processing concepts, such as *expectancies* or *spreading activation*, which form the foundation for nearly all contemporary research on thinking and reasoning. For a period of time, this led not only to misunderstanding, but also to conflict between motivational and cognitive perspectives on

judgment. More recently however, there has been a sharp increase in attempts to achieve a marriage between these two viewpoints in a wide variety of research areas. The primary objective of this chapter is to review these attempts and to demonstrate how it is not only possible, but also desirable, to reintroduce motivational approaches to the study of basic thought processes. We begin by providing some historical background on such approaches.

A Brief History of Motivated Thinking

Motivational perspectives on thought and reasoning originated most prominently with Freud's (1905) clinical theorizing on the psychodynamic conflicts created by unconscious drives and urges. These perspectives quickly spread to other areas of psychology. Early pioneers of experimental social psychology gave primary emphasis to motivational variables such as drives, goals, and aspirations (e.g., Allport, 1920; Lewin, 1935). The study of personality came to involve the

identification and classification of different types of needs and motives (e.g., Murray, 1938). Even research on sensory and perceptual processes was influenced by a motivational approach with the emergence of the “New Look” school (e.g., McGinnies, 1949).

After this early period of growth and expansion, however, research and theory on motivated thinking became quite controversial. With the ascendance of cognitive perspectives on thinking and reasoning in the 1960s and 1970s, many supposed instances of motivated reasoning were recast as merely a product of imperfect information processing by imperfect perceivers (compare Bruner, 1957, with McGinnies, 1949; Festinger, 1957, with Bem, 1967; Bradley, 1978, with Nisbett & Ross, 1980). The various “motivation versus cognition” debates that subsequently developed continued off and on for years before they were declared not only unwinnable, but also counterproductive. An uneasy armistice was declared (Tetlock & Levi, 1982) that effectively quieted the public conflict, but did nothing to reconcile the deep conceptual differences that still remained between researchers favoring cognitive or motivational perspectives.

Following this period of conflict, enthusiasm for questions concerning motivational influences on thinking was dampened in the 1970s and early 1980s. Beginning in the late 1980s, however, there was a resurgence of interest in this area (for recent reviews and overviews, see Dunning, 1999; Gollwitzer & Bargh, 1996; Higgins & Molden, 2003; Kruglanski, 1996; Kunda, 1990; Sorrentino & Higgins, 1986). One reason for this new life is that instead of revisiting debates about the workings of motivational *versus* cognitive processes, researchers began to examine the important interactions between these two processes. Thus, more recent investigations have focused on the identification of principles that describe the *interface* between motivation and cognition, and the implications of this interface for thinking, reasoning, and judgment (see Kruglanski, 1996; Kunda, 1990; Higgins & Molden, 2003).

This chapter provides an overview of this “second generation” of research on motivated thinking and discusses some of the larger principles that have emerged from the study of the motivation/cognition interface. We consider two general classes of motivational influences; the first involves people’s desires for reaching certain types of *outcomes* in their judgments, and the second involves people’s desires to use certain types of *strategies* while forming their judgments. In so doing, we adopt a rather broad focus and discuss several different varieties of motivated thinking. Given space constraints, this broad focus necessitates being selective in the phenomena to be described. We have chosen those programs of research that we believe are representative of the larger literature and are especially relevant not only to the study of reasoning, but also to other areas in cognitive psychology.¹ After reviewing the separate influences of outcome- and strategy-based motivations on thinking, we conclude by suggesting potential directions for future research, giving special attention to circumstances where multiple sources of motivation might operate simultaneously.

Outcome-Motivated Thinking

The most prominent approach to motivated reasoning, in both classic and contemporary perspectives, has been to examine the influence on people’s thought processes of their needs, preferences, and goals to reach desired outcomes (or avoid undesired outcomes). Although the types of preferred outcomes that have been studied are highly diverse, they can be divided into two general classes: *directional* outcomes and *nondirectional* outcomes (see Kruglanski, 1996; Kunda, 1990). Individuals who are motivated by directional outcomes are interested in reaching specific desired conclusions, such as impressions of themselves as intelligent, caring, and worthy people (e.g., Dunning, 1999; Pyszczynski & Greenberg, 1987), or positive beliefs about others whom they find likeable or to whom they are especially close (e.g., Murray, 1999).

In contrast, individuals who are motivated by nondirectional outcomes have more general concerns, such as reaching the most accurate conclusion possible (e.g., Fiske & Neuberg, 1990) or making a clear and concise decision (e.g., Kruglanski & Webster, 1996), whatever this conclusion or decision may be.

Whether outcome motivation is directional or nondirectional, however, this motivation has been conceptualized as affecting thought and reasoning in the same way: by directing people's cognitive processes (e.g., their recall, information search, or attributions) in ways that help to ensure they reach their desired conclusions. That is, individuals' preferences for certain outcomes are believed to often shape their thinking so as to all but guarantee that they find a way to believe, decide, and justify whatever they like. In this chapter, we review several programs of research that have more closely examined the specific mechanisms by which this can occur, first in relation to motivations for directional outcomes and then in relation to motivations for nondirectional outcomes. Following this, we discuss several limitations of the effects of outcome motivation on reasoning and identify circumstances in which these motivations are most likely to have an impact.

Influences of Directional Outcome Motivation

Overall, the kinds of phenomena that have been studied most extensively in research on motivated thinking involve directional outcome preferences (i.e., individuals' desires to reach specific conclusions about themselves and others; for reviews, see Dunning, 1999; Kunda, 1990; Murray, 1999; Pyszczynski & Greenberg, 1987). Although a variety of outcomes have been investigated, people's well-documented preference for viewing themselves, and those close to them, in a generally positive manner (see Baumeister, 1998) has, by far, received the most attention. This outcome is the primary focus here.² In the next sections, we review several effects of desires for positive self-evaluation involving many

different cognitive processes, including attribution, evaluation of evidence, information search, recall and knowledge activation, and the organization of concepts in memory.

EFFECTS ON ATTRIBUTION

Some of the first evidence for the effects on reasoning of motivations for positive self-evaluation grew out of work on attribution (see Kelley, 1973). Early attributional research found that when people were explaining their performance on tasks measuring important abilities, they tended to take responsibility for their success (i.e., cite internal and stable causes, such as "I'm good at this task.") and to deny responsibility for their failure (i.e., cite external and unstable causes, such as "I was unlucky."). Such findings were typically described as stemming from desires for positive beliefs about the self (for a review, see Bradley, 1978).

The motivational nature of these findings was questioned, however. Several researchers (e.g., Nisbett & Ross, 1980) argued that although one's attributions may sometimes be biased, this does not necessarily imply that motivational forces are at work (e.g., previous expectancies for success could lead people to label an unexpected failure as unusual or unlucky). Yet, subsequent research has found that, although people's expectancies do play a role in these attributional effects, there is substantial evidence that motivation plays an important role as well (see Kunda, 1990; Pyszczynski & Greenberg, 1987).

One type of evidence for the role of motivation in self-serving attributions is that, independent of expectancies from prior success or failure, the more personally important a success is in any given situation, the stronger is the tendency to claim responsibility for this success but to deny responsibility for failure (Miller, 1976). Another type of evidence is that people's attributions become increasingly self-serving when success or failure feedback is experienced as highly arousing. For instance, Gollwitzer, Earle, and Stephan (1982) had participants first complete an intelligence test, then vigorously

ride a stationary bicycle while the test was being scored (increasing their arousal), and finally, receive feedback about succeeding or failing on the test. Feedback was given 1 minute, 5 minutes, or 9 minutes after riding the bicycle. Both those receiving feedback after 9 minutes, who were no longer aroused, and those receiving feedback after 1 minute, who were aroused but still associated this arousal with the exercise, showed only small attributional differences following success versus failure feedback. In contrast, those receiving feedback after 5 minutes, who were still aroused but no longer associated this with the exercise, misattributed their arousal to the feedback concerning the test and showed a strong tendency to credit their ability for success and blame bad luck for failure (see also Stephan & Gollwitzer, 1981).

EFFECTS ON EVIDENCE EVALUATION

Similar to these attribution effects, more recent research has found that motivations for positive self-evaluations also influence the way in which people evaluate information that either supports or contradicts these positive self-evaluations. In general, individuals tend to (1) give more credence to, and be more optimistic about, the validity of information that supports or confirms their standing as kind, competent, and healthy people; and (2) be more skeptical and cautious about information that threatens this standing.

An example of the first type of influence can be found in a study by Ditto, Scepansky, Munro, Apanovitch, and Lockhart (1998). Individuals were "tested" for the presence of a fictitious enzyme in the body, TAA, and everyone was told that they had tested positive. Half of the people were informed that this had positive health consequences, and half were informed that this had negative consequences. Those who believed TAA had negative health consequences were largely dismissive of the test when told it was slightly unreliable (i.e., had a 10% false-positive rate) and judged the result to be only somewhat more valid when told the test was highly reliable (i.e., had a .05% false-

positive rate). Those who believed TAA had positive health consequences, however, judged the test to be highly valid regardless of its reliability (see also Doosje, Spears, & Koomen, 1995).

An example of the second type of influence can be found in a study by Kunda (1987). Participants read a scientific article reporting that caffeine consumption was related to serious health problems in women. Afterward, women (but not men) who were heavy caffeine consumers reported that the article was less convincing than women who were light caffeine consumers. In a follow-up study where people read a similar article that revealed caffeine caused only mild health problems, there was no relation between their evaluation of the article and their caffeine consumption. Because, in both studies, people's reasoning was altered only when there was a significant threat to the self, this demonstrates the motivational nature of these results (see also Beauregard & Dunning, 1998; Ditto et al., 1998).

Similar effects of people's desire to view themselves positively have also been demonstrated in domains that do not directly involve health consequences. For instance, people who encounter scientific research that appears to support their cherished attitudes describe this research as being better conducted, and its conclusions as being more valid, than those who encounter the same research, but believe it to be in conflict with their cherished attitudes (e.g., Lord, Ross, & Lepper, 1979). In addition, people have been shown to engage in considerable counterfactual thinking (i.e., mentally undoing the present state of affairs by imagining "if only..."; see Roese, 1997) when evidence supporting predictions from a preferred theory or worldview fails to materialize. Such counterfactual thinking allows them to generate ways in which they were almost correct. However, when evidence is consistent with their theories, these same individuals do not engage in counterfactual thinking, which would force them to generate ways in which they were almost wrong (Tetlock, 1998).

EFFECTS ON INFORMATION SEARCH

The motivational influences discussed thus far center on the *quality* of people's information processing during reasoning (e.g., biased attributions, more or less critical evaluations). However, desires for positive self-evaluations also affect the *quantity* of people's information processing (Kruglanski, 1996). Specifically, such desires motivate decreased processing and quick acceptance of favorable evidence, and increased processing and hesitant acceptance of unfavorable evidence. As one example, Ditto and colleagues (Ditto & Lopez, 1992; Ditto et al., 1998) demonstrated that, compared with evaluating favorable evidence, when people evaluate unfavorable evidence they spend a greater amount of time examining this evidence and spontaneously generate more alternate hypotheses about why it might be unreliable (see also Pyszczynski & Greenberg, 1987). Moreover, they have also shown that individuals who are prevented from putting this extra cognitive effort into the examination of unfavorable evidence (e.g., participants who are placed under *cognitive load*), return evaluations that are substantially less critical.

Additional evidence of increased information processing of information that is inconsistent with preferred conclusions comes from Chaiken and colleagues (Giner-Sorolla & Chaiken, 1997; Liberman & Chaiken, 1992). In one experiment, for example, people read scientific reports claiming that there was either a strong link or a weak link between caffeine consumption and significant health risks, similar to the Kunda (1987) studies discussed earlier. As before, the group of women who were the most threatened by this information were the least convinced by the reports. In addition, the study found that the most threatened group of participants also expended the most effort to find flaws in the studies described and identified the most weaknesses.

EFFECTS ON RECALL AND KNOWLEDGE ACTIVATION

In addition to affecting the appraisal and encoding of new information, people's de-

sires for positive views of themselves (and certain well-liked others) have been also found to influence their use of stored knowledge in memory, such as the selective activation of concepts and recall of events that support these views. This phenomena is exemplified in a series of studies by Santos, Kunda, and Fong (1990). Participants in these studies read fictitious articles revealing that either introverts or extroverts tend to have more academic and professional success. Following this, individuals who believed that introversion was linked to success were more likely to recall, and were faster to recall, autobiographical instances of introverted behaviors than extroverted behaviors. The opposite pattern of results was found for individuals who believed that extroversion was linked to success.

More recent work has demonstrated that, in addition to creating selective recall, directional outcome motivation can also lead to the *reconstruction* of previous memories. For instance, McDonald and Hirt (1997) showed people a videotape of a fellow college student who was portrayed as either likeable or unlikable. They then provided some additional information about the target, including his midterm scores in several classes. Later, when the target's scores on his final exams were revealed, those who found the target likeable remembered some of the target's midterm scores as lower than they actually were in order to make the final scores more consistent with improvement. In contrast, those who found the target unlikable remembered some of the midterm scores as *higher* than they actually were in order to make the final scores more consistent with decline (see also Conway & Ross, 1984).

Finally, besides influencing explicit recall, motivations to reach specific preferred conclusions also influence more implicit processes, such as knowledge activation and accessibility. In one demonstration of this (Sinclair & Kunda, 1999), individuals either received positive or negative feedback from a person who was a member of multiple social categories. One of these social categories (doctor) was associated with mostly positive stereotypes and another (African

American) was associated with mostly negative stereotypes. Those who had received positive feedback from the other person were faster than baseline to identify doctor-related words and slower than baseline to identify African American-related words on a lexical-decision task. Those who had received negative feedback showed a reverse pattern of activation (see also Spencer, Fein, Wolfe, Hodgson, & Dunn, 1998; for a reversal of these effects when people are motivated by *egalitarian* rather than self-serving outcomes, see Moskowitz, Gollwitzer, Wasel, & Schaal, 1999).

EFFECTS ON ORGANIZATION OF CONCEPTS IN MEMORY

Finally, beyond affecting the activation of knowledge from memory, motivation for directional outcomes can also influence the way in which people come to organize this knowledge. The most widely studied example of this concerns how desires for positive self-evaluation lead people to form stronger associations between their self-concepts and attributes that they feel are praiseworthy or related to success. Three primary strategies by which people accomplish this have been identified: (1) altering one's self-concept to include attributes that are believed to bring about successful outcomes (e.g., Klein & Kunda, 1992; Kunda & Santioso, 1989); (2) coming to view the attributes that one already possesses as essential for successful outcomes (Dunning, Leuenberger, & Sherman, 1995; Dunning, Perie, & Story, 1991; Kunda, 1987); and (3) redefining the criteria that must be met before one can be considered successful or in possession of particular positive and negative qualities (Beauregard & Dunning, 1998; Dunning & Cohen, 1992; see also Alicke, LoSchiavo, Zerbst, & Zhang, 1997).

The second two strategies are of particular relevance to the issue of knowledge organization. Use of the second strategy can clearly be seen in a program of research by Dunning and his colleagues (Dunning et al., 1995; Dunning et al., 1991). In one study, people who considered themselves either more *goal-oriented* or more *people-oriented*

rated only those traits that were central to their own orientation (e.g., *determined* in the former case versus *dependable* in the latter) as more prototypical of successful leaders (see also Kunda, 1987). In another study, individuals rated their own characteristics as more prototypical of positive qualities such as intelligence, but as less prototypical of negative qualities such as aloofness.

Use of the third strategy can be seen in another series of experiments by Dunning and his colleagues (Beauregard & Dunning, 1998; Dunning & Cohen, 1992; see also Alicke et al., 1997). Participants in these experiments were asked to judge the abilities of others in several domains (e.g., math, athletics). When participants themselves were highly skilled in the domain they were considering or had just experienced a relevant personal success, they set higher performance standards for others. That is, to distinguish their own superiority, they judged others as less successful. However, when participants themselves were not highly skilled in the domain they were considering or had just experienced a relevant personal failure, they set lower performance standards for others. That is, to cast those outperforming them as relatively high achievers, they judged them as more successful.

In sum, motivations for directional outcomes can affect basic cognitive processes and influence thinking in several profound ways. These types of motivations affect not only how people search for, evaluate, and explain information in the world around them, but also how they activate, access, and organize their knowledge about themselves and others. The next section reviews research indicating that motivations for nondirectional outcomes can be equally important.

Influences of Nondirectional Outcome Motivation

Although less research exists concerning the cognitive effects of nondirectional outcome motivation, several varieties have been considered in some depth (e.g., Cacioppo, Petty, Feinstein, & Jarvis, 1996; Fiske & Neuberg, 1990; Kruglanski & Webster, 1996; Lerner &

Tetlock, 1999). Among these, the two most prominent are desires for *accuracy* (Fiske & Neuberg, 1990), and desires for clarity and conciseness, or *closure* (Kruglanski & Webster, 1996). Here, we consider the effects of these two motivations (which, as will be discussed, often have opposing effects on information processing) on many of the same cognitive processes examined in the previous section.

Before beginning, however, it should be noted that both accuracy and closure motivation have been operationalized in multiple ways. For example, motivations for accuracy have been studied in terms of wanting to know as much as possible about a person on whom one is going to be dependent (Neuberg & Fiske, 1987), feelings of accountability for one's judgments (e.g., Tetlock, 1983), a "fear of invalidity" (e.g., Kruglanski & Freund, 1983), and simple desires to be as correct as possible (e.g., Neuberg, 1989). Motivations for closure have been examined in terms of feelings time pressure (Kruglanski & Freund, 1983), a desire to quickly complete judgment tasks that are dull and unattractive (Webster, 1993), and desires to escape noisy environments (Kruglanski, Webster, & Klem, 1993; see Kruglanski & Webster, 1996). In the initial discussion presented, each of these varieties of accuracy or closure motivation are treated as equivalent; some important differences among the effects of these various operationalizations, however, are considered at the end.

EFFECTS ON ATTRIBUTION

In addition to self-serving biases that occur when people explain their own performance, as described previously, research on attribution has also identified more general biases. For example, there is the tendency for people to fixate on one particular cause for some action or event and then fail to adequately consider alternative causes that are also possible (see Gilbert & Malone, 1995; see also Buehner & Cheng, Chap. 7; Kahneman & Frederick, Chap. 12). Although these attributional biases have been largely considered from a purely cognitive standpoint,

there is also evidence to suggest that they can also be influenced by accuracy and closure motivations.

In one study, Tetlock (1985) had participants read an essay either supporting or opposing affirmative action that had ostensibly been written by someone from a previous experiment. They were then informed that the author of the essay had been assigned to take this position by the experimenter and asked to judge the extent to which the arguments presented in the essay reflected the author's own attitude. People who were not provided with any additional motivations displayed the typical fixation on a single cause. These individuals reported that the position taken in supportive essay could be explained by the positive attitude of the author toward affirmative action, whereas the position taken in the opposing essay could be explained by the negative attitude of the author toward affirmative action, despite knowing that both essays had been largely coerced by the experimenter. However, people who were motivated to make accurate judgments (by informing them that they would later be discussing the reasons for their impressions with the experimenter) did consider the alternate cause represented by the experimenter's coercion. These individuals judged the attitude of the author to be neutral, regardless of which essay they read. A study by Webster (1993) using a similar paradigm showed that, in contrast, when participants' motivation for closure was increased the typical fixation on a single cause became even *more* pronounced. Thus, a need for accuracy and a need for closure appear to have opposite effects on people's considerations of alternate causes during attribution (see Kruglanski & Freund, 1983; Kruglanski & Webster, 1996).

EFFECTS ON EVIDENCE EVALUATION AND INFORMATION SEARCH

As discussed earlier, research on directional outcome motivation has demonstrated that people engage in increased evidence evaluations and prolonged information search when encountering evidence unfavorable

to their preferred self-views, and reduced evidence evaluation and information search when encountering evidence favorable to their preferred self-views. In contrast, accuracy motivation produces prolonged information search, and closure motivation produces reduced information search, regardless of the circumstances.

This consequence of accuracy motivation is evident in a study by Neuberg (1989), where people were asked to conduct a telephone interview with a peer, but were given unfavorable expectations concerning the interviewee. Those participants who were instructed to "form the most accurate impressions possible" of the other person spent more time listening and provided more opportunities for the interviewee to elaborate his or her opinions. This in turn prevented their unfavorable expectations from creating negative final impressions of the interviewee, which is what occurred with those participants who were not given any special instructions for the interview.

Similar consequences of accuracy motivation are also seen in research by Chaiken and colleagues (for reviews, see Chen & Chaiken, 1999; Eagly & Chaiken, 1993). For example, in one study by Maheswaran and Chaiken (1991), participants evaluated a product based on a detailed review that described this product more favorably or less favorably than similar products. Participants who were high in accuracy motivation, because they believed their evaluations would have important consequences, generated more thoughts about the strengths and weaknesses of the specific product-quality arguments that were listed in the review than did those who were low in accuracy motivation. This again attenuated any effects of people's prior expectations on their final evaluations.

The consequences of closure motivation on evidence evaluation and information search has been shown in several studies by Kruglanski et al. (1993). People were paired with someone else for a discussion about the verdict of a mock trial. Before the discussion, everyone received a summarized legal analysis of the case which, unbeknownst

to the participants in the study, supported a different verdict for each member of the pair. Participants with high (versus low) closure motivation attempted to bring about a quick end to the discussion. Moreover, when asked before the discussion, they expressed a strong preference for a partner who could be easily persuaded to their existing viewpoint, and once the discussion began, they stubbornly attempted to convince their partner to see things their way rather than considering alternative arguments.

EFFECTS ON EVALUATION COMPLEXITY

In addition to affecting the length of people's analysis and evaluation of evidence, nondirectional outcome motivation can also influence the complexity of this analysis. Accuracy-motivated individuals form judgments that show greater consideration of conflicting opinions and evidence, whereas closure-motivated individuals form judgments that show less of this type of consideration. Tetlock and colleagues demonstrated these effects in experiments where participants were asked to write down their thoughts about topics such as affirmative action, American foreign policy, and the causes of certain historical events (for a review, see Lerner & Tetlock, 1999). Responses were then coded for their *integrative complexity*, which was defined in terms of the degree to which multiple perspectives on an issue were both identified and then integrated into a framework that includes complex connections between them. Findings with people who were both novices and experts on the issues they were analyzing (i.e., college students and professional historians, respectively) indicated that those with increased accuracy motivation provided a more integratively complex analysis (e.g., Tetlock, 1983), whereas those with increased closure motivation provided a less integratively complex analysis (Tetlock, 1998).

EFFECTS ON RECALL AND KNOWLEDGE ACTIVATION

Whereas directional outcome motivation was seen earlier to have qualitative effects on recall and knowledge activation,

nondirectional outcome motivation has largely quantitative effects. Once again, accuracy motivation and closure motivation have opposite influences.

In an investigation of accuracy motivation on recall during impression formation, Berscheid and colleagues found that when people observed interviews involving individuals with whom they might later be paired, they paid more attention to the interview and remembered more information about the interviewees than when they did not expect any future interactions (Berscheid, Graziano, Monson, & Dermer, 1976; see also Srull, Lichtenstein, & Rothbart, 1985). However, in studies of closure motivation and impression formation, individuals with chronically high (versus low) need for closure spent less time reading different pieces of behavioral information they were given about a target and later recalled fewer of these behaviors (Dijksterhuis, van Knippenberg, Kruglanski, & Schaper, 1996). There is also evidence that people with high (versus low) accuracy motivation activate more pieces of individuating trait and behavioral information when forming impressions of others (Kruglanski & Freund, 1983; Neuberg & Fiske, 1987), whereas people with high (versus low) need for closure display an increased tendency to rely solely on categorical information during impression formation (Dijksterhuis et al., 1996; Kruglanski & Freund, 1983; see also Moskowitz, 1993).

Similar effects are found for the use of highly accessible knowledge structures or attitudes in judgment. In typical circumstances, concepts or attitudes that have been recently or frequently activated will lead people to assimilate their judgments to this highly accessible information without considering any additional information (see Fazio, 1995; Higgins, 1996). Increased accuracy motivation can attenuate assimilation effects by increasing the activation of alternative interpretations, whereas increased closure motivation can exacerbate assimilation effects by decreasing the activation of alternative interpretations. For example, when evaluating the behavior of a target person who was ambiguously adventurous or reck-

less, participants based their evaluations on whichever one of these concepts was most accessible to a greater extent when their closure motivation was high but to a lesser extent when their accuracy motivation was high (Ford & Kruglanski, 1995; Thompson et al., 1994). These effects have been found both when people are making online judgments (Kruglanski & Freund, 1983; Schuette & Fazio, 1995) and when they are reconsidering previously encountered information (Sanbonmatsu & Fazio, 1990; Thompson et al., 1994).

Overall, then, motivations for nondirectional outcomes can also affect basic cognitive processes and profoundly influence thinking. Whereas motivations for directional outcomes were earlier shown to alter *how* people activate, evaluate, and explain information during reasoning, motivations for nondirectional outcomes (at least in terms of the accuracy and closure motivations reviewed here) instead alter *how much* activation, evaluation, or explanation, in fact, occurs. Furthermore, as the findings presented here illustrate, such quantitative differences in thought can often affect the outcomes of people's judgments and decisions just as much as the qualitative differences described previously.³

Limits to Outcome-Motivated Thinking

Although, so far, people have been shown to have an impressive array of cognitive mechanisms at their disposal when attempting to reach desired conclusions, limits do exist concerning when these mechanisms are applied. These limits are first described for directional outcome-motivated thinking and then for nondirectional outcome-motivated thinking.

REALITY CONSTRAINTS ON MOTIVATIONS FOR DIRECTIONAL OUTCOMES

Although there are often specific outcomes, such as positive self-views, that people have some preference for during judgment, most individuals still acknowledge there is some kind of "objective reality" about whatever information they are considering.

That is, motivated thinking related to directional outcomes operates within what Kunda (1990) has called *reality constraints* (see also Pyszczynski & Greenberg, 1987; cf. Kruglanski, 1999). Therefore, although there is a degree to which people adjust their definitions of success, engage in selective recall, or seek to criticize unfavorable evidence, this does not make them entirely unresponsive to world around them, except perhaps in extreme circumstances (see Bachman & Cannon, Chap. 21).

Indeed, evidence for this principle of reality constraints has been repeatedly found in the context of the research previously described. For example, a study using a paradigm discussed earlier, where participants first learned that introverts or extroverts were generally more successful before rating themselves on these traits, was performed using participants who had been pre-selected as having high trait levels of either introversion or extroversion (Santioso et al., 1990). Although beliefs that one trait was more beneficial than the other increased everyone's self-ratings concerning that trait, demonstrating motivated reasoning, there was also a large effect of people's chronic dispositions. Introverts' ratings of themselves, were always more introverted than extroverts' ratings of themselves, no matter how beneficial the introverts believed the trait of extroversion to be. That is, regardless of how desirable it would have been, introverts did not suddenly believe themselves to be extroverts and vice versa.

Another example of the influence of reality constraints is that people's thinking is guided by their preferred outcomes to a much greater extent in situations of uncertainty (e.g., Dunning, Meyerowitz, & Holtzberg, 1989; Hsee, 1995). When there is more potential for constructing idiosyncratic criteria for a certain judgment (e.g., judging whether one possess somewhat vague traits such as sensibility or insecurity), then people use this opportunity to select criteria that allow them to reach their desired conclusion. However, when there is less potential for this construction (e.g., judging whether one possesses more precise traits such as

punctuality or gullibility), people engage in less motivated reasoning (Dunning et al., 1989). Overall, these results suggest that thinking and reasoning inspired by directional outcomes does not so much lead people to ignore the sometimes disappointing reality they face as it inspires them to exploit the uncertainties that exist in this reality to their favor.

COGNITIVE-RESOURCE CONSTRAINTS ON ACCURACY MOTIVATION

Virtually all the effects of accuracy motivation reviewed here involve increases in the total amount of information processing that people perform during judgment. Therefore, in circumstances where one's ability to engage in this information processing is constrained, the effects of increased accuracy motivation should be minimal (Fiske & Neuberg, 1990). One demonstration of this was provided by Pendry and Macrae (1994). As described earlier, accuracy-motivated individuals who were forming an impression of a target displayed an increased use of individuating trait and behavioral information when they possessed their full information processing resources (see Neuberg & Fiske, 1987). However, accuracy-motivated individuals, whose processing resources were depleted based their impression primarily on categorical information, similar to those who had little accuracy motivation (see also Kruglanski & Freund, 1983). In addition, Sanbonmatsu and Fazio (1990) showed that the influence of accuracy motivation in reducing people's assimilation of their judgments to highly accessible attitudes disappears when people are placed under time pressure, which prevents extended information processing.

DOES MOTIVATION FOR ACCURACY RESULT IN ACCURATE REASONING?

Another important consideration of the effects of accuracy motivation on thinking and reasoning is that even when people high in accuracy motivation are free to engage in extended information processing, this does not guarantee that they will arrive at more accurate judgments. One obvious example

of this situation is where evidence beyond what is immediately and effortlessly available does not exist or has faded from memory (see, e.g., Thompson et al., 1994). Another is where people are affected by certain biases that are outside their awareness, or where people are aware of such biases, but unaware of what the proper strategy is to correct them. In all these circumstances, although accuracy motivation might increase information search, recall, and consideration of multiple interpretations, it would not be expected to eliminate judgment errors (Fischhoff, 1982), and might even increase them (Pelham & Neter, 1995; Tetlock & Boettger, 1989).

DISTINCTIONS AMONG CIRCUMSTANCES THAT LEAD TO ACCURACY MOTIVATION

As alluded to earlier, the different types of accuracy motivation inductions reviewed here are not always equivalent and can have markedly different effects. For example, although having one's outcomes dependent on another person can increase desires for accuracy in diagnosing that person's true character (e.g., Neuberg & Fiske, 1987), in other cases such circumstances can produce a desire to see a person that one is going to be depending on in the best possible light (e.g., Berscheid et al., 1976; Klein & Kunda, 1992; see Kruglanski, 1996). As another example, although believing that one's judgment has important consequences may motivate an accurate consideration of all the relevant evidence, it could also motivate a more general need to increase elaborative thinking that is not necessarily focused on accuracy (see Footnote 3; Petty & Wegener, 1999). Finally, although justifying one's judgments to an audience can motivate accuracy when the opinion of the audience is unknown, it can also lead to more directional outcome motivation, such as ingratiation toward this audience, when the opinion of the audience is known (Tetlock, 1983; see Lerner & Tetlock, 1999). Therefore, when attempting to anticipate the effects of accuracy motivation on reasoning in a particular situation, it is important to consider both the current source

of this motivation and the larger context in which it exists.

THE INFLUENCE OF INFORMATION AVAILABILITY ON CLOSURE MOTIVATION

Certain qualifications must also be noted in the effects of closure motivation. All the findings discussed so far have involved the tendency for people with increased closure motivation to quickly assimilate their judgments to readily available or highly accessible information, leading to an early "freezing" of their information search. However, in situations where little information is available, high closure motivation may inspire efforts to find something clear and concise to "seize" upon and *increase* information search (see Kruglanski & Webster, 1996). For example, in the Kruglanski et al. (1993) studies described previously that involved partners discussing the verdict of a mock trial, people with high closure motivation preferred easily persuadable partners and were unwilling to consider alternative arguments only when they had enough information at their disposal (i.e., a summarized legal analysis) to form a clear initial impression. When these same individuals were not provided with the legal analysis and did not begin the discussion with a clear opinion, they expressed a desire to be paired with someone who was highly *persuasive* and shifted toward their partner's point of view.

Conclusions on Outcome-Motivated Thinking

Recent research has uncovered many potential routes by which people's desires for particular judgment outcomes can affect their thinking and reasoning. To summarize, both directional outcome motivations, where people have a specific preferred conclusion they are trying to reach, and nondirectional outcome motivations, where people's preferred conclusions are more general, alter many basic cognitive processes during reasoning. These include (1) the explanation of events and behaviors; (2) the organization, recall, and activation of knowledge in memory; and (3) the pursuit and

evaluation of evidence relevant to decision making. Outcome motivation effects involve both how such cognitive processes are initiated and directed, as well as how thoroughly these processes are implemented. Moreover, in any given situation, the specific cognitive processes influenced by outcome motivation are typically those that aid the gathering and interpretation of information supporting the favored outcome. In this self-fulfilling way, then, people's outcome-motivated reasoning often successfully brings about their desired conclusions.

Strategy-Motivated Thinking

Although outcome-motivated thinking has been the most widely studied form of motivated reasoning, other varieties of motivational influences on cognition are also possible. One alternate perspective that has more recently emerged, and which complements an outcome-based view, proposes that people are motivated not only with respect to the outcomes of their judgments, but also with respect to the manner in which they go about making these judgments. That is, not only do people have preferred conclusions, but they also have *preferred strategies* for reaching their conclusions (Higgins & Molden, 2003; cf. Tyler & Blader, 2000). Therefore, independent of whatever outcome holds the most interest for them, people may be motivated to reach these outcomes using strategies that "feel right" in terms of, and allow them to sustain, their current motivational orientation (e.g., eagerly gathering evidence that might support a positive self-view or facilitate cognitive closure vs. vigilantly suppressing evidence that could undermine a positive self-view or threaten cognitive closure).

Several lines of research have examined how motivations for particular judgment strategies can also influence people's basic cognitive processes. In the vast majority of these studies, strategic motivations were measured and manipulated in terms of people's *regulatory focus* (see Higgins, 1997).

Regulatory focus theory distinguishes between two basic motivational orientations: a *promotion focus* involving concerns with advancement and approaching gains versus avoiding non-gains, and a *prevention focus* involving concerns with security and approaching non-losses versus avoiding losses. Because it centers on the presence and absence of positive outcomes, a promotion focus has been found to create preferences for *eager* judgment strategies that emphasize advancement (or, to use signal detection terminology, finding *hits*) and ensure against overlooking something that might be important (or, to again use signal detection terminology, avoiding *errors of omission*). In contrast, because it centers on the presence and absence of negative outcomes, a prevention focus has been found to engender preferences for *vigilant* judgment strategies that emphasize protection (or making *correct rejections*) and ensure against committing to something that might be a mistake (or avoiding *errors of commission*; see Higgins & Molden, 2003). Therefore, even in circumstances where individuals are pursuing the same outcome, they may show marked differences in their pursuit of this outcome depending upon whether they are currently promotion-focused or prevention-focused. The studies reviewed here are intended to illustrate the effects of eager or vigilant strategic motivation on several types of thought processes similar to those found to be influenced by outcome motivation (for a larger overview, see Higgins & Molden, 2003).

EFFECTS ON THE CONSIDERATION OF ALTERNATIVE HYPOTHESES

Considering alternative hypotheses is a fundamental component of many varieties of thinking (see Sloman & Lagnado, Chap. 5). How might eager versus vigilant strategic preferences influence this process? In general, an eager strategy of considering alternatives would involve attempting to attain hits and to ensure against errors of omission by generating and selecting any plausible hypotheses that could remotely be correct. However, a vigilant strategy of considering

alternatives would involve attempting to make correct rejections and to ensure against errors of commission by generating and selecting only the most probable hypotheses that seem likely to be correct. Therefore people in a promotion focus would be expected to consider a greater number of alternatives during thinking and reasoning than people in a prevention focus.

This question was addressed in several studies by Liberman, Molden, Idson, and Higgins (2001). One important instance of considering alternatives occurs when people form hypotheses about what they are perceiving (see Tversky, Chap. 10). Therefore, Liberman et al. (2001) examined the effects of people's strategic preferences on a task where people identified vague and distorted objects in a series of photographs. Across several studies where a promotion or prevention focus was both measured as an individual differences variable and induced experimentally, results indicated that those in a promotion focus generated a greater number of alternatives for the identity of the objects than those in a prevention focus (see also Crowe & Higgins, 1997).

In addition to examining the effects of strategic preferences on generating alternative hypotheses for object perception, Liberman et al. (2001) also investigated whether similar effects occurred for social perception. Participants read a scenario describing the helpful behavior of a target person and were asked to evaluate several equally plausible alternative explanations for this behavior. Consistent with the results described previously, participants in a promotion focus again selected a greater number of alternative explanations than participants in a prevention focus. Moreover, these effects were also found to influence the general impressions people formed of the target. After selecting their reasons for the target's helpful behavior, participants predicted how helpfully he or she would behave in the future. Those in a promotion focus, because they were considering more interpretations of a target's behavior, formed more equivocal impressions and showed relatively little generalization about the target's behavior as

compared with those in a prevention focus (see Kelley, 1973).

Finally, additional research by Molden and Higgins (2004) has more recently demonstrated similar effects for eager versus vigilant strategic preferences on the generation and selection of alternatives during basic categorization processes. People were given vague descriptions of a target person where it was not clear how to correctly categorize him and a number of alternatives could all have been possible. As before, participants with either a chronic or experimentally induced promotion focus generated more possible categories for the target than those with either a chronic or experimentally induced prevention focus.

Overall, then, people's eager versus vigilant strategic preferences play a significant role in their generation of alternatives during a number of important thought processes. Moreover, it is important to note that in all the studies described in this section, everyone was pursuing the exact same outcome (identifying an object, explaining behaviors) and did not have motivations for any specific conclusion or end-state. Furthermore, measures of people's motivations for more general outcomes such as accuracy and closure were also taken and these factors were statistically removed from all analyses. Therefore, the observed effects of promotion or prevention motivational orientations are distinct from the outcome motivation effects reviewed earlier and can be attributed to the influences of these orientations on people's strategic preferences.

EFFECTS ON COUNTERFACTUAL THINKING

Besides generating and evaluating hypotheses, another way in which people consider alternatives during reasoning is in their use of counterfactuals. As briefly mentioned previously, counterfactual thinking involves mentally undoing the present state of affairs and imagining alternative realities "if only" different decisions had been made or actions been taken (Roese, 1997). Several different varieties of counterfactual thinking have been identified. One broad distinction that

has been made is between thoughts that concern the reversal of a previous inaction (e.g., if only I had acted, things might have gone better), or *additive* counterfactuals, and thoughts that concern the reversal of a previous action (e.g., if only I hadn't acted, things wouldn't be so bad), or *subtractive* counterfactuals.

Because additive counterfactuals simulate the correction of a past error of omission, this type of thinking represents a more eager strategy of considering alternative realities. In contrast, because subtractive counterfactuals simulate the correction of a past error of commission, this type of thinking represents a more vigilant strategy of considering alternate realities. Therefore, a promotion focus should increase the generation of additive counterfactuals and a prevention focus should increase the generation of subtractive counterfactuals. In line with this, Roese, Hur, and Pennington (1999) found that, both when analyzing hypothetical examples and when describing particular instances of their own behavior, participants who considered promotion-related setbacks (i.e., nongains and missed opportunities for advancement) offered a greater number of additive counterfactuals, whereas participants who considered prevention-related setbacks (i.e., losses and missed opportunities to prevent mistakes) offered a greater number of subtractive counterfactuals. In the literature that exists on counterfactual thinking, it has been traditionally assumed that subtractive counterfactuals are more common than additive counterfactuals and that failures associated with action inspire more regret than failures associated with inaction (Roese, 1997). However, the results of these studies demonstrate that, in some cases, people's strategic preferences can result in additive counterfactuals being more common and perhaps being associated with greater regret (see also Camacho, Higgins, & Lugar, 2003).

It is important to note that care was taken to make sure the outcomes that participants were considering in these studies did not differ across any important dimensions, such as how painful they were imagined to be or

how much regret they inspired (see Roese et al., 1999). Therefore, the results can again only be explained in terms of differences in strategic motivation.

EFFECTS ON FAST VERSUS ACCURATE INFORMATION PROCESSING

A major question across many areas of psychology has been when and why people choose to emphasize either speed or accuracy in their thinking and decision making (e.g., Josephs & Hahn, 1995; Zelaznik, Mone, McCabe, & Thaman, 1988). Förster, Higgins, and Bianco (2003) more recently investigated whether promotion preferences for strategic eagerness would result in faster information processing and a higher *quantity* of output in a search for possible hits, whereas prevention preferences for strategic vigilance would result in more accurate information processing and a higher *quality* of output in an effort to avoid mistakes.

Participants were given a task involving four pictures taken from a children's "connect the dots" drawing book. For each picture, the objective was to connect sequentially numbered dots within a given time period in order to complete the outline of an image. Participants' speed on each picture was assessed by the highest number dot they reached by the end of the time period for that picture, and their accuracy on each picture was assessed by the number of dots they skipped (i.e., that were not connected). Across two studies where participants' promotion or prevention focus was both measured and experimentally induced, promotion-focused individuals were faster and produced a higher quantity of responses, whereas prevention-focused individuals were more accurate and produced a higher quality of responses over the entire task. Moreover, both of these tendencies increased in intensity as people moved closer to goal completion, resulting in stronger effects of strategic preferences toward the end of a task than toward the beginning of a task (i.e., the "goal looms larger" effect where motivation increases as one's distance to the completion of a goal decreases; Lewin, 1935). This provides strong support

that people's motivations for different judgment strategies can alter their concerns with different aspects of information processing (e.g., speed vs. accuracy).

EFFECTS ON KNOWLEDGE ACTIVATION AND RECALL

Analogous to the selective recall and activation of information from memory that occurs in the presence of motivations for directional outcomes, another influence of strategic preferences on thinking is to increase sensitivities to, and recall of, information that is particularly relevant to these preferences. A study by Higgins, Roney, Crowe, and Hymes (1994) demonstrated this by having participants read an essay about the life of a hypothetical target person in which two different types of situations were encountered. In one type of situation, the target used eager strategies that were advancement oriented (e.g., waking up early in order to be on time for a favorite class), whereas in the other type of situation, the target used vigilant strategies that were more protection oriented (e.g., being careful not to sign up for a class whose schedule conflicted with a desired activity). Individuals who had chronic promotion orientations showed a stronger sensitivity for information related to advancement versus protection strategies, and later showed greater recall for these episodes, whereas individuals who had chronic prevention orientations showed the reverse effect.

Another study by Higgins and Tykocinski (1992), which again had people read an essay about the life of a hypothetical target person, extends these findings. In this study, the target person experienced situations that either involved the presence or absence of gains (finding \$20 on the street or missing a movie that he wanted to see, respectively) or the presence of absence of losses (being stuck in a crowded subway for an extended period of time or getting a day off from a particularly arduous class schedule, respectively). Similar to the previous study, individuals who were chronically promotion-focused showed a stronger sensitivity and recall for gain-related informa-

tion that is more meaningful in the context of eager strategic preferences, whereas individuals who were chronically prevention-focused showed a stronger sensitivity and recall for loss-related information that is more meaningful in the context of vigilant strategic preferences.

Strategic Preferences and Regulatory Fit

Although the studies presented thus far have demonstrated how people's motivational orientations can lead them to prefer and choose certain judgment strategies, situations may exist in which they may be more or less able to follow these preferences. For example, some situations may generally require greater use of eager strategies of pursuing gains or vigilant strategies of preventing mistakes, such as when supervisors demand either innovative and creative practices of all their employees in search of advancement or cautious and responsible practices in hope of preventing losses. What might be the consequences of making judgments and decisions in a way that either suits one's current strategic preferences (i.e., promotion-focused individuals using eager strategies and prevention-focused individuals using vigilant strategies) or does not suit one's preferences (i.e., promotion-focused individuals using vigilant strategies and prevention-focused individuals using eager strategies)?

Higgins and colleagues have examined this question and investigated how the *regulatory fit* between one's motivational orientation and the means one uses during goal pursuit affects thinking and reasoning (e.g., Camacho et al., 2003; Freitas & Higgins 2002; Higgins, Idson, Freitas, Spiegel, & Molden, 2003). Although space limitations prohibit a more thorough review of this work here (see Higgins, 2000a; Higgins & Molden, 2003), the general findings have been that the primary consequence of regulatory fit is to increase the perceived value of the goal one is pursuing. That is, regulatory fit (as compared with nonfit) leads people to "feel right" about their goal pursuit, which then leads them to (1) feel good

while pursuing these goals (i.e., what *feels* right *feels* good; see Freitas & Higgins, 2002); (2) experience the outcomes they are striving for as having more value or worth (i.e., what *feels* right *is* good; see Higgins et al., 2003); and (3) believe the strategies they are using are inherently right (i.e., what *feels* right *is* right; see Camacho et al., 2003). Therefore, another avenue for future research on how people's motivations to use certain judgment strategies during judgment can affect their thought processes is the further refinement and elaboration of the process of regulatory fit.

Conclusions on Strategy-Motivated Thinking

In sum, several emerging programs of research are beginning to demonstrate that, beyond the effects on reasoning of people's desires for particular judgment outcomes, there are additional effects on reasoning of people's desires to use particular judgment strategies. For example, preferences for eager judgment strategies, shown by those with promotion concerns, versus preferences for vigilant judgment strategies, shown by those with prevention concerns, alter many basic cognitive processes during reasoning. These include (1) the generation and testing of hypotheses, (2) the use of counterfactual thinking, (3) an emphasis on fast versus accurate processing of information, and (4) knowledge activation and recall. Strategy motivation effects include whether cognitive processes are implemented in order to advance the right decision and avoid errors of omission in judgment or to protect against the wrong decision and avoid errors of commission in judgment. They also include whether such implementation fits or does not fit one's current motivational orientation. The implementation of cognitive processes for either of these strategic reasons or for regulatory fit influences what pieces of information are considered during judgment and how much this information is valued in a final decision. In this way, then, people's strategic motiva-

tions have important effects on their thinking and reasoning above and beyond their outcome motivations.

General Conclusions and Future Directions

The sheer number and diversity of the studies reviewed here is a testament to the return of motivational perspectives on cognition to the vanguard of psychology. The richness and consistency of the findings emerging from these studies is also a testament to the utility of this perspective in the study of thinking and reasoning. We optimistically forecast a further expansion of research informed by motivational perspectives and, in conclusion, briefly outline two general directions we believe should be priorities for the future.

The first direction involves expanding current conceptualizations of the ways in which motivational and cognitive processes interact during judgment. Although there is still much to be learned from examining the effects on thinking of people's motivations for certain outcomes (either directional or nondirectional), there may potentially be other important sources of motivated thought as well. In this chapter, we reviewed our own initial research on one of these possible sources – people's motivations for employing preferred strategies during judgment. We expect that further study will lead to the development of additional perspectives on the interface of motivation and cognition that go beyond both motivated outcomes and motivated strategies.

The second direction involves moving past research that examines different varieties of motivated thinking in isolation from one another (i.e., studying situations where people are only motivated to achieve positive self-views or only motivated to be accurate). There is a need to consider how multiple goals, desires, and motives interact to influence the thought process, that is the effects of patterns of motivational

forces. For instance, it has been noted for some time now that people possess many potential objectives when processing information (e.g., Chen & Chaiken, 1999). Although it is certainly the case that, at times, objectives such as accuracy, ingratiation, or self-enhancement may be predominant (Kruglanski, 1999), it is also true that there are many instances in which several of these objectives are pursued simultaneously. What happens when people not only want to be accurate, but also want to please others or boost their own self-esteem? Studies addressing these questions are just beginning to appear and early findings are indicating that important interactions can occur (Lundgren & Prislun, 1998; Nienhuis, Manstead, & Spears, 2001; Ruscher, Fiske, & Schnake, 2000).

Similarly, although we have made a distinction between outcome- and strategy-motivated thinking and discussed their effects independently, there are situations where these two sources of motivation operate in concert. One of these situations has been the focus of recent studies by Molden and Higgins (2004). These studies examined how preferences for eager versus vigilant decision strategies influence people's generation of alternative explanations for their own success and failure. In addition to replicating both the previously discussed self-serving pattern of attributions for performance (an outcome-motivated effect) and the selection of a greater number of alternative attributions by those preferring eager strategies than vigilant strategies (a strategy-motivated effect), these studies showed that self-serving and strategic motivations interacted to determine the extent to which people generalized their current experiences to their future performance. Individuals using eager strategies, because they tended to consider multiple attributions, including both internal and external causes, showed only moderate generalization after both success and failure. In contrast, individuals using vigilant strategies, because they tended to consider only a few attributions, including primarily internal causes follow-

ing success but external causes following failure, showed strong generalizations following success and almost no generalization after failure. These results demonstrate the importance of considering the effects of multiple sources of motivated reasoning simultaneously (see also Förster, Higgins, & Strack, 2000).

One final way in which investigating the cognitive effects of interacting motivational forces could be fruitfully expanded is by synthesizing work on how motivation influences reasoning with work on how affect influences reasoning (see Forgas, 2000; Martin & Clore, 2001). Great strides have been made in determining the mechanisms by which affective and emotional states can alter people's judgments. Many of the changes in the quality and quantity of information processing found in this research bear a striking resemblance to the motivational effects reviewed here. For example, positive moods have generally been found to support less thorough and complex information processing, similar to closure motivation, whereas negative moods have generally been found to support more thorough and complex information processing, similar to accuracy motivation (for a review, see Schwarz & Clore, 1996). This is not to say, however, that the effects reviewed here are actually just due to changes in emotion, because many of the studies discussed carefully controlled for affective influences and continued to find independent effects. Therefore, it would be fruitful to investigate how affective thinking may give rise to motivational thinking (e.g., Erber & Erber, 2000), and how motivational thinking may give rise to affective thinking (e.g., Higgins, 2000b), in order to develop a better understanding of how these two factors are related and what their combined and separate consequences might be.

To conclude, this chapter reviewed research that displays the broad applicability of emerging motivational perspectives to the study of thinking and reasoning. Through this review, we attempted to convey the potential utility of these perspectives and to advocate a greater incorporation of principles

of outcome- and strategy-based motivation in future research. The further refinement and elaboration of these principles, we believe, will benefit not only the study of thinking but also cognitive science in general.

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Notes

1. One area of study that is notably absent in this review concerns affective and emotional influences on reasoning. This important and extensive literature certainly enjoys a central place in the study of motivated thinking. However, the topic of affect and cognition has recently been the subject of several entire handbooks on its own (see Forgas, 2000; Martin & Clore, 2001). Therefore, rather than attempt an extremely limited overview of this major topic alongside the other topics mentioned previously, we instead refer the interested reader to these other sources. The larger relation between research on emotional thinking and the research described here is discussed briefly below.
2. It is important to note that, although a wealth of studies have demonstrated people's broad and robust desires for positive self-evaluation, these studies have almost exclusively been performed on members of Western, and generally more *individualistic* cultures (Baumeister, 1998). In contrast, recent evidence collected from Eastern, and generally more *collectivist* cultures, has demonstrated that, in these populations, such desires for self-evaluation are often considerably less, and that some of the effects described here are thereby weaker (see Greenfield, Chap. 27). Yet, this should *not* be taken to mean that the general effects of outcome-motivated thinking are necessarily culture specific or only apply to Western cultures. Instead, this indicates that, if general principles of this type of motivated

thinking are to be revealed, future investigations of outcome-motivated thinking in different cultures should take care to identify *which specific outcomes* are culturally desirable in those contexts (e.g., proper fulfillment of one's social duties to others, high social status relative to others; see, e.g., Endo, Heine, & Lehman, 2000).

3. Another type of nondirectional outcome motivation that has been the focus of considerable study is the *need for cognition*, or a general desire for elaborative thinking and increased cognitive activity (Cacioppo et al., 1996). At times, the need for cognition has been considered equivalent to accuracy motivation (Chen & Chaiken, 1999). Consistent with this, research has shown that an increased need for cognition can affect thinking in the same way as heightened accuracy motivation, reducing biases during attribution (D'agostino & Fincher-Kiefer, 1992), increasing recall (Srull et al., 1985), lessening assimilation to highly accessible attitudes (Florack, Scarabis, & Bless, 2001), and increasing information search (Verplanken, 1993; see Cacioppo et al., 1996). However, at times the effects of the need for cognition differ from those of accuracy motivation. Accuracy motivation, because it inspires a thorough consideration of *all* available evidence, weakens the tendency to base judgments on early superficial impressions (i.e., primacy effects; Kruglanski & Freund, 1983). In contrast, the need for cognition, because it simply inspires cognitive elaboration even if this involves only part of the available evidence, can lead to increased rumination on one's early superficial impressions and *strengthen* primacy effects (see Petty & Wegener, 1999). Given these conceptual and empirical distinctions, we have not included research on need for cognition in our larger review of the effects of accuracy motivation and consider it a separate form of nondirectional outcome motivation (for a review of need for cognition effects, see Cacioppo et al., 1996).

References

- Alicke, M. D., LoSchiavo, F. M., Zerbst, J. I., & Zhang, S. (1997). The person who outperforms me is a genius: Maintaining perceived competence in upward social comparison. *Journal of Personality and Social Psychology*, 73, 781–789.

- Allport, F. H. (1920). The influence of the group upon association and thought. *Journal of Experimental Psychology*, 3, 159–182.
- Baumeister, R. F. (1998). The self. In D. Gilbert, S. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., Vol. 1, pp. 680–740). New York: McGraw-Hill.
- Beauregard, K. S., & Dunning, D. (1998). Turning up the contrast: Self-enhancement motives prompt egocentric contrast effects in social judgment. *Journal of Personality and Social Psychology*, 74, 606–621.
- Bem, D. J. (1967). Self-perception: An alternative interpretation of cognitive dissonance phenomena. *Psychological Review*, 74, 183–200.
- Berscheid, E., Graziano, W., Monson, T., & Derman, M. (1976). Outcome dependency: Attention, attribution, and attraction. *Journal of Personality and Social Psychology*, 34, 978–989.
- Bradley, G. W. (1978). Self-serving biases in the attribution process: A reexamination of the fact or fiction question. *Journal of Personality and Social Psychology*, 18, 68–88.
- Bruner, J. S. (1957). On perceptual readiness. *Psychological Review*, 64, 123–152.
- Cacioppo, J. T., Petty, R. E., Feinstein, J. A., & Jarvis, W. B. G. (1996). Dispositional differences in cognitive motivation: The life and times of individuals varying in need for cognition. *Psychological Bulletin*, 119, 197–253.
- 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.
- Chen S., & Chaiken, S. (1999). The heuristic-systematic model in its broader context. In S. Chaiken & Y. Trope (Eds.), *Dual-process theories in social psychology* (pp. 73–96). New York: Guilford.
- Conway, M., & Ross, M. (1984). Getting what you want by revising what you had. *Journal of Personality and Social Psychology*, 47, 738–748.
- 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.
- D'agostino, P. R., & Fincher-Kiefer, R. (1992). Need for cognition and the correspondence bias. *Social Cognition*, 10, 151–163.
- Dijksterhuis, A., van Knippenberg, A., Kruglanski, A. W., & Schaper, C. (1996). Motivated social cognition: Need for closure effects on memory and judgment. *Journal of Experimental Social Psychology*, 32, 254–270.
- Ditto, P. H., & Lopez, D. F. (1992). Motivated skepticism: Use of differential decision criteria for preferred and non-preferred conclusions. *Journal of Personality and Social Psychology*, 63, 569–584.
- Ditto, P. H., Scepansky, J. A., Munro, G. D., Apanovitch, A. M., & Lockhart, L. K. (1998). Motivated sensitivity to preference-inconsistent information. *Journal of Personality and Social Psychology*, 75, 53–69.
- Doosje, B., Spears, R., & Koomen, W. (1995). When bad isn't all bad: Strategic use of sample information in generalization and stereotyping. *Journal of Personality and Social Psychology*, 69, 642–655.
- Dunning, D. (1999). A newer look: Motivated social cognition and the schematic representation of social concepts. *Psychological Inquiry*, 10, 1–11.
- Dunning, D., & Cohen, G. L. (1992). Egocentric definitions of traits and abilities in social judgment. *Journal of Personality and Social Psychology*, 63, 341–355.
- 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.
- Dunning, D., Meyerowitz, J. A., & Holtzberg, A. D. (1989). Ambiguity and self-evaluation: The role of idiosyncratic trait definitions in self-serving assessments of ability. *Journal of Personality and Social Psychology*, 57, 1082–1090.
- Dunning, D. A., Perie, M., & Story, A. L. (1991). Self-serving prototypes of social categories. *Journal of Personality and Social Psychology*, 61, 957–968.
- Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. New York: Harcourt Brace College.
- Endo, Y., Heine, S. J., & Lehman, D. R. (2000). Culture and positive illusions in close relationships: How my relationships are better than yours. *Personality & Social Psychology Bulletin*, 26, 1571–1586.
- Erber, M. W., & Erber, R. (2000). The role of motivated social cognition in the regulation of affective states. In J. P. Forgas (Ed.), *Handbook*

- of affect and social cognition (pp. 275–292). Mahwah, NJ: Erlbaum.
- Fazio, R. H. (1995). Attitudes as object-evaluation associations: Determinants, consequences, and correlates of attitude accessibility. In R. E. Petty & J. A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp. 247–282). Mahwah, NJ: Erlbaum.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford, CA: Stanford University Press.
- Fischhoff, B. (1982). “Debiasing.” In D. Kahneman, P. Slovic, & A. Tversky (Eds.), *Judgment under uncertainty* (pp. 237–262). Cambridge, MA: Cambridge University Press.
- Fiske, S. T., & Neuberg, S. L. (1990). A continuum of impression formation, from category-based to individuating processes: Influences of information and motivation on attention and interpretation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 23, pp. 1–74). New York: Academic Press.
- Florack, A., Scarabis, M., & Bless, H. (2001). When do associations matter? The use of automatic associations toward ethnic groups in person judgments. *Journal of Experimental Social Psychology*, 37, 518–524.
- Ford, T. E., & Kruglanski, A. W. (1995). Effects of epistemic motivations on the use of accessible constructs in social judgment. *Personality & Social Psychology Bulletin*, 21, 950–962.
- Forgas, J. P. (Ed.). (2000). *Handbook of affect and social cognition*. Mahwah, NJ: Erlbaum.
- Förster, J., Higgins, E. T., & Bianco, A. T. (2003). Speed/accuracy decisions in task performance: Built in trade-off of separate strategic concerns. *Organization Behavior and Human Decision Processes*, 90, 148–164.
- Förster, J., Higgins, E. T., & Strack, F. (2000). When stereotype disconfirmation is a personal threat: How prejudice and prevention focus moderate incongruency effects. *Social Cognition*, 18, 178–197.
- Freitas, A. L., & Higgins, E. T. (2002). Enjoying goal-directed action: The role of regulatory fit. *Psychological Science*, 13, 1–6.
- Freud, S. (1905). Fragments of an analysis of a case of hysteria. In J. Strachey (Ed.), “The Standard Edition of the Complete Psychological Works of Sigmund Freud.” *Standard edition, vol. 7*. Macmillan: Hogarth, 1964.
- Gilbert, D. T., & Malone, P. S. (1995). The correspondence bias. *Psychological Bulletin*, 117, 21–38.
- Giner-Sorolla, R., & Chaiken, S. (1997). Selective use of heuristic and systematic processing under defense motivation. *Personality and Social Psychology Bulletin*, 23, 84–97.
- Gollwitzer, P. M., & Bargh, J. A. (Eds.). (1996). *The psychology of action: Linking cognition and motivation to behavior*. New York: Guilford.
- Gollwitzer, P. M., Earle, W. B., & Stephan, W. G. (1982). Affect as a determinant of egotism: Residual excitation and performance attributions. *Journal of Personality and Social Psychology*, 43, 702–709.
- Higgins, E. T. (1996). Knowledge activation: Accessibility, applicability, and salience. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 133–168). New York: Guilford.
- Higgins, E. T. (1997). Beyond pleasure and pain. *American Psychologist*, 52, 1280–1300.
- Higgins, E. T. (2000a). Making a good decision: Value from “fit.” *American Psychologist*, 55, 1217–1230.
- Higgins, E. T. (2000b). Promotion and prevention experiences: Relating emotions to non-emotional motivational states. In J. P. Forgas (Ed.), *Handbook of affect and social cognition* (pp. 186–211). Mahwah, NJ: Erlbaum.
- 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: A festschrift in honor of Robert S Wyer, Jr.* (pp. 211–236). 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., & Tykocinski, O. (1992). Self-discrepancies and biographical memory: Personality and cognition at the level of psychological situations. *Personality and Social Psychology Bulletin*, 18, 527–535.
- Hsee, C. K. (1995). Elastic justification: How tempting but task-irrelevant factors influence decisions. *Organizational Behavior and Human Decision Processes*, 62, 330–337.

- Josephs, R. A., & Hahn, E. D. (1995). Bias and accuracy in estimates of task duration. *Organizational Behavior and Human Decision Processes*, 61, 202-213.
- Kelley, H. H. (1973). The process of causal attribution. *American Psychologist*, 28, 107-128.
- Klein, W. M., & Kunda, Z. (1992). Motivated person perception: Constructing justifications for desired beliefs. *Journal of Experimental Social Psychology*, 28, 145-168.
- 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.
- Kruglanski, A. W. (1999). Motivation, cognition, and reality: Three memos for the next generation of research. *Psychological Inquiry*, 10, 58.
- Kruglanski, A. W., & Freund, T. (1983). The freezing and unfreezing of lay inferences: Effects on impression primacy, ethnic stereotyping and numerical anchoring. *Journal of Experimental Social Psychology*, 19, 448-468.
- Kruglanski, A. W., & Webster, D. M. (1996). Motivated closing of the mind: "Seizing" and "freezing." *Psychological Review*, 103, 263-283.
- Kruglanski, A. W., Webster, D. M., & Klem, A. (1993). Motivated resistance and openness to persuasion in the presence of absence of prior information. *Journal of Personality and Social Psychology*, 65, 861-876.
- Kunda, Z. (1987). Motivated inference: Self-serving generation and evaluation of causal theories. *Journal of Personality and Social Psychology*, 53, 636-647.
- Kunda, Z. (1990). The case for motivated reasoning. *Psychological Bulletin*, 108, 480-498.
- Kunda, Z., & Santioso, R. (1989). Motivated change in the self-concept. *Journal of Experimental Social Psychology*, 25, 272-285.
- Lerner, J. S., & Tetlock, P. E. (1999). Accounting for the effects of accountability. *Psychological Bulletin*, 125, 255-275.
- Lewin, K. (1935). *A dynamic theory of personality*. New York: McGraw-Hill.
- Liberman, A., & Chaiken, S. (1992). Defensive processing of personally relevant health messages. *Personality and Social Psychology Bulletin*, 18, 669-679.
- 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.
- Lord, C. G., Ross, L., & Lepper, M. R. (1979). Biased assimilation and attitude polarizations: The effects of prior theories on subsequently considered evidence. *Journal of Personality and Social Psychology*, 37, 2098-2109.
- Lundgren, S. R., & Prislin, R. (1998). Motivated cognitive processing and attitude change. *Personality and Social Psychology Bulletin*, 24, 715-726.
- Maheswaran, D., & Chaiken, S. (1991). Promoting systematic processing in low-motivation settings: Effect of incongruent information on processing and judgment. *Journal of Personality and Social Psychology*, 61, 13-25.
- Martin, L., & Clore, G. C. (Eds.). (2001). *Theories of mood and cognition*. Mahwah, NJ: Erlbaum.
- McDonald, H. E., & Hirt, E. R. (1997). When expectancy meets desire: Motivational effects in reconstructive memory. *Journal of Personality and Social Psychology*, 72, 5-23.
- McGinnies, E. (1949). Emotionality and perceptual defense. *Psychological Review*, 56, 244-251.
- Miller, D. T. (1976). Ego involvement and attributions for success and failure. *Journal of Personality and Social Psychology*, 34, 901-906.
- Molden, D. C., & Higgins, E. T. (2004). *Preferred strategies for self-attribution: Motivated inference beyond self-serving biases*. Manuscript under review.
- Molden, D. C., & Higgins, E. T. (2004). Categorization under uncertainty: Resolving vagueness and ambiguity with eager versus vigilant strategies. *Social Cognition*, 22, 248-277.
- Moskowitz, G. B. (1993). Individual differences in social categorization: The influence of personal need for structure on spontaneous trait inferences. *Journal of Personality & Social Psychology*, 65, 132-142.
- Moskowitz, G. B., Gollwitzer, P. M., Wasel, W., & Schaal, B. (1999). Preconscious control of stereotype activation through chronic egalitarian goals. *Journal of Personality and Social Psychology*, 77, 167-184.
- Murray, H. A. (1938). *Explorations in personality*. New York: Oxford University Press.
- Murray, S. L. (1999). The quest for conviction: Motivated cognition in romantic relationships. *Psychological Inquiry*, 10, 23-34.
- Neuberg, S. L. (1989). The goal of forming accurate impressions during social interactions: Attenuating the impact of negative expectancies.

- Journal of Personality and Social Psychology*, 56, 374–386.
- Neuberg, S. L., & Fiske, S. T. (1987). Motivational influences on impression formation: Dependency, accuracy-driven attention, and individuating information. *Journal of Personality and Social Psychology*, 53, 431–444.
- Nienhuis, A. E., Manstead, A. S. R., & Spears, R. (2001). Multiple motives and persuasive communication: Creative elaboration as a result of impression motivation and accuracy motivation. *Personality and Social Psychology Bulletin*, 27, 118–132.
- Nisbett, R. E., & Ross, L. (1980). *Human inference: Strategies and shortcomings of social judgment*. Englewood Cliffs, NJ: Prentice-Hall.
- Pelham, B. W., & Neter, E. (1995). The effect of motivation on judgment depends on the difficulty of the judgment. *Journal of Personality and Social Psychology*, 68, 581–594.
- Pendry, L. F., & Macrae, C. N. (1994). Stereotypes and mental life: The case of the motivated but thwarted tactician. *Journal of Experimental Social Psychology*, 30, 303–325.
- Petty, R. E., & Wegener, D. T. (1999). The elaboration likelihood model: Current status and controversies. In S. Chaiken & Y. Trope (Eds.), *Dual-process theories in social psychology* (pp. 41–72). New York: Guilford.
- Pyszczynski, T., & Greenberg, J. (1987). Toward an integration of cognitive and motivational perspectives on social inference: A biased hypothesis testing model. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 20, pp. 297–340). New York: Academic 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.
- Ruscher, J. B., Fiske, S. T., & Schnake, S. B. (2000). The motivated tactician's juggling act: Compatible vs. incompatible impression goals. *British Journal of Social Psychology*, 39, 241–256.
- Sanbonmatsu, D. M., & Fazio, R. H. (1990). The role of attitudes in memory-based decision making. *Journal of Personality and Social Psychology*, 59, 614–622.
- Santioso, R., Kunda, Z., & Fong, G. T. (1990). Motivated recruitment of autobiographical memories. *Journal of Personality and Social Psychology*, 59, 229–241.
- Schuetz, R. A., & Fazio, R. H. (1995). Attitude accessibility and motivation as determinants of biased processing: A test of the MODE model. *Personality and Social Psychology Bulletin*, 21, 704–710.
- Schwarz, N., & Clore, G. L. (1996). Feelings and phenomenal experiences. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 433–465). New York: Guilford.
- Sinclair, L., & Kunda, Z. (1999). Reactions to a black professional: Motivated inhibition and activation and conflicting stereotypes. *Journal of Personality and Social Psychology*, 77, 885–904.
- Sorrentino, R. M., & Higgins, E. T. (Eds.). (1986). *Handbook of motivation and cognition, vols. 1–3*. New York: Guilford.
- Spencer, S. J., Fein, S., Wolfe, C., Hodgson, H. L., & Dunn, M. A. (1998). Stereotype activation under cognitive load: The moderating role of self-image threat. *Personality and Social Psychology Bulletin*, 24, 1139–1152.
- Srull, T. K., Lichtenstein, M., & Rothbart, M. (1985). Associative storage and retrieval processes in person memory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 11, 316–345.
- Stephan, W. F., & Gollwitzer, P. (1981). Affect as a mediator of attributional egotism. *Journal of Experimental Social Psychology*, 17, 443–458.
- Tetlock, P. E. (1983). Accountability and complexity of thought. *Journal of Personality and Social Psychology*, 45, 74–83.
- Tetlock, P. E. (1985). Accountability: A social check on the fundamental attribution error. *Social Psychology Quarterly*, 48, 227–236.
- Tetlock, P. (1998). Close-call counterfactuals and belief-system defense: I was not almost wrong but I was almost right. *Journal of Personality and Social Psychology*, 75, 639–652.
- Tetlock, P. E., & Boettger, R. (1989). Accountability: A social magnifier of the dilution effect. *Journal of Personality and Social Psychology*, 57, 388–398.
- Tetlock, P. E., & Levi, A. (1982). Attribution bias: On the inconclusiveness of the cognition-motivation debate. *Journal of Experimental Social Psychology*, 18, 68–88.

- Thompson, E. P., Roman, R. J., Moskowitz, G. B., Chaiken, S., & Bargh, J. A. (1994). Systematic processing and the debasing of covert primacy effects in impression formation: Unshackling the motivated perceiver from constraints of accessibility. *Journal of Personality and Social Psychology*, *66*, 474-489.
- Tyler, T. R., & Blader, S. L. (2000). *Cooperation in groups: Procedural justice, social identity, and behavioral engagement*. Philadelphia: Psychology Press.
- Webster, D. M. (1993). Motivated augmentation and reduction of the over-attribution bias. *Journal of Personality and Social Psychology*, *65*, 261-271.
- Verplanken, B. (1993). Need for cognition and external information search: Responses to time pressure during decision-making. *Journal of Research in Personality*, *27*, 238-252.
- Zelaznik, H. N., Mone, S., McCabe, G. P., & Thaman, C. (1988). Role of temporal and spatial precision in determining the nature of the speed-accuracy trade-off in aimed-hand movement. *Journal of Experimental Psychology: Human Perception and Performance*, *14*, 221-230.

