

The Psychology of Goals

edited by
GORDON B. MOSKOWITZ
HEIDI GRANT



THE GUILFORD PRESS

New York London

2009

- Sheldon, K. M., Ryan, R. M., Deci, E. L., & Kasser, T. (2004). The independent effects of goal contents and motives on well-being: it's both what you pursue and why you pursue it. *Personality and Social Psychology Bulletin*, 30(4), 475–486.
- Solarz, A. K. (1960). Latency of instrumental responses as a function of compatibility with the meaning of eliciting verbal signs. *Journal of Experimental Psychology*, 59, 239–245.
- Stroop, J. R. (1935). Studies of interference in serial verbal reactions. *Journal of Experimental Psychology*, 18, 643–661.
- Tamir, M., & Robinson, M. D. (2004). Knowing good from bad: the paradox of neuroticism, negative affect, and evaluative processing. *Journal of Personality & Social Psychology*, 87(6), 913–925.
- Trope, Y., & Fishbach, A. (2000). Counteractive self-control in overcoming temptation. *Journal of Personality and Social Psychology*, 79(4), 493–506.
- Trope, Y., & Liberman, N. (2003). Temporal construal. *Psychological Review*, 110(3), 403–421.
- Vallacher, R. R., & Wegner, D. M. (1987). What do people think they're doing? Action identification and human behavior. *Psychological Review*, 94(1), 3–15.
- Warburton, E., Wise, R. J., Price, C. J., Weiller, C., Hadar, U., Ramsay, S., et al. (1996). Noun and verb retrieval by normal subjects. Studies with PET. *Brain*, 119(1), 159–179.
- Ward, A., & Mann, T. (2000). Don't mind if I do: disinhibited eating under cognitive load. *Journal of Personality & Social Psychology*, 78(4), 753–763.
- Wegner, D. M., Vallacher, R. R., & Dizadji, D. (1989). Do alcoholics know what they're doing? Identifications of the act of drinking. *Basic and Applied Social Psychology*, 10(3), 197–210.
- Wicklund, R. A., & Gollwitzer, P. M. (1981). Symbolic self-completion, attempted influence, and self-deprecation. *Basic and Applied Social Psychology*, 2(2), 89–114.
- Wise, R., Chollet, F., Hadar, U., Friston, K., Hoffner, E., & Frackowiak, R. (1991). Distribution of cortical neural networks involved in word comprehension and word retrieval. *Brain*, 114(4), 1803–1817.
- Wise, S. P., Murray, E. A., & Gerfen, C. R. (1996). The frontal cortex-basal ganglia system in primates. *Critical Reviews of Neurobiology*, 10(3/4), 317–356.
- Zametkin, A. J., Nordahl, T. E., Gross, M., King, A. C., Semple, W. E., Rumsey, J., et al. (1990). Cerebral glucose metabolism in adults with hyperactivity of childhood onset. *New England Journal of Medicine*, 323(20), 1361–1366.

CHAPTER 5

The Selfish Goal

JOHN A. BARGH
JULIE Y. HUANG

There has been a sea change in the past 20 years in our understanding of the role of consciousness in the selection and guidance of social behavior. Dominant theories of the 1970s and 1980s emphasized the central role of conscious choice and intention in the production of human behavior, as in the theory of reasoned action (Ajzen & Fishbein, 1980), self-efficacy theory (Bandura, 1977, 1986), and other motivational models (Locke & Latham, 1990; Mischel, 1973). Conscious choice of behaviors or goals to pursue was a bottleneck in these models: Nothing happened without the exercise of conscious will. Even today, proponents of these models hold that “human behavior is affected by conscious purposes, plans, intentions, tasks and the like . . . [which are] the immediate motivational causes of most human action” (Locke & Latham, 2002, p. 705).

However, two concurrent movements within social psychology have operated over the years to cast doubt on assumption that conscious processes are usually, if not always, in control. First and most important was the growing realization of the power of external situational variables in determining behavior, sometimes shown to be more powerful than internal causes such as personality or values (e.g., Darley & Latane, 1968; Milgram, 1963; Mischel, 1973; Ross & Nisbett, 1991). Second was the introduction of “dual-process” models (e.g., Posner & Snyder, 1975; Shiffrin & Schneider, 1977) that complemented conscious mental processes with “automatic,” implicit, or nonconscious ones. Research within this dual-process framework amassed a good deal of evidence that there was

another route to the selection and guidance of higher mental processes such as are involved in social judgment and behavior, a route that was triggered by relevant environmental stimuli and that bypassed the consciousness bottleneck (see reviews in Bargh, 2007; Chaiken & Trope, 1999).

Research on social-construct *priming* combines the situational and the nonconscious emphases of the past several decades. "Priming" refers to the passive, subtle, and unobtrusive activation of relevant mental representations by external, environmental stimuli, such that people are not and do not become aware of the influence exerted by those stimuli. In harmony with the situationist tradition, this priming research has shown that the mere, passive perception of environmental events directly triggers higher mental processes in the absence of any involvement by conscious, intentional processes (see reviews in Bargh & Ferguson, 2000; Dijksterhuis, Aarts, & Chartrand, 2007; Higgins, 1996). Following the initial success of priming research in the domain of impression formation (Higgins, Rholes, & Jones, 1977; Srull & Wyer, 1979), researchers extended it to other higher mental processes, such as evaluation (e.g., Fazio, 1986, 1990), stereotyping and prejudice (Devine, 1989), social behavior (e.g., Bargh, Chen, & Burrows, 1996; Dijksterhuis & van Knippenberg, 1998), and motivated goal pursuit (e.g., Bargh & Gollwitzer, 1994; Chartrand & Bargh, 1996).

For example, priming the concept of a library causes participants to speak more softly (Aarts & Dijksterhuis, 2003), the faint odor of cleaning fluid makes them more likely to tidy up after themselves when eating a crumbly cookie (Holland, Hendriks, & Aarts, 2005), and the mere presence of a briefcase versus backpack by the door of the experimental room causes them to be relatively competitive versus cooperative in a Prisoner's Dilemma game (Kay, Wheeler, Bargh, & Ross, 2004)—in each case, without any awareness of the role played by these external stimuli in the production of their behavior. The ease and ubiquity with which priming effects have been obtained have revealed the openness of the human mind to environmental influences. At the same time, it has by logical necessity reduced the presumed causal role of intentional, conscious processes in higher mental processes such as social behavior and goal pursuit (Bargh & Ferguson, 2000).

Up until quite recently, mainstream accounts of executive control or working memory within cognitive science held that all of the contents of working memory were accessible to conscious awareness; indeed, "working memory" and "conscious awareness" were considered synonymous terms (e.g., Smith & Jonides, 1998). Under this assumption it was difficult to understand how higher mental processes could make use of those executive control structures without the person being aware of it (see Bargh, 2005). This was especially a problem in the case of nonconscious goal

pursuit, in which a primed goal operates on incoming informational input that is accessible to conscious awareness, while the goal-driven attentional selection and transformation of that information, and on-line guidance of behavior toward the goal, is occurring outside of conscious awareness.

That executive control structures could be operating without the person's awareness of their operation would seem to require the existence of dissociable component processes within executive control or working memory structures. Although these were not part of standard models of working memory at the time of the initial behavioral demonstrations of nonconscious goal pursuit (e.g., Bargh & Gollwitzer, 1994; Chartrand & Bargh, 1996), evidence of such dissociations had been reported in patients with "environmental dependency syndrome" (Lhermitte, 1986) that left them entirely at the mercy of externally suggested actions. Recently, supporting the existence of nonconscious forms of goal pursuit, cognitive neuroscience research has confirmed that distinct anatomical structures support the operating goal program, on the one hand, and the knowledge of its operation (i.e., consciously held intentions) on the other. Conscious intentions appear to be represented in the prefrontal and premotor cortex, but it is the parietal cortex that houses the representation used to guide action (Frith, Blakemore, & Wolpert, 2000).

That a goal can operate independently of conscious awareness of its operation would seem to imply the existence of a dissociation between the executive control structures in the brain responsible for "running" that goal's "program" and those that enable conscious awareness of the goal pursuit. Recent cognitive neuroscience research has confirmed this implication, with the finding that the operation of a goal program and one's awareness of its operation are located in separate anatomical structures within the frontal lobes (Frith et al., 2000). Further dissociation evidence comes from investigations of prefrontal lobe syndromes (Bogen, 1995; Lhermitte, 1986), the psychophysiology of dream consciousness, which involves prefrontal deactivations (Muzur, Pace-Schott, & Hobson, 2002), and demonstrations that control-structures in the brain (e.g., the frontal cortices) are not essential for the generation of consciousness (Koch & Tsuchiya, 2007). In light of this gathering evidence, it seems reasonable that goals can become active and operate to guide behavior independently of conscious intention and awareness (Bargh, 1990).

If a goal is capable of operating independently of any conscious intention or awareness of its operation, then active goals and conscious intentions cannot be the same things (Bargh, 1990). Self-theorists have distinguished between the "belief" (self-concept, self-esteem, self-efficacy) and the "agentic" (ego, volition) functions of the self: "Many crucial functions of the self involve volition: making choices and decisions, taking responsibility, initiating and inhibiting behavior, and making plans of action

and carrying out those plans. The self exerts control over itself and over the external world" (Baumeister, Bratslavsky, Muraven, & Tice, 1998, p. 1252). Yet the self comprises many different, often-conflicting motives and goals, such as self-interest versus empathic concern for others, short-term pleasure versus long-term health and happiness, competition versus cooperation with others, and so on (Elster, 1990; Sen, 1978; see Mansbridge, 1990). Goal systems theory (e.g., Kruglanski et al., 2002) and supramodular interaction theory (Morsella, 2005), in fact, are specifically concerned with the structural relations between competing goal tendencies and how these conflicts are resolved within the self or individual.

Thus it is possible to make a useful distinction between the self and the currently active goal. In the case of nonconscious goal operation, it is clearly the goal that is in charge (of selective attention, evaluation, and behavior), not the "active" or conscious self. Modern self-theorists do acknowledge that "a great deal of human behavior is influenced by automatic or nonconscious processes," but contend that "undoubtedly some portion involves deliberate, conscious, controlled responses by the self . . . acting autonomously on its own behalf" (Baumeister et al., 1998, p. 1252). Our main point in this chapter is that ultimate control rests not with the self, but with the currently active goal, which will pursue its agenda autonomously even when doing so is not in the overall best interests of the individual (self)—and that this selfish goal principle holds for consciously pursued goals just as much as for automatic or nonconscious goal pursuits.

The relation between goals and the individuals holding them is strikingly similar to that between genes and their host organisms. In his classic work *The Selfish Gene*, Dawkins (1976) described how our genes have designed us (through the blind process of natural selection) to be their "survival machines" on which they depend for their propagation into future generations. The core of Dawkins's argument was that genes, not individual organisms, are the basic unit of natural selection. Moreover, genes were said to be essentially "selfish" in that their own propagation is their only concern, not the welfare of the host organism (except as it might affect propagation): "Each gene is seen as pursuing its own self-interested agenda against the background of the other genes in the gene pool" (p. ix).

That goals are to the self as genes are to the organism is more than just a metaphor. Evolutionary biologists and psychologists, as well as philosophers of science, view motivations as the crucial link between genetic influences and adaptive behavior (Campbell, 1974; Mayr, 1976; Neuberger, Kenrick, Maner, & Schaller, 2004; Pinker & Bloom, 1990, p. 468; Popper, 1972, pp. 256–280; Symons, 1992, p. 138; Tetlock, 2002; Tomasello, Carpenter, Call, Behne, & Moll, 2005; Tooby & Cosmides, 1992, p. 99). Because of constantly changing and shifting environmental conditions,

coupled with the very slow rate of genetic change, direct genetic controls over behavior tend to be inflexible and unable to adapt fast enough to changes in the environment. Accordingly, genes provide us with general and specific motivations, which are translated into our nervous systems as "goal programs," and it is these goal programs that guide our behavior in the local environment (Mayr, 1976).

The close correspondence between genes and goals is further attested to by the prevalence of goal-directed behavior in the organic world, which largely lacks the strategic, conscious information-processing capabilities of humans. As the evolutionary theorist Ernst Mayr (1976, p. 389) stressed, "the occurrence of goal-directed processes is perhaps the most characteristic feature of the world of living organisms." For example, a predator stalking its prey or the prey fleeing from the pursuing predator, a bird starting on its migration, an insect selecting its host plant, a male displaying to a female are acting purposefully yet unconsciously.

One reason why goal-directed and purposive behavior is commonplace among living organisms (Mayr, 1976) is because goal programs are the "local agents" in the present that carry out genetic instructions from the distant past. Why do genes require the proxy of goals and motives? Because the rate of genetic change is very slow, too slow for direct genetic controls over behavior to adapt quickly enough to the constantly changing and shifting environmental conditions over long stretches of time. The inflexibility of direct genetic control is the main reason why 99% of the species that ever existed are now extinct. Therefore, behavior is never directly controlled by the genotype but by a behavior program in the nervous system that results from the translation of the original genetic program. As Dawkins (1976) summarized the situation, "genes exert ultimate power over behavior. But the moment-to-moment decisions about what to do next are taken by the nervous system. Genes are the primary policymakers, brains are the executives" (p. 19). And goal pursuits, we would add, are the executive processes of the brain.

Dawkins's (1976) main point was that genes, not their host organisms, are the unit of natural selection; further, that genes are essentially "selfish" in that their own propagation is their only concern, not the welfare of the host organism, except where it affects propagation. In an analogous fashion, we argue, active goals are the unit of control over higher mental processes, not the self or individual person, and active goals single-mindedly pursue their agenda independently of whether doing so is in the overall good of the individual person.

In advancing this argument, we first review evidence as to whether active goals operate in an autonomous fashion (autonomous with regard to the self and its conscious intentions and purposes). The evidence on this point comes mainly from experimental demonstrations of *nonconscious*

goal pursuit. This leads us to the pivotal question of whether *conscious* goal pursuit is also characterized by autonomous goal functioning. We make a theoretical and an empirical case that it is: theoretically, because of the likelihood that conscious goal pursuit makes use of the same underlying structures and processes as in evolutionarily older unconscious goal pursuit mechanisms; empirically, because of the many other similarities between nonconscious and conscious goal pursuit that have already been demonstrated. We then report the findings of several experiments specifically designed to test whether conscious goals operate autonomously from conscious intentions—in other words, whether intended goal pursuit produces unintended (and, presumably, unwanted) consequences for the individual.

Do Goals Operate Autonomously?: Evidence from Goal-Priming Studies

The autonomy of active goals is clearly apparent in the case of nonconscious goal pursuit. The goal-priming literature has shown that goals can be activated without the individual knowing about or intending it—either through subliminal presentation of goal relevant stimuli, or through subtle and unobtrusive supraliminal presentation. A wide variety of environmental triggers have been demonstrated: not only verbal stimuli semantically related to the goal (as in many studies), but also material objects such as backpacks and briefcases (Kay et al., 2004), scents such as cleaning fluids (Holland et al., 2005), power-related features of a situation such as a professor's desk chair (Chen, Lee-Chai, & Bargh, 2001), and the names of one's significant others (Fitzsimons & Bargh, 2003; Shah, 2003).

These same studies have shown that once activated outside the person's knowledge, these goals operate autonomously, without any conscious guidance, to guide cognition and behavior toward the desired end-state (see reviews in Bargh, 2005; Bargh & Ferguson, 2000; Chartrand & Bargh, 2002; Dijksterhuis et al., 2007; Ferguson, Hassin, & Bargh, 2008; Fitzsimons & Bargh, 2004). Importantly, the same behavioral and judgmental outcomes are obtained in these studies as when the same goal is pursued consciously (see next section). Nonconscious goal pursuit has now been demonstrated across a range of goal types: information-processing goals such as judgment and memorization, achievement goals such as high performance on a task, and interpersonal goals such as to compete or cooperate.

How do nonconscious goals operate outside of awareness and intention when the stimuli and events they are operating on are in full view of conscious awareness? In one study, for example, the nonconscious (primed) goal to cooperate with one's game opponent produced equivalent

increases in cooperative behavior to the experimental condition in which some participants were explicitly instructed to cooperate (Bargh, Gollwitzer, Lee-Chai, Barndollar, & Troetschel, 2001, Study 2). Yet only in the latter case were participants aware of having the goal to cooperate, as shown by postexperimental retrospective reports of how cooperative they had just been on the task. These participants thus gave every appearance of pursuing the cooperation goal without knowing they were doing so, while they were consciously aware of the task stimuli and of their own behavioral responses to them. Somehow the primed goal operated on stimuli and events relevant to it to produce the goal-appropriate outcomes, but without any foreknowledge of exactly what goal-relevant stimuli and events might occur during the experimental session. The active goal, therefore, had to be ready for whatever goal-relevant environmental input might occur, and then operate on it when it did occur.

The readiness of nonconsciously activated goals to operate on whatever goal-relevant input occurs in the environment illustrates the open-ended nature of human goal pursuit. Mayr (1976, p. 23) identified two types of inherited behavior programs in the organic world: open and closed. Closed programs are those containing a nearly complete set of ready-made responses to particular stimuli in the environment; these characterize organisms with short life spans or highly stable and unchanging environments, in which there is little time or need to benefit from experience or adapt to local variations. Because humans, on the other hand, enjoy longer life spans and also a long childhood under the supervision and protection of caregivers, most genetic behavior programs (goals) in humans are open. This is a great advantage to successful adaptation because it allows the general tendencies furnished genetically to be fine-tuned to the specific local conditions into which the infant happens to be born. A well-known example of an open-ended program in humans is the young child's ability to quickly learn the local language and absorb the local culture; any infant can be taken to any location on earth and over time will learn that language and that culture as well as if he/she had been born there (Pinker, 1994).

The open-ended nature of human goal pursuit also enables flexibility of behavior instead of fixed, rigid responses to specific stimuli. Many researchers have taken this flexibility as evidence of the autonomous nature of conscious self-control (e.g., Baumeister et al., 1998), but as the evolutionary psychologist Symons (1992) pointed out, this confuses the open-ended nature of means selection with a choice among goals themselves (i.e., desired end-states):

One source of confusion is that we are used to thinking of human behavior as being uniquely flexible and responsive to environmental variation. Human behavior is flexible, of course, but this flexibility is of means, not ends, and

the basic experiential goals that motivate human behavior are both inflexible and specific. (p. 138; see also Tooby & Cosmides, 1992, p. 101)

To give one example, we have many ways of consuming sugar, but the goal of eating sugar remains the same: to experience the sensation of sweetness.

Moreover, flexibility of means cannot be the exclusive province of conscious goal pursuit and self-regulation because the empirical demonstrations of nonconscious goal pursuit could not have occurred if it did not have this same flexible quality. In fact, the most compelling demonstration of the open-ended nature of human goal pursuit is in the case of nonconscious goal pursuit. Given the largely unpredictable nature of future events (e.g., Dawes, 1993), participants cannot know in advance in these studies what goal-relevant stimuli might occur (they are not even aware of which stimuli are goal relevant and which are not). Nevertheless, the nonconscious goal is shown to operate on any and all such relevant information: driving selective attention toward such information when it is present (Chartrand & Bargh, 1996, Study 2; Neuberg et al., 2004), causing the differential evaluation of that information in terms of whether it facilitates or interferes with the goal (Ferguson & Bargh, 2004), transforming and manipulating the information in the service of the goal (McCulloch, Ferguson, Kawada, & Bargh, 2008), and guiding behavior toward the goal (e.g., Bargh et al., 2001).

Thus, the recent research on nonconscious goal pursuit has established the autonomy with which goals can be activated, operate, and guide cognition and behavior to successful completion of the goal, all independently of conscious intentions and guidance. Once again, the situation is closely analogous to how genes operate to guide our present-day behavior through open-ended motivational mechanisms. The nonconsciously active goal operates on whatever goal-relevant information happens to occur next in the experimental situation, which could not be known to the participant beforehand—just as genetic influences from the distant past programmed us through open-ended motivations to be capable of adapting to local conditions far into a future that could not have been anticipated in any detail (Dawkins, 1976).

Similarity of Nonconscious and Conscious Goal Pursuit

Do conscious goals also operate autonomously, once activated? The many similarities that recent research has revealed between conscious and nonconscious goal pursuit suggests that they might also share the feature of autonomous operation. First, as noted above, nonconsciously operating goals produce the same outcomes as when those same goals are pursued

consciously, and as the recent study by McCulloch et al. (2008) showed in the case of the impression-formation goal, do so following the same processing stages as well. Second, nonconscious goal pursuit possesses the same phenomenal qualities previously demonstrated and ascribed to conscious, deliberate goal pursuit (Bandura, 1977, 1986; Gollwitzer & Moskowitz, 1996; Heckhausen, 1991; Lewin, 1926). These include persistence in the face of obstacles, resumption of interrupted goal pursuits in the face of intrinsically more attractive activities, and evaluative and motivational consequences of the goal pursuit attempt (see reviews in Chartrand & Bargh, 2002; Ferguson et al., 2008). Kawada, Oettingen, Gollwitzer, and Bargh (2004) demonstrated yet another similarity: Conscious and nonconscious goals, when active, are “projected onto” (i.e., attributed to) other people in the course of impression formation.

Cognitive neuroscience studies of the brain regions involved in motivated behavior also support the hypothesis that the same underlying mechanisms and processes are involved in conscious and nonconscious goal pursuit. Pessiglione et al. (2007) found that the same region of the basal forebrain moderates task-effort level in response to a consciously perceived and a subliminally presented reward signal, leading the authors to conclude that “the motivational processes involved in boosting behavior are qualitatively similar, whether subjects are conscious or not of the reward at stake” (p. 906).

What accounts for these close similarities in process and outcome between conscious and nonconscious forms of goal pursuit? As noted above, purposive behavior and goal pursuits are widespread in the world of living things, serving as the liaison between genetic influences from the deep past and adaptive behavior in the present (e.g., Mayr, 1976). Thus, goal pursuit is not something requiring human consciousness or its equivalent; for most organisms goal-directed behavior is driven entirely through unconscious means (Dawkins, 1976). Given that consciousness and strategic, intentional mental processes were relatively late arrivals in human evolutionary history (e.g., Dennett, 1991; Donald, 1991), human goal pursuit was largely unconscious in nature for most of evolutionary time. Thus, upon the arrival of conscious forms of information processing, it is probable that conscious methods of goal pursuit made use of the existing (unconscious) goal pursuit structures in the brain. In evolution, the formation of new structures (such as organs) involves complex, often competitive interactions with extant ones because intelligent design in nature builds on available existing structures in a gradual, incremental fashion, instead of creating entirely new ones each time from scratch (Allman, 2000; Dawkins, 1976).

For these reasons, then, we hypothesized that conscious and nonconscious goal pursuit would share another important feature, that of

autonomous operation once active. Note that up to this point, potential similarities between the two modes of goal pursuit were assessed by testing whether nonconscious goal pursuit possesses qualities already established for conscious goal pursuit (Chartrand & Bargh, 2002; Fitzsimons & Bargh, 2004). Here we do the reverse: asserting that conscious goal pursuit shares a quality previously demonstrated only for nonconscious goal pursuit—that is, operating on any relevant (i.e., applicable; see Higgins, 1996) information in the environment regardless of whether the individual intends or is aware of it. In the case of conscious goals, the person is aware of pursuing them with regard to a specific target or set of targets; but just as nonconscious goals operate on any and all perceived information to which they are applicable, conscious goals will too—even information that was not the intended focus of the goal. If even consciously pursued goals operate in this independent manner, one can speak of the “selfish goal” pursuing its own agenda just as the “selfish gene” is ultimately concerned with its own propagation.

An Empirical Test of Conscious Goal Autonomy

We suggest that the “selfish goal” principle holds for all goal pursuits, conscious and unconscious alike. Previous research shows that primed, nonconscious goals to form an impression of a target person operate without the participant’s knowledge and compute the evaluation in the same way as if the person consciously and intentionally had the goal to form an impression (Chartrand & Bargh, 1996). In that study, participants were unaware of having the goal of forming an impression and so also were not intending to form an impression of the particular target person. Thus, the experiment included an unintended goal and an unintended target of that goal; but because of the open-ended nature of the active impression goal, and the presence of relevant target information in the environment, impressions of that target were nonetheless formed and stored (see also McCulloch et al., 2008).

For consciously intended goal pursuits, on the other hand, the goal is of course intended and resident in conscious awareness, and so the autonomy of goal operation from conscious intentions and awareness would be manifested by its application to relevant targets that were not the intended focus of the goal. Thus, it is the open-ended nature of human goal pursuit that is expected to produce the unintended effects, with the active goal ready to operate on any goal-relevant information in the environment, even if it is not the intended focus of the goal.

We (Bargh, Green, & Fitzsimons, 2008) tested this hypothesis in two experiments by having participants watch a videotape of an ostensible job

interview (in the control condition, participants were told it was of two people getting acquainted). They were told that the job in question was either a crime reporter for the *New York Daily News*, or a restaurant waiter position. The two jobs were pretested so that the desired personality characteristics were opposite of each other: the ideal crime reporter is tough and aggressive, whereas the ideal waiter is deferential and polite.

During the taped interview, the two principals were interrupted several times by secretaries and coworkers, as in an actual busy office situation. The behavior of one of these interrupters (“Mike”) varied across the two experimental conditions. In one tape, Mike was very polite and deferential after interrupting; in the other, he was rude and aggressive. After the tape had been presented, participants were given a surprise impression task in which we did not ask about the job candidate at all (on which they had been consciously focused), but simply how much they liked Mike.

Under the hypothesis that the active conscious goal of evaluating a specific type of job candidate would also be applied to other people encountered at the same time, we expected that participants in the control and waiter-goal conditions would like “polite Mike” more than “rude Mike,” but that those in the reporter-goal condition would actually like “rude Mike” better. Results confirmed this prediction. Because Mike’s behavior matched the qualities that the active goal was looking for, and which would be evaluated positively by the active goal (see Ferguson & Bargh, 2004), participants in the reporter-goal condition showed a significant reversal of preferences compared to the other two conditions: They liked rude Mike more than polite Mike.

These findings support the hypothesis that conscious as well as nonconscious goals, once activated, operate autonomously in an open-ended fashion on any and all relevant information in the environment, even that which was not the original intended focus of the goal pursuit (in the case of conscious goals). Intended goal pursuits thus can have unintended consequences. As shown by the results of the control condition, we do not normally find rude, aggressive people likable, and it is doubtful we’d like “rude Mike” under normal circumstances—but we do tend to like him if we are concurrently evaluating others for some purpose in which rudeness and aggressiveness happen to be valued traits.

In a third study, some participants were instructed to help another participant (actually a confederate) with an experimental task, while others were not assigned this “helper” role. Consistent with the selfish-goal hypothesis, participants who were concurrently helping someone (compared to those who were not) showed a greater willingness to donate money to a charity, and also to commit their time to helping a stranger who stopped by the experimental room, asking if the participant would fill out a lengthy questionnaire for her. Note that these are costs that one

would not choose to incur were it not for this unintended influence of the active goal (as shown by the control and deactivated-goal conditions of that study), just as one would normally like a polite person more than a rude one.

This last experiment also included a condition in which the conscious helping goal was completed and no longer active at the time of the further requests for help. Consistent with predictions as well as past theory and evidence on goal effects (Atkinson & Birch, 1970; Förster, Liberman, & Higgins, 2005; Kawada et al., 2004; Lewin, 1926), turning off the goal in this way also eliminated the selfish-goal effect of causing the participant to help anyone who asked for it, not only the person the participant consciously intended to help. It is the currently active goal that is in charge of attention, judgment, evaluation, and behavior, and turning off the goal turns off its property of operating on any and all relevant information in the environment.

Operation of the Selfish Goal

The preceding analysis suggests that it may be beneficial to depart from the traditional homuncular view of social (and much of cognitive: see Bargh & Morsella, 2008) psychology, with its agentic, autonomous self said to be in control of executive processes and goal pursuits, and instead conceptualize the human motivational system as a collection of self-interested entities. Increasingly, research is concluding that an organism can be optimally designed (i.e., the fittest organism by natural selection terms) of conflicting selfish agents (Dawkins, 1976; Kurzban & Aptikis, 2007; Livnat & Pippenger, 2006). As Livnat and Pippenger (2006) pointed out, “Unbeknownst to an agent, its actions may promote the goal of the collective, given the actions of the other agents and the computational limitations. Yet it does not necessarily follow that the agent’s goal aligns with that of the collective or of any other agent by extension.” Instead, the human goal system appears to have evolved as a collection of “selfish” agents, operating to attain their own end-states at whatever costs to other agents or even its host organism.

Therefore, instead of viewing our goals as always operating in direct service of our conscious agenda, in this section we ask an alternative question: How do our goals control us? In our view, the open-ended design and autonomous operation of the selfish goal is the key to how it pursues its own attainment. To document the variety of mechanisms through which active goals control our minds and behavior without our being aware of it, we review evidence bearing on how conscious and nonconscious goals operate as open-ended systems, following them from activation, through

strategic operation, conflict with other selfish goals, and finally to completion (see also Gollwitzer & Moskowitz, 1996).

Selfish Goals Drive Attention, Perception, and Evaluation

Once active, the goal directs one’s attention toward some (i.e., goal-relevant) stimuli and away from others; the world is filtered through the goal’s “eyes.” The active goal’s effect on selective attention has long been known in the case of consciously pursued goals (Anderson & Pichert, 1978; Bruner, 1957; Hastie & Park, 1986), but more recent research shows this effect occurs in nonconscious goal pursuit as well (Chartrand & Bargh, 1996, Study 2; Maner et al., 2003; McCulloch et al., 2008; Neuberg et al., 2004). For example, a nonconscious impression formation goal causes greater selective attention to behavioral information inconsistent with the target’s general pattern of behavior (Chartrand & Bargh, 1996, Study 2; McCulloch et al., 2008), and a nonconscious mating goal drives greater selective attention to the potential romantic partners shown on a video-screen (Maner et al., 2003; Neuberg et al., 2004).

The power of the effect of active goals on attention and memory is such that very salient, unusual events can be missed entirely, as in the “attentional blindness” research (Mack, 2003; Simons & Chabris, 1999). In one such study, participants given the explicit, conscious task of counting the number of ball tosses between actors on a computer display failed to notice a gorilla walking right through the ball-tossing game while they were busy counting tosses.

These effects on attention, encoding, and memory occur because the active goal is only interested in facilitating its own attainment—to the exclusion of other concerns, such as whether all available visual information has been relayed to its host. The power of selfish-goal effects on attention and encoding is further indicated by the power of the currently active goal to override otherwise automatic, chronic encoding tendencies. For example, there is much evidence of the automatic manner in which other people are encoded or categorized in terms of their race, age, and gender (e.g., Bargh, 1999; Brewer, 1988). However, if doing so hinders the successful completion of the currently active goal, this does not happen. Kurzban, Tooby, and Cosmides (2001, Study 2) gave participants the explicit goal of impression formation and subsequently presented them with a situation wherein allied targets were visibly linked by shirt color. The experimenters found that participants encoded targets using the most useful information current to that context, which in this case, was target shirt color, to a greater extent than race (which did not designate targets’ group affiliations).

Moskowitz, Gollwitzer, Wasel, and Schaal (1999) provided a particularly powerful demonstration of the selfish goal dominating potentially

antagonistic automatic processes. In their studies, those participants with a strongly held goal to treat others in an egalitarian fashion showed evidence of inhibiting automatically activated stereotypes toward minority groups. The active egalitarian goal, once again, overrode the otherwise automatic tendency to categorize people in terms of the group stereotype, because doing so would run counter to the active goal's aim of treating people the same regardless of race, gender, or ethnicity.

Treating other people fairly is a positive social goal of course, but in line with the notion that the self comprises of many, often-conflicting goals, people also have strong goals to protect their self-esteem. If this self-protective goal is active, for example following a threat to one's self-esteem (e.g., failure at a task), it can instead cause the stereotyping of minority group members, even under conditions known to normally prevent such stereotyping. In a series of experiments by Spencer, Fein, Wolfe, Fong, and Dunn (1998), automatic stereotyping effects were shown to be blocked by an attentional load (secondary task) manipulation, replicating earlier work by Gilbert and Hixon (1991). The secondary task thus created conditions under which it was difficult for automatic stereotyping of minority group members to occur.

Next, Spencer et al. (1998) threatened the self-esteem of some participants through bogus failure feedback, thus presumably triggering a goal to restore positive self-regard. This active self-protective goal was able to overcome the load conditions as automatic stereotyping effects were found to reemerge for this group: the goal of maintaining self-esteem using the means of denigration of others, strong enough to overcome the obstacle (attentional load) in its way.

The currently active goal also has the power to override chronic, automatic attitudes. Ferguson and Bargh (2004) showed that though a goal is active, stimuli that facilitate attainment of that goal are automatically (non-consciously and immediately) evaluated positively, even if those stimuli are otherwise viewed negatively. When the goal was completed, evaluations were found to revert immediately back to their default state. These findings are reminiscent of the successful intervention by Sherif, Harvey, White, Hood, and Sherif (1961) in the famous Robbers' Cave summer camp study: Giving the two warring bands of campers a common goal, for which they needed the cooperation of the other group to succeed, made friends out of summer-long "enemies."

And in another demonstration of an active (nonconscious) goal overriding automatic, habitual responding, Sassenberg and Moskowitz (2005) primed a "think-different" goal of generating creative solutions to a problem. Participants in the think-different condition indeed generated more unusual uses for a given object and more uncommon answers in a free-association task, instead of the usual, more easily generated ones.

Successful Goals Are Self-Perpetuating

Once a goal pursuit attempt is completed, the goal deactivates (e.g., Atkinson & Birch, 1970; Lewin, 1926) and then inhibits the mental representations used to attain the goal (Förster et al., 2005). In the case of non-conscious goal pursuit, it is clear that the deactivation of the goal must occur independently of conscious intention and awareness (because the individual was not even aware the goal was active in the first place). Thus, several studies have found that once a nonconscious goal is satisfied, its influence on cognition and behavior disappears (e.g., Kawada et al., 2004). The same goal turn-off effect occurs for conscious goals as well, of course, even for positively valued, prosocial goals such as helping another person (Bargh et al., 2007, Study 3). Our point is that the goal turn-off is part of the autonomous operation of the (selfish) goal, and not under the individual's (or self's) awareness and control; this can be seen most clearly in studies where an unequivocally positive goal deactivates after fulfillment, actually inhibiting the individual from continuing to behave in this positive fashion! A dramatic example of this phenomenon is found in recent research on "moral credentials" (e.g., Monin & Miller, 2001).

Monin and Miller (2001) found that participants who were given the opportunity to disagree with blatantly sexist comments (thus fulfilling their goal to be egalitarian and nonsexist) were later more willing (compared to a control condition) to recommend a man for a stereotypically male job. According to the authors, after participants had been allowed to establish their moral credentials in the first part of the experiment, they stopped pursuing this goal in a subsequent part. Thus, after the egalitarian goal was fulfilled, it shut off, leaving its "host" individual vulnerable to behaving in a manner contrary to his or her egalitarian values.

The recently discovered "Macbeth effect" (Zhong & Liljenquist, 2006) provides another illustration of the goal-completion effect running against the individual's presumed values and behavioral intentions. In this study, participants were induced to consider performing some unethical behaviors and were then given a choice among several small gifts for taking part in the study. Compared to a control condition, these participants were more likely to choose an antiseptic tissue-wipe than other gifts. Most important, those who were given an opportunity to wash their hands after contemplating the unethical behavior subsequently were less likely to help a stranger. Considering an unethical act thus triggered the participants' goal to cleanse themselves in any way possible (i.e., morally or physically), and satisfying that goal by washing of the hands (physical cleansing) turned off the goal and made it less likely they would engage in ethical behavior (moral cleansing).

When participants who were morally threatened washed their hands, the selfish goal was fulfilled—and therefore no longer on the lookout for

opportunities to restore its host's moral self. Consequently, participants who were morally restored were more likely to decline helping a person in need. Once again, as with the moral-credentialing effect, the effect of completion of the cleansing goal runs counter to the presumed conscious intentions of the individual. As one of the Macbeth-effect study's authors asked rhetorically in an on-line interview, "Do you really want your past sins to be easily washed away, which discourages you from engaging in ethical behaviors to help others?" (Hirshon, 2006).

The autonomy of selfish-goal operation even extends to its own perpetuation (another similarity between goals and genes). The consequences of conscious goal attempts for affective experience (mood) and the future strength of that goal have long been established (e.g., Bandura, 1977; Carver & Scheier, 1981; Heckhausen, 1991). Success at the attempt produces positive mood and increased tendencies to pursue that goal in the future; failure produces the opposite consequences. Research on nonconscious goal pursuit has shown that the same consequences accrue for goal attempts the individual is not even aware of making (Chartrand & Bargh, 2002). Participants were given an anagram task that was very easy or impossible to solve; the importance of this task was downplayed by the experimenter as a "filler task" in the larger study. However, for participants previously primed with the achievement (high-performance) goal, but not for control group participants, working on the easy anagram task (success condition) resulted in elevated mood and increased motivation to work on a subsequent verbal task, and working on the difficult anagram task produced depressed mood and lower effort on the subsequent task.

Thus, successful goals become stronger (more likely to be pursued again by the individual) and unsuccessful goals become weaker, all without the individual's knowledge or consent. Presumably this change in future goal strength is driven by the positive versus negative affect associated with the goal; that is, its "incentive value." As noted earlier, Pessiglione et al. (2007) showed this incentive value can be manipulated outside of conscious awareness, having the same effect on the individual's effort and performance as when manipulated explicitly and consciously. Similarly, recent experimental work by Custers and Aarts (2005, 2007) showed that conditioning a positive affective response to the name of a particular goal increases the chances the individual will pursue that goal over other possible alternatives, without the participants being aware of this influence on their choice of action. Thus, successful goals are self-perpetuating; more to the present point, their increase in strength and thus probability of being pursued in the future by the individual is determined autonomously, through mechanisms independent of the individual's conscious awareness and intent.

Conclusions

Just as genes are the unit of natural selection, not the individual organism or species (Dawkins, 1976), so too are active goals the unit of behavioral selection and control, not the individual pursuing them. We have reviewed evidence in support of the selfish-goal hypothesis that currently active goals operate independently of conscious awareness and purposes and can thus be shown to yield consequences that run counter to the individual's conscious intentions and values.

The theoretical parents of the selfish-goal hypothesis are "selfish-gene" theory (Dawkins, 1976) combined with the widely held view in evolutionary biology (and by some in evolutionary psychology) that motivations are the present-day agents of genetic influences from the distant past. Genes as the unit of natural selection pursue their own agenda (propagation) whether or not this is in the best interest of their host organism; similarly, goals (when active) as the proxies of genetic influences guide human cognition and behavior toward the goals' desired end-states, independently of conscious awareness and guidance by the individual. Goals, conscious and unconscious alike, are the local agents of genes, their instantiation in present time. Therefore, just as the selfish gene operates to further its own agenda independently of the interests of its host organism (for the gene, not the organism, is the unit of natural selection; see Dawkins, 1976; Dennett, 1995), the selfish goal has only its attainment "in mind" and not the overall interests of the goal holder. Accordingly, we have reviewed evidence from many domains that consistently show conscious and unconscious goal pursuit produce judgmental and behavioral outcomes that the person does not consciously intend and might well seek to avoid if aware of them.

We emphasize in closing that the fact of the "selfish goal" does not at all imply selfishness at the level of the individual person, mainly because the individual or "self" comprises many goals—self-interested ones to be sure, but also prosocial and morally principled ones as well (e.g., Mansbridge, 1990; Sen, 1978). Prosocial goals such as cooperation, helping, and putting the welfare of others over one's own have been shown to operate entirely automatically and nonconsciously, testifying to their innate or well-practiced nature (see Bargh et al., 2001, Study 2; Chen et al., 2001).

As selfishness means putting one's own welfare and needs above those of other people (Elster, 1990; Jencks, 1990), perhaps the best demonstration of a "selfless" (at the level of the individual) selfish goal comes from the Chen et al. (2001) study in which participants nonconsciously primed with the concept of power were given a choice of experimental tasks to complete, with full knowledge that an ostensibly late other participant would have to do the remaining tasks. For those participants with a com-

munal relationship orientation (who tend to care more about the welfare of those they have power over; see Clark & Mills, 1993), the nonconscious effect of power was to activate their communal or altruistic goals, causing them to take more of the task burden on themselves, leaving less for the other person to do. And in another experiment (Bargh et al., 2001, Study 2), subliminal priming of the goal of cooperation caused participants playing the role of a fishing company to voluntarily put more fish back into a lake to replenish the fish population, thereby reducing their own profits in the game. These experimental findings were not driven by any self-presentational or "demand" effects given their nonconscious nature (the participants were not aware of the cause of their prosocial behavior), and thus demonstrate that goals that are selfish in terms of their own agenda, completion, and perpetuation are not selfish in terms of only pursuing the individual's own self-interest.

That goals can be selfish without making their "owners" selfish is a nice idea on which to end this chapter. It shows yet again that it is the active goal that is the unit of autonomous behavior control, not the individual human being (or "self")—just as Dawkins and others had shown earlier that the gene is the unit of natural selection, not the individual organism. The selfish goal pursues its agenda regardless of whether this fits the agenda of its individual host, just as selfish genes pursue their own propagation whether or not this is good for their host organisms. Conscious intentions and active goals are not the same thing, not at the level of brain physiology, nor at the level of the outcomes they produce. Little wonder then that to "know thyself," the task assigned to visitors by the ancient oracle of Delphi, is such a difficult one.

Acknowledgments

This research was supported by Grant No. MH R01 MH60767 from the U.S. Public Health Service. We thank Ezequiel Morsella for input and feedback.

References

- Aarts, H., & Dijksterhuis, A. (2003). The silence of the library: Environmental control over social behavior. *Journal of Personality and Social Psychology*, 84, 18–28.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice Hall.
- Allman, J. M. (2000). *Evolving brains*. New York: Scientific American Library.
- Anderson, R. C., & Pichert, J. W. (1978). Recall of previously unrecalled information following a shift in perspective. *Journal of Verbal Learning and Verbal Behavior*, 17, 1–12.
- Atkinson, J. W., & Birch, D. (1970). *The dynamics of action*. New York: Wiley.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84, 191–215.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bargh, J. A. (1990). Goal intention: Goal-directed thought and behavior are often unintentional. *Psychological Inquiry*, 1, 248–251.
- Bargh, J. A. (1999). The cognitive monster: The case against controllability of automatic stereotype effects. In S. Chaiken & Y. Trope (Eds.), *Dual process theories in social psychology* (pp. 361–382). New York: Guilford Press.
- Bargh, J. A. (2005). Bypassing the will: Towards demystifying behavioral priming effects. In R. Hassin, J. Uleman & J. Bargh (Eds.), *The new unconscious* (pp. 37–58). Oxford, UK: Oxford University Press.
- Bargh, J. A. (Ed.). (2007). *Social psychology and the unconscious: The automaticity of higher mental processes*. Philadelphia: Psychology Press.
- Bargh, J. A., Chen, M., & Burrows, L. (1996). Automaticity of social behavior: Direct effects of trait construct and stereotype priming on action. *Journal of Personality and Social Psychology*, 71, 230–244.
- Bargh, J. A., & Ferguson, M. J. (2000). Beyond behaviorism: The automaticity of higher mental processes. *Psychological Bulletin*, 126, 925–945.
- Bargh, J. A., & Gollwitzer, P. M. (1994). Environmental control over goal-directed action. *Nebraska Symposium on Motivation*, 41, 71–124.
- Bargh, J. A., Gollwitzer, P. M., Lee-Chai, A., Barndollar, K., & Trötschel, R. (2001). The automated will: Unconscious activation and pursuit of behavioral goals. *Journal of Personality and Social Psychology*, 81, 1004–1027.
- Bargh, J. A., Green, M. L., & Fitzsimons, G. M. (2008). The selfish goal: Unintended consequences of intended goal pursuit. *Social Cognition*, 28, 520–540.
- Bargh, J. A., & Morsella, E. (2008). The unconscious mind. *Perspectives on Psychological Science*, 3, 73–79.
- Baumeister, R. F., Bratslavsky, E., Muraven, M., & Tice, D. M. (1998). Ego depletion: Is the active self a limited resource? *Journal of Personality and Social Psychology*, 74, 1252–1265.
- Bogen, J. E. (1995). On the neurophysiology of consciousness: II. Constraining the semantic problem. *Consciousness and Cognition*, 4, 137–158.
- Brewer, M. B. (1988). A dual process model of impression formation. In T. K. Srull & R. S. Wyer, Jr. (Eds.), *Advances in social cognition* (Vol. 1, pp. 1–36). Hillsdale, NJ: Erlbaum.
- Bruner, J. S. (1957). On perceptual readiness. *Psychological Review*, 64, 123–152.
- Campbell, D. T. (1974). Evolutionary epistemology. In P. A. Schilpp (Ed.), *The philosophy of Karl Popper* (pp. 413–463). La Salle, IL: Open Court Publishing.
- Carver, C. S., & Scheier, M. F. (1981). *Attention and self-regulation: A control-theory approach to human behavior*. New York: Springer-Verlag.
- Chaiken, S., & Trope, Y. (1999). *Dual process theories in social psychology*. New York: Guilford Press.

- Chartrand, T. L., & Bargh, J. A. (1996). Automatic activation of social information processing goals: Nonconscious priming reproduces effects of explicit conscious instructions. *Journal of Personality and Social Psychology*, 71, 464-478.
- Chartrand, T. L., & Bargh, J. A. (2002). Nonconscious motivations: Their activation, operation, and consequences. In A. Tesser, D. Stapel, & J. Wood (Eds.), *Self and motivation: Emerging psychological perspectives* (pp. 13-41). Washington, DC: American Psychological Association Press.
- Chen, S., Lee-Chai, A. Y., & Bargh, J. A. (2001). Relationship orientation as a moderator of the effects of social power. *Journal of Personality and Social Psychology*, 80, 173-187.
- Clark, M. S., & Mills, J. (1993). The difference between communal and exchange relationships: What it is and is not. *Personality and Social Psychology Bulletin*, 19, 684-691.
- Custers, R., & Aarts, H. (2005). Positive affect as implicit motivator: On the non-conscious operation of behavioral goals. *Journal of Personality and Social Psychology*, 89, 129-142.
- Custers, R., & Aarts, H. (2007). In search of the nonconscious sources of goal pursuit: Accessibility and positive affective valence of the goal state. *Journal of Experimental and Social Psychology*, 43, 312-318.
- Darley, J., & Latane, B. (1968). Bystander intervention in emergencies: Diffusion of responsibility. *Journal of Personality and Social Psychology*, 8, 377-383.
- Dawes, R. M. (1993). Prediction of the future versus an understanding of the past: A basic asymmetry. *American Journal of Psychology*, 106, 1-24.
- Dawkins, R. (1976). *The selfish gene*. New York: Oxford University Press.
- Dennett, D. C. (1991). *Consciousness explained*. Boston: Little, Brown.
- Dennett, D. C. (1995). *Darwin's dangerous idea: Evolution and the meanings of life*. New York: Simon & Schuster.
- Devine, P. G. (1989). Stereotypes and prejudice: Their automatic and controlled components. *Journal of Personality and Social Psychology*, 56, 5-18.
- Dijksterhuis, A., Aarts, H., & Chartrand, T. L. (2007). Automatic behavior. In J. A. Bargh (Ed.), *Social psychology and the unconscious: The automaticity of higher mental processes* (pp. 51-131). Philadelphia: Psychology Press.
- Dijksterhuis, A., & van Knippenberg, A. (1998). The relation between perception and behavior or how to win a game of Trivial Pursuit. *Journal of Personality and Social Psychology*, 74, 865-877.
- Donald, M. (1991). *Origins of the modern mind*. Cambridge, MA: Harvard University Press.
- Elster, J. (1990). Selfishness and altruism. In J. J. Mansbridge (Ed.), *Beyond self-interest* (pp. 44-52). Chicago: University of Chicago Press.
- Fazio, R. H. (1986). How do attitudes guide behavior? In R. M. Sorrentino & E. T. Higgins (Eds.), *Handbook of motivation and cognition* (Vol. 1, pp. 204-243). New York: Guilford Press.
- Fazio, R. H. (1990). Multiple processes by which attitudes guide behavior: The MODE model as an integrative framework. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 23, pp. 75-109). New York: Academic Press.

- Ferguson, M. J., & Bargh, J. A. (2004). Liking is for doing: The effects of goal pursuit on automatic evaluation. *Journal of Personality and Social Psychology*, 87, 557-572.
- Ferguson, M. J., Hassin, R., & Bargh, J. A. (2008). Implicit motivation: Past, present, and future. In J. Shah & W. Gardner (Eds.), *Handbook of motivational science* (pp. 150-166). New York: Guilford Press.
- Fitzsimons, G. M., & Bargh, J. A. (2003). Thinking of you: Nonconscious pursuit of interpersonal goals associated with relationship partners. *Journal of Personality and Social Psychology*, 84, 148-164.
- Fitzsimons, G. M., & Bargh, J. A. (2004). Automatic self-regulation. In R. F. Baumeister & K. D. Vohs (Eds.), *Handbook of self-regulation: Research, theory, and applications* (pp. 151-170). New York: Guilford Press.
- Förster, J., Liberman, N., & Higgins, E. T. (2005). Accessibility from active and fulfilled goals. *Journal of Experimental Social Psychology*, 41, 220-239.
- Frith, C. D., Blakemore, S.-J., & Wolpert, D. M. (2000). Abnormalities in the awareness and control of action. *Philosophical Transactions of the Royal Society of London*, 355, 1771-1788.
- Gilbert, D. T., & Hixon, J. G. (1991). The trouble of thinking: Activation and application of stereotypic beliefs. *Journal of Personality and Social Psychology*, 60, 509-517.
- Gollwitzer, P. M., & Moskowitz, G. B. (1996). Goal effects on action and cognition. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles*. (pp. 361-399) New York: Guilford Press.
- Hastie, R., & Park, B. (1986). The relationship between memory and judgment depends on whether the judgment task is memory-based or online. *Psychological Review*, 93, 258-268.
- Heckhausen, H. (1991). *Motivation and action*. New York: Springer.
- 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 Press.
- Higgins, E. T., Rholes, W. S., & Jones, C. R. (1977). Category accessibility and impression formation. *Journal of Experimental Social Psychology*, 13, 141-154.
- Hirshon, B. (2006, October 5). Washing away your sins. *Science Update*. Available at www.scienceupdate.com/show.php?date=20061005.
- Holland, R. W., Hendriks, M., & Aarts, H. (2005). Smells like clean spirit: Non-conscious effects of scent on cognition and behavior. *Psychological Science*, 16, 689-693.
- Jencks, C. (1990). Varieties of altruism. In J. J. Mansbridge (Ed.), *Beyond self-interest* (pp. 53-67). Chicago: University of Chicago Press.
- Kawada, C. L. K., Oettingen, G., Gollwitzer, P. M., & Bargh, J. A. (2004). The projection of implicit and explicit goals. *Journal of Personality and Social Psychology*, 86, 545-559.
- Kay, A. C., Wheeler, S. C., Bargh, J. A., & Ross, L. (2004). Material priming: The influence of mundane physical objects on situational construal and competitive behavioral choice. *Organizational Behavior and Human Decision Processes*, 95, 83-96.

- Koch, C., & Tsuchiya, N. (2007). Attention and consciousness: two distinct brain processes. *Trends in Cognitive Sciences*, 11, 16–22.
- Kruglanski, A. W., Shah, J. Y., Fishbach, A., Friedman, R., Chun, W. Y., Sleeth-Keppler, D. (2002). A theory of goal systems. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (pp. 331–378). San Diego: Academic Press.
- Kurzban, R., & Aktipis, C. A. (2007). Modularity and the social mind: Are psychologists too self-ish? *Personality and Social Psychology Review*, 11, 131–149.
- Kurzban, R., Tooby, J., & Cosmides, L. (2001). Can race be erased? Coalitional computation and social categorization. *Proceedings of the National Academy of Sciences USA*, 98, 15387–15392.
- Lewin, K. (1926). Vorsatz, wille, und bedürfnis [Intention, will, and need]. *Psychologische Forschung*, 7, 330–385.
- Lhermitte, F. (1986). Human anatomy and the frontal lobes: Part II: Patient behavior in complex and social situations: The “environmental dependency syndrome.” *Annals of Neurology*, 19, 335–343.
- Livnat, A., & Pippenger, N. (2006). An optimal brain can be composed of conflicting agents. *Proceedings of the National Academy of Sciences USA*, 103, 3198–3202.
- Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice Hall.
- Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task performance: A 35-year odyssey. *American Psychologist*, 57, 705–717.
- Mack, A. (2003). Inattention blindness: Looking without seeing. *Current Directions in Psychological Science*, 12, 180–184.
- Maner, J. K., Kenrick, D. T., Becker, D. V., Delton, A. W., Hofer, B., Wilbur, L. J., & Neuberg, S. L. (2003). Sexually selective cognition: Beauty captures the mind of the beholder. *Journal of Personality and Social Psychology*, 85, 1107–1120.
- Mansbridge, J. J. (1990). The rise and fall of self-interest in the explanation of political life. In J. J. Mansbridge (Ed.), *Beyond self-interest* (pp. 3–22). Chicago: University of Chicago Press.
- Mayr, E. (1976). *Evolution and the diversity of life*. Cambridge, MA: Harvard University Press.
- McCulloch, K. D., Ferguson, M. J., Kawada, C., & Bargh, J. A. (2008). Taking a closer look: On the operation of nonconscious impression formation. *Journal of Experimental Social Psychology*, 44, 614–623.
- Milgram, S. (1963). Behavioral study of obedience. *Journal of Abnormal and Social Psychology*, 67, 371–378.
- Mischel, W. (1973) Toward a cognitive social learning reconceptualization of personality. *Psychological Review*, 80, 252–283.
- Monin, B., & Miller, D. T. (2001). Moral credentials and the expression of prejudice. *Journal of Personality and Social Psychology*, 81, 33–43.
- Morsella, E. (2005). The function of phenomenal states: Supramodular interaction theory. *Psychological Review*, 112, 1000–1021.

- 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.
- Muzur, A., Pace-Schott, E. F., & Hobson, J. A. (2002). The prefrontal cortex in sleep. *Trends in Cognitive Sciences*, 6, 475–481.
- Neuberg, S. L., Kenrick, D. T., Maner, J. K., & Schaller, M. (2004). From evolved motives to everyday mentation: Evolution, goals, and cognition. In J. Forgas & K. Williams (Eds.), *Social motivation: Conscious and unconscious processes* (pp. 133–152). New York: Cambridge University Press.
- Pessiglione, M., Schmidt, L., Draganski, B., Kalisch, R., Lau, H., Dolan, R., et al. (2007, April 12). How the brain translates money into force: A neuroimaging study of subliminal motivation. *Science*, 316, 904–906.
- Pinker, S. (1994). *The language instinct*. New York: William Morrow.
- Pinker, S., & Bloom, P. (1990). Natural language and natural selection. *Behavioral and Brain Sciences*, 13, 707–784.
- Popper, K. R. (1972). *Objective knowledge: An evolutionary approach*. Oxford, UK: Oxford University Press.
- Posner, M. J., & Snyder, C. R. (1975). Attention and cognitive control. In R. L. Solso (Ed.), *Information processing in cognition: The Loyola Symposium* (pp. 55–85). Hillsdale, NJ: Erlbaum.
- Ross, L., & Nisbett, R. E. (1991). *The person and the situation: Perspectives of social psychology*. New York: McGraw-Hill.
- Sassenberg, K., & Moskowitz, G. B. (2005). Do not stereotype, think different! Overcoming automatic stereotype activation by mindset priming. *Journal of Experimental Social Psychology*, 41, 317–413.
- Sen, A. K. (1978). Rational fools: A critique of the behavioral foundations of economic theory. In H. Harris (Ed.), *Scientific models and men* (pp. 317–344). New York: Oxford University Press.
- Shah, J. Y. (2003). Automatic for the people: How representations of significant others implicit affects goal pursuit. *Journal of Personality and Social Psychology*, 84, 661–681.
- Sherif, M., Harvey, O. J., White, B. J., Hood, W. R., & Sherif, C. (1961). *Intergroup conflict and cooperation: The Robbers Cave experiment*. Norman: University of Oklahoma.
- Shiffrin, R. M., & Schneider, W. (1977). Controlled and automatic human information processing: II. Perceptual learning, automatic attending, and a general theory. *Psychological Review*, 84, 127–190.
- Simons, D. J., & Chabris, C. F. (1999). Gorillas in our midst: Sustained inattention blindness for dynamic events. *Perception*, 28, 1059–1074.
- Smith, E. E., & Jonides, J. (1998). Storage and executive processes in the frontal lobes. *Science*, 283, 1657–1661.
- Spencer, S. J., Fein, S., Wolfe, C., Fong, C., & Dunn, M. (1998). Stereotype activation under cognitive load: The moderating role of self-image threat. *Personality and Social Psychology Bulletin*, 24, 1139–1152.
- Srull, T. K., & Wyer, R. S., Jr. (1979). The role of category accessibility in the interpretation of information about persons: Some determinants and implications. *Journal of Personality and Social Psychology*, 37, 1660–1672.

- Symons, D. (1992). On the use and misuse of Darwinism in the study of human behavior. In J. H. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind: Evolutionary psychology and the generation of culture* (pp. 137–159). New York: Oxford University Press.
- Tetlock, P. E. (2002). Social functionalist frameworks for judgments and choice: Intuitive politicians, theologians, and prosecutors. *Psychological Review*, 109, 451–471.
- Tomasello, M., Carpenter, M., Call, J., Behne, T., & Moll, H. (2005). Understanding and sharing intentions: The origins of cultural cognition. *Behavioral and Brain Sciences*, 28, 675–691.
- Tooby, J., & Cosmides, L. (1992). The psychological foundations of culture. In J. H. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind: Evolutionary psychology and the generation of culture* (pp. 19–136). New York: Oxford University Press.
- Zhong, C.-B., & Liljenquist, K. (2006, Sept. 8). Washing away your sins: Threatened morality and physical cleansing. *Science*, 313, 1451–1452.

P A R T I I

HOW ARE GOALS SELECTED?