The Unbearable Automaticity of Being

John A. Bargh and Tanya L. Chartrand
New York University

What was noted by E. J. Langer (1978) remains true today: that much of contemporary psychological research is based on the assumption that people are consciously and systematically processing incoming information in order to construe and interpret their world and to plan and engage in courses of action. As did E. J. Langer, the authors question this assumption. First, they review evidence that the ability to exercise such conscious, intentional control is actually quite limited, so that most of moment-to-moment psychological life must occur through nonconscious means if it is to occur at all. The authors then describe the different possible mechanisms that produce automatic, environmental control over these various phenomena and review evidence establishing both the existence of these mechanisms as well as their consequences for judgments, emotions, and behavior. Three major forms of automatic self-regulation are identified: an automatic effect of perception on action, automatic goal pursuit, and a continual automatic evaluation of one's experience. From the accumulating evidence, the authors conclude that these various nonconscious mental systems perform the lion's share of the self-regulatory burden, beneficently keeping the individual grounded in his or her current environment.

The strongest knowledge—that of the total unfreedom of the human will—is nonetheless the poorest in successes, for it always has the strongest opponent: human vanity.

—Nietzsche, *Human, All Too Human*

Imagine for a moment that you are a psychology professor who does experiments on conscious awareness. You keep finding that your subtle manipulations of people's judgments and even behavior are successful—causing your experimental participants to like someone or to dislike that same person, to feel happy or sad, to behave rudely or with infinite patience. However, none of your participants have a clue as to what caused them to feel or behave in these ways. In fact, they don't believe you, and sometimes even argue with you, when you try to explain your experiment to them and how they were caused to feel or behave.

Now, let's say you are home with your family for the holidays or on vacation. Your aunt or brother-in-law asks politely what your job is like. You attempt to explain your research and even some of your more interesting findings. Once again you are met with incredulity. "This can't be so," says your brother-in-law. "I can't remember this ever happening to me, even once."

Our thesis here—that most of a person's everyday life is determined not by their conscious intentions and deliberate choices but by mental processes that are put into motion by features of the environment and that operate outside of conscious awareness and guidance—is a difficult one for people to accept. One cannot have any experiences or memories of being nonconsciously influenced, of course, almost by definition. But let us move from the layperson to the experts (namely, psychological researchers) and see what they have to say about the relative roles played by conscious versus nonconscious causes of daily experience.

The major historical perspectives of 20th-century psychology can be distinguished from one another based on their positions on this question: Do people consciously and actively choose and control (by acts of will) these various experiences and behaviors, or are those experiences and behaviors instead determined directly by other factors, such as external stimuli or internal, unconscious forces?

Freud (e.g., 1901/1965), for example, considered human behavior to be determined mainly by biological impulses and the unconscious interplay of the psychic forces those impulses put into motion. The individual was described as usually unaware of these intrapsychic struggles and of their causal effect on his or her behavior, although it was possible to become aware of them (usually on Freud's couch) and then change one's patterns of behavior.

Early behaviorist theory (e.g., Skinner, 1938; Watson, 1913) similarly proposed that behavior was outside of conscious control, but placed the source of the control not in the psyche but in external stimulus conditions and events. Environmental events directed all behavior in combination with the person's reinforcement history.

A third major perspective emerged in midcentury with Rogers's (1951) self theory and the humanist movement (Kelly, 1955; Rotter, 1954). In what was a reaction to the then-dominant Freudian and behavioristic perspectives, in which "people were thought to be either pushed by their inner drives or pulled by external events" (Seligman, 1991,

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Author's note. John A. Bargh and Tanya L. Chartrand, Department of Psychology, New York University.

Tanya L. Chartrand is now at the Department of Psychology, Ohio State University.

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Correspondence concerning this article should be addressed to John A. Bargh, Department of Psychology, New York University, 6 Washington Place, Seventh Floor, New York, NY 10003. Electronic mail may be sent to bargh@psych.nyu.edu.

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pp. 8–9), the "causal self" was placed as a mediator between the environment and one's responses to it. In these self-theories, behavior was adapted to the current environment, but it was determined by an act of conscious choice. Fifty years later, this perspective remains dominant among theories of motivation and self-regulation (e.g., Bandura, 1986, 1990; Cantor & Kihlstrom, 1987; Deci & Ryan, 1985; Dweck, 1996; Locke & Latham, 1990; Mischel, Cantor, & Feldman, 1996).

Finally, the contemporary cognitive perspective, in spirit as well as in practice, seeks to account for psychological phenomena in terms of deterministic mechanisms. Although there exist models that acknowledge the role played by higher-order choice or "executive" processes, the authors of these models generally acknowledge that the lack of specification of how these choices are made is an inadequacy of the model. Neisser's (1967) seminal book *Cognitive Psychology,* for example, describes the "problem of the executive," in which the flexible choice and selection processes are described as a homunculus or "little person in the head" that does not constitute a scientific explanation. This position is echoed in Barsalou's (1993) text, in which he too calls free will a homunculus, noting that "most cognitive psychologists believe that the fundamental laws of the physical world determine human behavior completely" (p. 91).[1]

Fortunately, contemporary psychology for the most part has moved away from doctrinaire either–or positions concerning the locus of control of psychological phenomena, to an acknowledgment that they are determined jointly by processes set into motion directly by one's environment and by processes instigated by acts of conscious choice and will. Such dual-process models (see Chaiken & Trope, 1999), in which the phenomenon in question is said to be influenced simultaneously by conscious (control) and nonconscious (automatic) processes, are now the norm in the study of attention and encoding (e.g., Logan & Cowan, 1984; Neely, 1977, 1991; Posner & Snyder, 1975; Shiffrin, 1988), memory (e.g., Jacoby, 1991; Schachter, 1987; Squire, 1987), emotional appraisal (e.g., Lazarus, 1991), emotional disorders (e.g., Beck, 1976), attitudes and persuasion (Chaiken, Liberman, & Eagly, 1989; Fazio, 1990; Petty & Cacioppo, 1986), and social perception and judgment (e.g., Bargh, 1994; Devine, 1989; Fiske & Neuberg, 1990; Gilbert, 1991; Trope, 1986). Thus, the mainstream of psychology accepts both the fact of conscious or willed causation of mental and behavioral processes and the fact of automatic or environmentally triggered processes. The debate has shifted from the existence (or not) of these different causal forces to the circumstances under which one versus the other controls the mind. Is everyday life mainly comprised of consciously or of nonconsciously caused evaluations, judgments, emotions, motivations, and behavior?

As Posner and Snyder (1975, p. 55) noted a quarter century ago, this question of how much conscious control we have over our judgments, decisions, and behavior is one of the most basic and important questions of human existence. The title of the present article makes our position on this question a matter of little suspense, but to make the reasons for that position clear and hopefully compelling, we must start by defining what we mean by a conscious mental process and an automatic mental process. The defining features of what we are referring to as a *conscious* process have remained consistent and stable for over 100 years (see Bargh & Chartrand, in press): These are mental acts of which we are aware, that we intend (i.e., that we start by an act of will), that require effort, and that we can control (i.e., we can stop them and go on to something else if we choose; Logan & Cowan, 1984). In contrast, there has been no consensus on the features of a single form of *automatic* process (Bargh, 1994); instead two major strains have been identified and studied over the past century, similar only in that they do not possess all of the defining features of a conscious process (see Bargh, 1996; Bargh & Chartrand, in press; Wegner & Bargh, 1998).

First, research on skill acquisition focused on intentional, goal-directed processes that became more efficient over time and practice until they could operate without conscious guidance (see J. R. Anderson, 1983; Jastrow, 1906; Shiffrin & Schneider, 1977; Smith & Lerner, 1986). These were intentional but effortless mental processes. Second, research on the initial perceptual analysis or encoding of environmental events (called "preattentive" or "preconscious" processing) showed that much of this anal-

[1] The existence of dominant, overarching perspectives concerning free will and self-determination does not mean, of course, that everyone working within a given perspective adheres to its dominant assumption. A notable exception within cognitive psychology is the approach of Varela, Thompson, and Rosch (1991), who argue that higher-order phenomena such as free will and the self are the result of a complex interaction between the mind and the world, and hence cannot be satisfactorily explained through mechanism alone.

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ysis takes place not only effortlessly, but without any intention or often awareness that it was taking place (e.g., Neisser, 1967; Posner & Snyder, 1975; Treisman, 1960). The "new look" in perception of the 1940s and 1950s, in which threatening or emotion-laden words or symbols were purportedly shown to be "defended against" through having higher perceptual thresholds than more neutral stimuli (see Allport, 1955; Erdelyi, 1974), is a prototypic example of this line of research. These are the two classic forms of "not-conscious" mental processes; both forms operate effortlessly and without need for conscious guidance, but one (mental skills) requires an act of will to start operation, and the other (preconscious) does not.

So much for how the field of psychology has historically thought about automatic processes; let's return to our aunts and in-laws. What does the concept mean to them? The popular meaning of "automatic" is something that happens, no matter what, as long as certain conditions are met. An automatic answering machine clicks into operation after a specified number of phone rings and then records whatever the caller wants to say. No one has to be at home to turn it on to record whenever the phone happens to ring. Automatic piloting systems on airplanes now perform many sophisticated and complex functions to keep the plane on course and to land it under poor visibility and weather conditions, actually making air travel safer than when such functions were handled entirely by the human pilots.

In modern technological societies one encounters many such automatic devices and systems in the course of daily life. They are all devised and intended to free us from tasks that don't really require our vigilance and intervention, so that our time and energy can be directed toward those that do. And these systems also perform their tasks with a greater degree of reliability, as they are not prone to sources of human error, such as fatigue, distraction, and boredom.

Just as automatic mechanical devices free us from having to attend to and intervene in order for the desired effect to occur, automatic mental processes free one's limited conscious attentional capacity (e.g., Kahneman, 1973; Miller, 1956; Posner & Snyder, 1975) from tasks in which they are no longer needed. Many writers have pointed out how impossible it would be to function effectively if conscious, controlled, and aware mental processing had to deal with every aspect of life, from perceptual comprehension of the environment (both physical and social) to choosing and guiding every action and response to the environment (e.g., Bateson, 1972; Miller, Galanter, & Pribram, 1960; Nørretranders, 1998). But none put it so vividly as the philosopher A. N. Whitehead:

> It is a profoundly erroneous truism, repeated by all copy-books and by eminent people making speeches, that we should cultivate the habit of thinking of what we are doing. The precise opposite is the case. Civilization advances by extending the number of operations which we can perform without thinking about them. Operations of thought are like cavalry charges in a battle—they are strictly limited in number, they require fresh horses, and must only be made at decisive moments. (Whitehead, 1911)

Whitehead (1911) presaged what psychological research would discover 86 years later. Baumeister, Tice, and their colleagues recently demonstrated just how limited conscious self-regulatory capacities are in a series of studies on what they called "ego depletion" (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Muraven, Tice, & Baumeister, 1998). In their experiments, an act of self-control in one domain (being told not to eat any of the chocolate chip cookies sitting in front of you) seriously depletes a person's ability to engage in self-control in a subsequent, entirely unrelated domain (persistence on a verbal task), which was presented to participants as being a separate experiment. Table 1 presents the variety of simple ways in which participants' conscious self-regulatory capacity was depleted to cause performance decrements on the unrelated task that followed.

Tice and Baumeister concluded after their series of eight such experiments that because even minor acts of self-control, such as making a simple choice, use up this limited self-regulatory resource, such conscious acts of self-regulation can occur only rarely in the course of one's day. Even as they were defending the importance of the conscious self for guiding behavior, Baumeister et al. (1998, p. 1252; also Baumeister & Sommer, 1997) concluded it plays a causal role only 5% or so of the time.

Given one's understandable desire to believe in free will and self-determination, it may be hard to bear that most of daily life is driven by automatic, nonconscious mental processes—but it appears impossible, from these findings, that conscious control could be up to the job. As Sherlock Holmes was fond of telling Dr. Watson, when one eliminates the impossible, whatever remains—however improbable—must be the truth.

Table 1
Deleterious Consequences of Various Acts of Choice and Self-Control

Doing this first . . .	. . . makes it difficult to do this
Eating radishes instead of available chocolates	Persist in attempting to solve unsolvable puzzles
Making a choice between two options	Persist in attempting to solve unsolvable puzzles
Suppressing emotional reactions to a movie	Solve (solvable) anagrams
Proofreading	Take action (stop watching a boring movie)
Suppressing emotional responses to a movie	Squeeze a handgrip exerciser for a short time
Suppressing thoughts (about white bears)	Persist in attempting to solve unsolvable puzzles
Suppressing thoughts (about white bears)	Suppress signs of amusement while watching comedy tape

Note. From "Ego Depletion: Is the Active Self a Limited Resource?" by R. F. Baumeister, E. Bratslavsky, M. Muraven, and D. M. Tice, 1998, *Journal of Personality and Social Psychology, 74.* Copyright 1998 by the American Psychological Association. Adapted with permission of the author. Also from "Self-Control as Limited Resource: Regulatory Depletion Patterns," by M. Muraven, D. M. Tice, and R. F. Baumeister, 1998, *Journal of Personality and Social Psychology, 74.* Copyright 1998 by the American Psychological Association. Adapted with permission of the author.

It follows, as Lord Whitehead (1911) argued, that most of our day-to-day actions, motivations, judgments, and emotions are not the products of conscious choice and guidance, but must be driven instead by mental processes put into operation directly by environmental features and events. Is this the case? The logical and empirical limits on conscious self-regulation tell us where to look for automatic phenomena—not only in perceptual activity and crude, simple processes (to which cognitive psychologists originally believed they were limited; e.g., Neisser, 1967, ch. 4), but everywhere. We and other researchers have been looking, and here is what we have found.

Perceiving Is for Doing

Humans and other primates have an innate capacity for imitative behavior and vicarious learning (e.g., Bandura, 1977b; Byrne & Russon, 1998). This has led many theorists over many years to argue that there must be a strong associative connection between representations used in perceiving the behavior of others and those used to behave in the same way oneself (Berkowitz, 1984; Koffka, 1925; Lashley, 1951; Piaget, 1946). Some have even argued that the same representation is used both in perceiving others' behavior and to behave that way oneself (Carver, Ganellen, Froming, & Chambers, 1983; Prinz, 1987, 1990). William James (1890), following the ideas of the physiologist William Carpenter (1874), popularized the principle of "ideomotor action" to account for how merely thinking about an action increases its likelihood of occurring. For Carpenter as well as James, the important feature of ideomotor action was that mere ideation about the behavior was sufficient to cause one to act—no separate act of volition was necessary. Although James argued that "thinking is for doing," we sought to extend the source of ideation from inside the head to out in the world—specifically, by considering whether merely perceiving an action increases the person's likelihood of performing the same act.

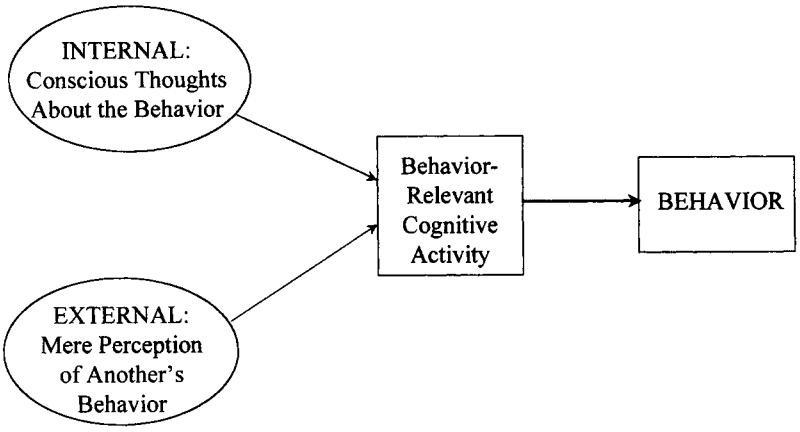
Automatic Perception Induces the Ideas

Of course, one's own thinking is more or less under one's own conscious control, so the principle of ideomotor action by itself does not mean the resultant behavior is caused by nonconscious, external environmental events. But because perceptual activity is largely automatic and not under conscious or intentional control (the orange on the desk cannot be perceived as purple through an act of will), perception is the route by which the environment directly causes mental activity—specifically, the activation of internal representations of the outside world. The activated contents of the mind are not only those in the stream of consciousness but also include representations of currently present objects, events, behavior of others, and so on. In short, the "ideo" in ideomotor effects could just as well come from outside the head as within it.

When one considers that this automatic perception of another person's behavior introduces the idea of action—but from the outside environment instead of from internal, intentionally directed thought—a direct and automatic route is provided from the external environment to action tendencies, via perception (see Figure 1).[2] The idea that social perception is a largely automated psychological phenomenon is now widely accepted. Many years of research have demonstrated the variety of ways in which behaviors are encoded spontaneously and without intention in terms of relevant trait concepts (e.g., Bargh & Thein, 1985; Winter & Uleman, 1984; Carlston & Skowronski, 1994; Uleman, Newman, & Moskowitz, 1996), how contextual priming of trait concepts changes the perceiver's interpretation of an identical behavior (through temporarily increasing their accessibility or readiness to be used; see Bargh, 1989; Higgins, 1989, 1996; Wyer & Srull, 1989, for reviews), and how stereotypes of social groups become activated automatically on the mere perception of the distinguishing features of a group member (e.g., Bargh, 1994, 1999; Brewer, 1988; Devine, 1989). Perceptual interpretations of behavior, as well as assumptions about an individ-

[2] Consistent with this, Wegner and Wheatley (1999) have shown that the introduction of behavior-relevant ideation through an external means (headphones) produces the same "feeling of will" as when the thought occurs internally and intentionally.

Figure 1
Internal (Intentional) and External (Automatic) Sources of Behavior-Relevant Cognitions That Automatically Create a Tendency to Engage in That Behavior



ual's behavior based on identified group membership, become automated like any other representation if they are frequently and consistently made in the presence of the behavioral or group membership features.

The Perception–Behavior Link

Thus, the external environment can direct behavior nonconsciously through a two-stage process: automatic perceptual activity that then automatically creates behavioral tendencies through the perception–behavior link. That is, the entire environment–perception–behavior sequence is automatic, with no role played by conscious choice in producing the behavior. Berkowitz (1984, 1997) posited that such a mechanism underlies media effects on behavior and modeling effects more generally. In his account, perceiving the aggressiveness (for example) of an actor in a movie or television show activated, in an unintentional and nonconscious manner, the perceiver's own behavioral representation of aggressiveness, thereby increasing the likelihood of aggressive behavior. Carver et al. (1983) experimentally tested this hypothesis by first exposing some participants (and not others) to hostility-related words in a first "language experiment," and then—in what was believed to be a separate experiment—putting the participants in the role of a "teacher" who was to give shocks to a "learner" participant. Those who had been "primed" with hostile-related stimuli subsequently gave longer shocks to the learner than did control participants.

Carver et al. (1983) had explicitly told their participants to give the shocks, however, and so the question remained whether external events could induce the idea of the behavior itself. Bargh, Chen, and Burrows (1996) found that it indeed could. When trait constructs or stereotypes were nonconsciously activated during an unrelated task (i.e., "primed"), participants were subsequently more likely to act in line with the content of the primed trait construct or stereotype. In one experiment, participants were first exposed to words related to either rudeness (e.g., rude, impolite, obnoxious), politeness (e.g., respect, considerate, polite) or neither (in the control condition) in an initial "language experiment." They were then given a chance to interrupt an ongoing conversation (in order to ask for the promised next experimental task). Significantly more participants in the "rude" priming condition interrupted (67%) than did those in the control condition (38%), whereas only 16% of those primed with "polite" interrupted the conversation.

Experiment 2 extended these findings to the case of stereotype activation. In a first task, participants were primed (in the course of an ostensible language test) either with words related to the stereotype of the elderly (e.g., Florida, sentimental, wrinkle) or with words unrelated to the stereotype. As predicted, participants primed with the elderly-related material subsequently behaved in line with the stereotype—specifically, they walked more slowly down the hallway after leaving the experiment. Dijksterhuis, Bargh, and Miedema (in press) have shown that these effects also hold for another central feature of the elderly stereotype—forgetfulness. Those participants whose stereotype for the elderly had been unobtrusively activated in the "first experiment" subsequently could not remember as many features of the room in which that experiment was conducted as could control participants. (For similar findings of behavioral consequences of automatic stereotype activation with different stereotypes, including those for professors and for soccer hooligans, see Dijksterhuis & van Knippenberg [1998]).

Consequences for Social Interaction

In real life, stereotypes aren't triggered by lists of words but by skin color, gender characteristics, and other easily detected features of group members (Brewer, 1988)—in

other words, by the actual presence of the person being stereotyped. The effect of stereotypes on behavior could therefore create—entirely nonconsciously—a "self-fulfilling prophecy" (e.g., Rosenthal & Jacobson, 1968; Snyder, Tanke, & Berscheid, 1977) by causing the perceiver to behave in line with stereotypic expectations, to which the stereotyped person might well respond in kind. This possibility was examined in two experiments.

In the first (Bargh, Chen, & Burrows, 1996, Experiment 3), participants who were subliminally presented with faces of young male African Americans subsequently reacted with greater hostility (a component of the African American stereotype [e.g., Devine, 1989]) to a mild provocation, compared with the control condition. Thus the automatic activation of the African American stereotype caused the participants to behave themselves with greater hostility. In the second experiment (Chen & Bargh, 1997), the same subliminal priming manipulation was used but participants then interacted with each other, playing a potentially frustrating game of "Password," in which the object was to get their partner to correctly guess a specific word by giving clues. We recorded both sides of the game, conducted using microphones and headsets, and later had judges rate the degree of hostility of the interaction partners.

As predicted, the partners of participants who had earlier been subliminally primed with African American faces manifested greater hostility than the partners of those who had not been primed. Most important, the primed participants themselves rated their partners as being more hostile than did nonprimed participants. For the primed participants, their own hostile behavior, nonconsciously driven by the content of their stereotype of African Americans, caused their partners to respond in kind, but the primed participants had no clue as to their own role in producing that hostility.

Mental categories are absolutely essential in simplifying and understanding the information-rich environment (e.g., Bruner, 1957; E. E. Smith & Medin, 1981), but stereotypes are maladaptive forms of categories because their content does not correspond to what is actually present or going on in the environment. We reasoned therefore that even though automatic stereotype effects on behavior could cause problems in social interaction as demonstrated by Chen and Bargh (1997), the more natural effect of perception on behavior—when perceptual activity is based on what is actually going on at the moment—would be more positive. In other words, the express link between perception and action likely exists for a good, adaptive reason, such as creating appropriate behavioral readinesses in the absence of conscious guidance and monitoring. Within a social group setting, one is more likely to get along harmoniously with others in the group if one is behaving similarly to them, compared with being "out of sync" and behaving differently. Thus, it makes sense for the default behavioral tendency in an interaction to be based on one's perception of what the other person is doing.

There is a long history of research that suggests that perceptions of the behavior of one's interaction partner leads directly to tendencies to behave that way oneself. This research on mimicry (or "behavioral coordination"; Bernieri & Rosenthal, 1991) includes research on body movements ("movement synchrony"; e.g., Bernieri, 1988; Condon & Ogston, 1966), the imitation of facial expressions of adult models by infants (Meltzoff & Moore, 1977, 1983), and "behavior matching," in which people mimic behavior patterns by adopting similar postures or showing similar body configurations (LaFrance, 1979, 1982; LaFrance & Broadbent, 1976). A major purpose of this latter program of research has been to link similarities in body language to increased feelings of rapport or togetherness between the two people. However, all of these theories hold that the mimicry is for the purpose of establishing a relationship with the other person (i.e., ingratiate him or her). We predicted instead that perceptual effects on bodily movements and postures within social interaction would occur naturally and without the need of a purpose or goal to drive them.

To test this prediction, we (Chartrand & Bargh, 1999a) had participants work on a task along with two different confederates (whom they believed to be fellow participants), one after the other. In each session, the participant and confederate sat at right angles to each other and worked on a task ostensibly to help develop a new projective test based on photographs. We devised this task so as to minimize the chance that the participant would have a goal to form a relationship or make friends with the confederate—the task required the participant to look mostly down at the photographs being discussed, and this helped minimize eye contact. The confederate in session 1 either rubbed his or her face or shook his or her foot, and the confederate in session 2 did whichever mannerism the first confederate did not do. We videorecorded both sessions so that coders could later judge the extent to which participants mimicked the mannerisms of the two confederates. As predicted, participants rubbed their face more times in the presence of the face-rubbing confederate than with the foot-shaking confederate and shook their foot more times with the foot-shaking confederate than with the face-rubbing confederate. No one had any awareness of engaging in these behaviors when asked at the end of the experiment. In a chameleon-like way, the participants' behavior automatically changed as a function of their social environment; as the behavior of their interaction partner changed, so did their own behavior.

Why have humans developed the capacity (and tendency) to behave in line with activated perceptual representations? Is there an adaptive function served by such automatic effects of perception on behavior, by the nonconscious tendency to behave with others as those others are behaving? Our Experiment 2 (Chartrand & Bargh, 1999a) tested the hypothesis that nonconscious mimicry serves a distinct purpose: It increases liking and creates a sense of smooth interactions. As before, each participant worked with another participant—again actually a confederate—on the photograph-projective-test task. But this

time it was the confederate who deliberately mimicked the behavioral mannerisms and body posture of the participants, trying as much as possible to be, in a nonobvious way, the "mirror image" of the participant. When the task was over, participants were asked how much they liked the confederate and how smoothly they thought the interaction had gone. Relative to those in the control condition, participants whose mannerisms and posture had been mimicked found the confederate to be more likable and reported that their interaction had gone more smoothly. The natural tendency (because of the automatic effect of perception on behavior) to take on the posture and behaviors of people with whom one interacts, even when that person is a complete stranger, has the positive function of facilitating social interactions and increasing liking between people.

Tinker to Evers to Chance

Much of social behavior occurs without conscious choice or involvement. One major route between the environment and behavior exists because of the simultaneous operation of two different, automatic connections: One is between environmental events and objects (such as people and their behavior) and the individual's perceptual representations of those objects and events, and the other is between those perceptual representations and behavioral impulses. Each of these components of the sequence—automated perception and the perception–behavior link—are old stories in psychology with long research and theoretical histories. What the recent research has demonstrated, therefore, is that "environment to perception to behavior" operates as efficiently and smoothly in producing social behavior as the legendary Chicago Cubs infielders did in producing double plays.

Goals and Motivations

Although the effect of perception on behavior occurs passively, without the need for a conscious choice or intention to behave in the suggested manner, this does not mean that people do not have goals and purposes and are merely passive experiencers of events. People are active participants in the world with purposes and goals they want to attain. Much, if not most, of our responses to the environment in the form of judgments, decisions, and behavior are determined not solely by the information available in that environment but rather by how it relates to whatever goal we are currently pursuing (Bargh, 1989; Gollwitzer & Moskowitz, 1996; Kruglanski, 1996b; Kunda, 1990; Wicklund & Steins, 1996).

For example, when we are trying to get a new acquaintance to like us and perhaps be our friend, the things about that person to which we pay attention and later best remember are quite different than if we meet the same person in a different context, such as if they are a person to whom we are considering subletting our apartment or someone sitting across from us late at night on the subway. And as for behavioral responses to one's environment, the idea that behavior is largely purposive and determined by one's current goals has long had broad support within psychology—not only among those with a humanistic orientation but among cognitive psychologists (e.g., Miller et al., 1960; Wilensky, 1983) and neobehaviorists (e.g., Amsel, 1989; Hull, 1931; Tolman, 1932) as well.

But if the currently-held goal largely determines whether judgments are made (and the quality of those judgments) and how one behaves, this would seem to rule out much of a role for automatic, environmentally driven influences. How can the environment directly control much of anything if goals play such a mediational role?

The answer is as follows: if (and perhaps only if) the environment itself activates and puts the goal into motion (Bargh, 1990, 1997). To entertain this possibility, one must assume that goals are represented mentally (see Bargh, 1990; Kruglanski, 1996a) and like any other mental representation are capable of becoming automatically activated by environmental features. There is no reason, a priori, to assume that goal representations cannot become automated in the same way that stereotypes and other perceptual structures do, as long as the same conditions for development of automatic activation occur.

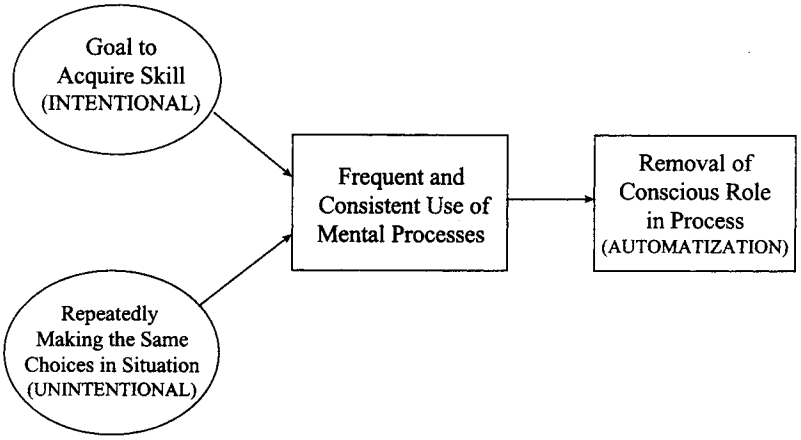
The Acquisition of Automaticity

What are those conditions? As discussed above, the development of most acquired forms of automaticity (i.e., skill acquisition) depends on the frequent and consistent pairing of internal responses with external events (Jastrow, 1906; Shiffrin & Dumais, 1981; Shiffrin & Schneider, 1977). Initially, conscious choice and guidance are needed to perform the desired behavior or to generate what one hopes are accurate and useful expectations about what is going to happen next in the situation. But to the extent the same expectations are generated, or the same behavior is enacted, or the same goal and plan are chosen in that situation, conscious choice drops out as it is not needed—it has become a superfluous step in the process (see Figure 2). According to James (1890),

> It is a general principle in Psychology that consciousness deserts all processes where it can no longer be of use . . . We grow unconscious of every feeling which is useless as a sign to lead us to our ends, and where one sign will suffice others drop out, and that one remains, to work alone. (p. 496)

Intentional acquisition of automaticity. At some level, people are aware of this phenomenon by which conscious choice-points drop out of mental sequences to the extent they are no longer needed (because the same choice is made frequently and consistently at a given point). This is shown by the fact that we often use it in a strategic fashion in order to develop a desired skill, such as driving a car or playing the violin. We purposefully engage in the considerable practice (frequent and consistent performances) required to sublimate many of the components of the skill. In this way, the conscious capacity that is freed up from not having to direct and coordinate the lower level components of the skill can be used instead to plot and direct higher-level strategy during the game or performance. And so, one sees the teenager go from being an overwhelmed tangle of nerves at the first attempts to drive a car to soon being able to do so while conversing, tuning

Figure 2
Intentional and Unintentional Routes to the Automatization of a Psychological Process



the radio, and getting nervous instead over that evening's date.

Unintentional acquisition of automaticity. But what we find most intriguing, in considering how mental processes recede from consciousness over time with repeated use, is that the process of automation itself is automatic. The necessary and sufficient ingredients for automation are frequency and consistency of use of the same set of component mental processes under the same circumstances—regardless of whether the frequency and consistency occur because of a desire to attain a skill, or whether they occur just because we have tended in the past to make the same choices or to do the same thing or to react emotionally or evaluatively in the same way each time. These processes also become automated, but because we did not start out intending to make them that way, we are not aware that they have been and so, when that process operates automatically in that situation, we aren't aware of it (see Figure 3).

This is how goals and motives can eventually become automatically activated by situations. For a given individual, his or her motivations (e.g., to gain the love and respect of one's parents) are represented in memory at the most abstract level of an organized hierarchy, followed by the various goals one can pursue to satisfy those motivations (e.g., to be a success, to become a lawyer, to have a family). Each of these motivations is associated with goals that will fulfill it, and these goals in turn have associated with them the various plans and strategies that can be used to attain the goals (e.g., study hard). These plans are in turn linked to specific behaviors by which the plan is carried out (see Carver & Scheier, 1998; Koestler, 1967; Martin & Tesser, 1989, 1996; Vallacher & Wegner, 1987; Wilensky, 1983). However, an individual's motivations are chronic and enduring over time (e.g., Gollwitzer, 1993; Gollwitzer & Moskowitz, 1996; Ryan, Sheldon, Kasser, & Deci, 1996). And thus, because of the stability over time of one's motivations, in many situations a given individual will frequently and consistently pursue the same goal. If the same goal is pursued within the same situation, then conscious choice eventually drops out of the selection of what goal to pursue—the situational features themselves directly put the goal into operation.

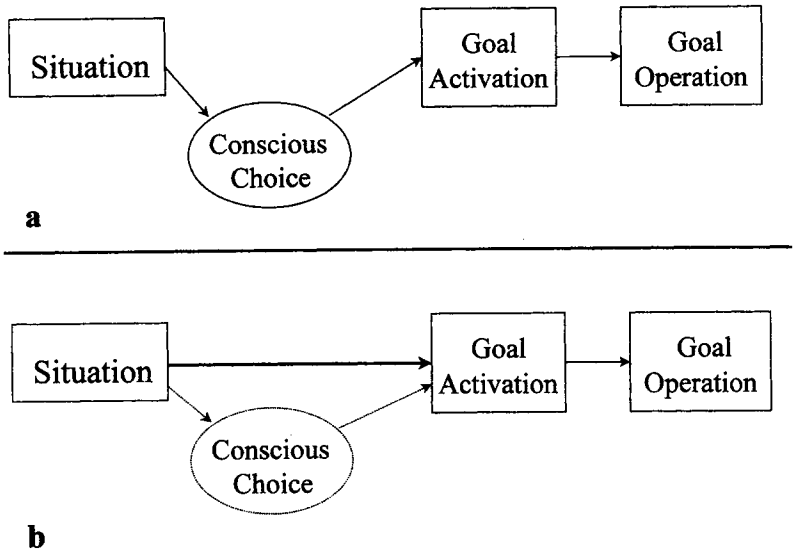
According to the above analysis, people should be able to put goals into gear through external means and thereby "bypass the will" entirely. The goal, once activated, should operate to produce the same effects as if it had been consciously chosen. At the same time, the individual should have no awareness of having pursued that goal. We tested this prediction in several different studies.

Automatic Activation of Cognitive Goals

Two experiments by Chartrand and Bargh (1996) demonstrated that information-processing goals (i.e., the goal to remember information and the goal to form an impression of someone) can be activated nonconsciously and then guide subsequent cognition. In the first experiment, we replicated a classic study on person memory by Hamilton, Katz, and Leirer (1980). In the original study, participants read a series of behaviors with instructions either to form an impression of the actor or to memorize the information. Hamilton et al. found that participants who had been given an impression-formation goal recalled more behaviors and showed greater organization of the material in memory around the several trait categories relevant to the target's behaviors (e.g., sociable, intelligent) than those given a memorization goal.

In our replication, however, participants were given no explicit conscious instructions as to what to do with the behavioral information. Instead, prior to being presented with the various behaviors, either the memorization or the impression-formation goal was unobtrusively primed by means of an ostensible "language test," in which some of the items contained synonyms of memorization (e.g., re-

Figure 3
(a) Conscious, Intentional Mediation of Goal Pursuit Within a Situation and (b) Automatic Activation and Operation of Goals by Situational Features Following Repeated Choice of the Same Goal



tain, hold) or evaluation (e.g., judge, evaluate), respectively. Nonetheless, the identical effects on free recall and on memory organization of the material were obtained as in the earlier study (see Figure 4).

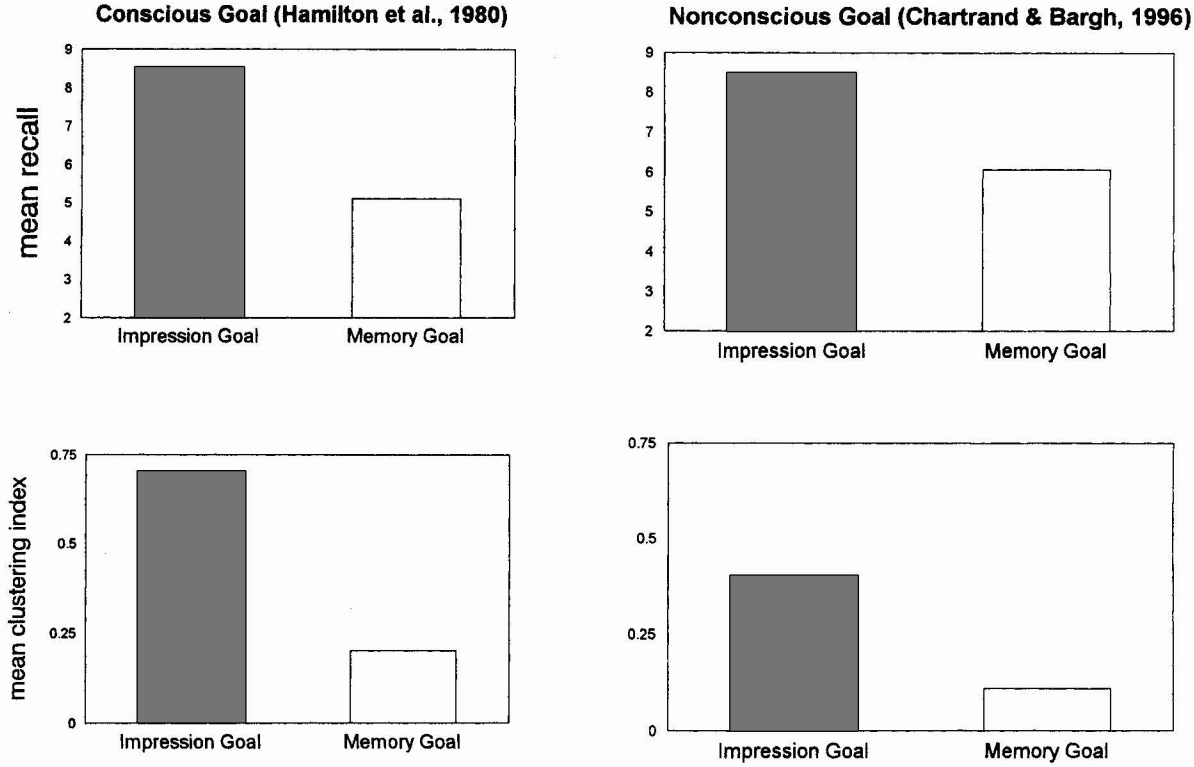
In a second experiment, all participants were given an initial "reaction-time" task, in the course of which some of them were exposed, subliminally, to words related to evaluation and impression formation, whereas the remaining participants were not. We intended this task to prime the goal of impression formation (or not) for participants. Next, in an ostensibly unrelated study, all participants were presented with a series of behaviors purportedly engaged in by a target person; however, as before, participants were not given any explicit instructions as to what to do with the behavioral information (except that they "would be asked questions about it later"). Those participants whose impression-formation goal had been nonconsciously activated were found to have formed an impression of the target during information acquisition, whereas control participants had not. When questioned extensively, no participant showed any awareness of having a particular goal in mind while encountering the information.

Stereotype activation and use. A provocative set of studies by Spencer, Fein, Wolfe, Fong, and Dunn (1998) also provided support for the automatic activation of information-processing goals. These researchers tested the hypothesis that threats to one's self-image automatically trigger the goal of restoring the threatened self-image. One tactic that people often use to restore self-esteem is to denigrate others, especially groups of low power and status within society. Spencer et al. (Experiment 1) replicated procedures of an earlier study that had been successful in eliminating the use of stereotypes (through an attention-demanding secondary task). However, Spencer et al. showed that participants who had just received a blow to their self-esteem, in the form of negative feedback concerning their abilities, still showed evidence of having stereotyped the group member even under these conditions in which stereotyping normally does not occur.

In other words, the threat to self-esteem put into motion a goal to denigrate others that was so automatic and efficient in its working that it produced stereotyping of a minority group member under attention-overload conditions, in which manifestations of stereotyping are normally not obtained. Here is a case in which a situational feature—a failure experience or some other blow to self-esteem—automatically triggers a well-rehearsed goal and plan to restore the sense of self-worth. Unfortunately, it comes at the expense of others.

Corroborating evidence from brain activation patterns. If information-processing goals operate in the same way regardless of how they were instigated (conscious intention vs. directly by the environment), their consequences should be observable not only in the outcome of the process but also in its known mediational brain processes. We have thus far observed the effects of automatic goal operation on dependent measures such as amount of free recall and judgments made about people. Automatically activated goals produce the same outcomes as do goals set in motion by an act of will, but do they do so in the same way, following the same process? The strong form of our argument asserts that they do: Once activated, a goal operates in the same way whether activated by will or by the environment.

Figure 4
Free Recall and Memory Organization (ARC Clustering Scores) With Explicit Instructions to Form an Impression or to Memorize the Behavioral Information and With Primed Impression or Memorization Goal and No Explicit Instructions



Note. The data in the lefthand graphs are from "Organizational Processes in Impression Formation," by D. L. Hamilton, L. B. Katz, and V. O. Leirer in *Person Memory: The Cognitive Basis of Social Perception*, by R. Hastie, T. M. Ostrom, E. B. Ebbesen, R. S. Wyer, D. L. Hamilton, and D. E. Carlston (Eds.), 1980, Hillsdale, NJ: Erlbaum. Copyright 1980 by Erlbaum. Adapted with permission. The data in the righthand graphs are from "Automatic Activation of Impression Formation and Memorization Goals: Nonconscious Goal Priming Reproduces Effects of Explicit Task Instructions," by T. L. Chartrand and J. A. Bargh, 1996, *Journal of Personality and Social Psychology, 71*. Copyright 1996 by the American Psychological Association.

To provide a strict test of this assumption, Gardner, Bargh, Shellman, and Bessenoff (1999) made use of the recent demonstrations of a "right-shift" in lateralized brain activation patterns (occurring about 650 ms after stimulus presentation) when participants are consciously evaluating a series of stimuli (Cacioppo, Crites, & Gardner, 1996). Participants were first primed with stimuli related to evaluation as part of a "verbal task" (i.e., the scrambled-sentence manipulation of Srull & Wyer, 1979). Next they were presented with a series of stimuli but with no explicit conscious instructions except to "listen" to them. Finally, they were presented with a different set of stimuli and were explicitly told to evaluate each one. After a 10-minute videogame distraction task, the same procedure was repeated but with a primed and then an explicit goal to form mental images of each stimulus. (Some participants did the imagery tasks before the evaluation tasks.) During all of these tasks, brain potentials evoked by the stimulus were measured. We could thus compare, on a within-subjects basis, the patterns of brain response under a nonconsciously chosen versus a consciously pursued evaluation goal.

Results confirmed that both the evaluation-priming and the conscious evaluation condition replicated the Cacioppo et al. (1996) findings by showing a significant activation increase in the basal right hemisphere on each trial at about 650 ms postexposure. Neither of the primed-imagery or conscious-imagery conditions produced this pattern. Thus, even though the participants during the operation of the primed evaluation goal did not know they were evaluating and did not intend to evaluate the stimuli (they believed only that they were listening to the names of the stimuli), the same area of the brain unique to the evaluative response reacted to the stimuli as when the participant was consciously evaluating stimuli.

Automatic Activation of Behavioral Goals

Information-processing goals can be put into motion by external events, bypassing the conscious will to become active and produce their effects. Do such automatic goal effects extend to behavioral responses to situations? Bargh, Gollwitzer, and Lee-Chai (1999; see also Bargh & Goll-

witzer, 1994) conducted a series of experiments in which the achievement motive was primed, as part of an allegedly unrelated first "word search" task in which synonyms of achievement (e.g., strive, succeed) were presented (or not, in the control condition). In several experiments, priming the achievement goal in this way caused participants to significantly outperform the control (nonprimed) condition on verbal tasks. As per usual, extensive questioning of the participants revealed no awareness of a possible effect of the priming task on their later performance.

Subsequent experiments provided further evidence that a motivational state had been activated and was guiding participants' performance on the tasks. Goal pursuits have unique properties as pointed to by different theories (e.g., Atkinson & Birch, 1970; Bandura, 1986; Gollwitzer, 1990; Lewin, 1951). One hallmark of an active goal is that the individual will persist on the task, striving to reach the desired goal, in spite of obstacles and interruptions. Therefore, in another experiment, Bargh et al. (1999) primed the achievement goal (or not) and then gave participants three minutes to write down as many words as they could find in a set of seven "Scrabble" letter tiles. They were told over an intercom to stop at the end of the period (the experimenter had left the room)—but hidden videocameras recorded that 55% of those in the achievement condition, compared with only 21% in the control condition, continued to write down words after the stop signal, overcoming the "stop" instructions in order to attain a still higher score. In another study, participants worked on a relatively uninteresting word search task but were then interrupted by a power failure. After power was resumed, those whose achievement goal had been primed (and the goal interrupted) were more likely to opt for returning to the word search task than control participants, who preferred instead the intrinsically more enjoyable "cartoon-humor rating" task option. These and other studies confirmed that nonconsciously activated and operating achievement goals not only produce higher performance but manifest the same classic qualities of motivational states as has been documented for conscious, intentional goal pursuit in years of research.

The process of goal pursuit does not stop with the behavioral attempt to attain the goal, however. Inevitably, the individual either achieves or does not achieve (in varying degrees) the pursued goal and tends to evaluate his or her performance following the attempt. Many researchers have demonstrated the consequences of success or failure at conscious goal pursuit for one's mood and beliefs of self-efficacy (see Bandura, 1997; Gollwitzer, 1990; Heckhausen, 1991). Are there similar consequences of success or failure at nonconscious goals for self-esteem and mood? Our approach suggests that there are such consequences of succeeding or failing, even at goals of which one was not aware of pursuing. Chartrand (1999) has looked beyond the automatic activation and pursuit of a goal to explore what happens once the nonconsciously-held goal is attained or not attained.

In Experiment 1, an achievement goal was primed in half the participants using a scrambled sentence task procedure. Next, participants were led to succeed or fail at this goal through an anagram task, which was downplayed as a "fun" time-filler: The anagrams were either very easy or very difficult to complete in what participants were told was the "average" amount of time. Participants were then administered mood scales as part of an ostensibly separate experiment. As predicted, achievement-primed participants were in a worse mood following the difficult anagram task than following the simple one, but control condition participants' mood was unaffected by the difficulty level of the task. When questioned at the end of the experimental session, no participant reported having a goal to achieve on the anagram task.

This finding was extended in another experiment (Chartrand, 1999, Experiment 3) by replicating the achievement priming and difficult versus easy verbal task procedures. However, instead of completing mood scales at the conclusion of the study, participants worked on a portion of the verbal section of the Graduate Record Examination (GRE), which tested their performance on a task in the same domain as they had just "succeeded" or "failed." If their self-efficacy beliefs were in fact affected by success or failure at the nonconscious achievement goal pursuit (i.e., on the anagram task), then according to Bandura's (e.g., 1977a, 1986, 1990) self-efficacy theory, their subsequent GRE task performance should be affected. That is, they should do better on the GRE if they had previously "succeeded" and worse if they had previously "failed," despite the fact that at a conscious level, they did not know they were pursuing the achievement goal. This is exactly what was found.

Automatic Goal Activation by Situational Features

The studies thus far have demonstrated that goals can become activated by means other than an act of will, and once activated, such goals operate in the same way, and produce the same effects, as when they are put into motion intentionally. However, in these studies the goal was activated by a priming procedure in which the stimuli were semantically related to the goal itself (e.g., achievement, impression formation). Our model, however, posits an automatic link between situational features and the goals that the individual has chronically selected in those situations. A direct test of this hypothesis therefore requires the priming or goal-activating stimuli to be semantically related to the situation, not to the goal itself; otherwise the environment–goal path is assumed but bypassed by the priming manipulation.

To provide this kind of test, we made use of the fact that one situational feature likely to be associated with a person's chronic goal pursuits is that of having (relative) power in that situation. By definition, power is the ability to attain one's desired goals, and so when one is in a position of power those goals are likely to be selected and pursued. In this study (Bargh, Raymond, Pryor, & Strack, 1995), a group already known to have a strong association between power and sex was selected—men who are likely to sexu-

ally aggress, as identified by Malamuth's (1989) Attractiveness of Sexual Aggression scale.

In the first experiment, participants were exposed on each trial subliminally to a prime word related either to power, sex, or neither, and then pronounced out loud a target word that immediately followed (also related either to power, sex, or neither) as quickly as possible. Only for men who were likely to sexually aggress (and so for whom we expected that a strong association between power and sex existed) did presentation of the subliminal power-related prime words facilitate (speed up) their times to respond to the sexual target words. This could only happen if there was an automatic connection between the concepts of power and sex for these men (e.g., Neely, 1977). It is important that the reverse connection—between sex and power—was not found to be present. Thus power as a situational feature automatically activated ideas of sex in these men.

In the second study, participants worked on a task in the presence of an attractive woman posing as another participant. Some of the participants were unobtrusively primed (using the scrambled sentence procedure) with power-related words, and the others were not. For men likely to sexually aggress, priming the idea of power caused them to rate the confederate as being more attractive compared with ratings in the no-priming condition; for men not likely to sexually aggress (who do not possess the automatic power–sex connection) the power priming made no difference in their opinion of the woman's attractiveness. The analogy here is the boss who finds his secretary attractive and believes this to be entirely due to her appearance and personality, completely unaware of the role played in his attraction by his relative power over her. What is the moral? This boss would not at all be attracted to the same woman if she were not his secretary, and he had encountered her instead in the corner coffee shop.

Summary

Goals do not require an act of will to operate and guide information processing and behavior. They can be activated instead by external, environmental information and events. Once they are put into motion they operate just as if they had been consciously intended, even to the point of producing changes in mood and in self-efficacy beliefs depending on one's degree of success or failure at reaching the goal. The goal does not know the source of its activation and behaves the same way regardless of where the command to do its thing came from (see Higgins & King, 1981, for a similar argument regarding the various sources of activation of social–perceptual representations).

Note that this argument applies to complex self-regulatory goals—such as those that serve achievement motives—as well as to simpler behavioral goals. Goals vary in their complexity and in how long they need to operate in order to attain the desired state of affairs. But as the achievement-priming studies have shown, one obtains the same qualities of complex and difficult goal pursuit with situationally (nonconsciously) activated goals, such as persistence and resumption of a task in the face of more intrinsically attractive alternatives, as with consciously selected goals.

Given the severe limitations of conscious self-regulation capacity (e.g., Baumeister et al., 1998; Muraven et al., 1998), it makes sense that even complex self-regulatory goals can operate automatically and efficiently, without needing to be instigated and then guided by expensive acts of will and choice. This limited conscious self-regulation is better spared for those occasions when there are real options and choices of which path to take—that is, for situations in which the same conscious choice is not typically made each time.

Subjective Experience

Emotions and Moods

That one's emotional responses to events occur without one intentionally choosing to have that emotion is hardly a controversial statement. Nearly all would agree that the intentional expression of particular emotions is difficult and that the experience of emotion is largely not a matter of conscious choice (e.g., Damasio, 1994; Wegner & Bargh, 1998; Zajonc, 1998; but see Clore, 1994). Consistent with this point is the fact that research on the role played by conscious processes in emotion focuses nearly exclusively on the intentional control of emotional reactions to events after they have occurred. Recently, LeDoux (1996) has put forth a still more radical view of emotions—that, over time, they become direct responses to the presence of the provoking object or event in the environment, with the emotional process bypassing the stage of conscious (cortical) appraisal of the event.

Because the idea of emotions produced without conscious choice is not novel, we turn to a second form of affective experience. *Moods* have been differentiated from emotions as being of lesser intensity but longer duration (e.g., Clark & Fiske, 1982). Moods also tend to develop more gradually than emotions and so typically are not immediate responses to environmental events. Therefore, there is more of a role to be played by conscious, intentional thought in producing moods than in producing emotions. Here again, however, it is not really a matter of intending to be in a good mood or a bad mood. Rather, effortful and strategic mental processes (e.g., thinking about an upcoming vacation in a time of pressure and stress at work) are used in an attempt to change or control the mood once it has settled in. Generally speaking, then, moods are a second form of affective experience that occur, for the most part, without conscious choice.

Evaluations and Judgments

Alternatively, evaluations, such as global judgments as to whether an event or object is good or bad (see Eagly & Chaiken, 1993), are commonly assumed to be made consciously and intentionally. Many theories of attitude formation and of the evaluative process hold that one weighs the pros and cons, or positive and negative features of the object or event, and with intention and deliberation makes a decision about how one feels about it (e.g., N. H. Ander-

son, 1971; Birnbaum, 1973; see Eagly & Chaiken, 1993, ch. 5). However, prodded by Zajonc's (1980) famous challenge to this position—that "preferences need no inferences"—a substantial body of evidence has now accumulated that one's evaluations often (if not usually) become activated directly, without one needing to think about them, or even be aware that one has just classified the person or event as good or bad. Instead, just the mere presence of the attitude object is sufficient to cause the corresponding evaluation.

The Perception–Evaluation Link

Zajonc (1980) posited the existence of a separate affective information-processing system to account for the fact (among others) that one often knows one's preference among several items before one can explain the reasons for that preference. In response, Fiske (1982) made a counterproposal that a separate mental system was not necessary—one could consider an evaluation as a node in an associational representation of the environmental object. Moreover, this evaluative "tag" (good vs. bad) to the object representation could become activated immediately on perception of the object, following the principle that all elements of integrated schematic representations become active in an all-or-none fashion (see Hayes-Roth, 1977). Fiske (1982) termed this approach to immediate evaluative experience "category-based affect": Evaluations of objects or events come to be components of their perceptual representations and so become activated immediately in the course of perception of the object or event, without one consciously considering or intending to evaluate it.

In many different areas of research (e.g., social judgment, attitudes) it has been found that people classify their experience as either good or bad and do so immediately, unintentionally, and without awareness that they are doing it. These experiments have, for the most part, used the paradigm developed by Neely (1977) to test for unintended, automatic associative connections between different mental concepts. In this paradigm, a prime word is presented for a short time (e.g., 250 milliseconds), followed by a target word to which the participant responds in some way. To the extent that the prime affects responding to the target, this can only be because of an automatic connection between those two concepts, because the 250-ms time delay between their presentations is too short for an intended, conscious expectancy about the target to have developed (Posner & Snyder, 1975). In the case of "automatic evaluation" research, the prime concept on a given trial is the name of a social group (e.g., White, Asian, male) or other attitude object (e.g., Clinton, tuna, baseball), and the target concept is a positive or negative adjective (e.g., beautiful, phony). If the attitude object (prime) is automatically evaluated by participants as "good," it should speed up responses to positive adjectives and slow down responses to negative adjectives and do the reverse for "bad" attitude objects. If the attitude object has no effect on target responses, this means that it was not evaluated automatically.

Many studies have shown this immediate evaluation effect, with the only contentious issue being just how pervasive the effect is. Some studies (e.g., Fazio, Sanbonmatsu, Powell, & Kardes, 1986) have found it limited to a person's strongest, most important attitudes, whereas others (e.g., Bargh, Chaiken, Govender, & Pratto, 1992; Bargh, Chaiken, Raymond, & Hymes, 1996) have shown the effect for all attitude objects studied, varying widely in the "strength" or importance of the attitude. One clue from this research about the nonconscious nature of evaluation is that those studies that have had fewer conscious, intentionally evaluative aspects to them have found the evaluation effect more pervasive and strong. For instance, Bargh, Chaiken, et al. (1996) had participants pronounce the names of the target words instead of evaluate the targets as good or bad and obtained strong evidence of automatic evaluation of weak as well as strong attitude objects. This study also showed, crucially, that automatic evaluation occurs even when the person has no conscious goal to evaluate.

Automatic Effects on Mood Via Automatic Evaluation

Given this ubiquitous automatic evaluation effect, the question arises as to what functions it serves. It is unlikely that such an immediate and basic mental response would exist in isolation, having no "downstream" consequences for thought, behavior, and phenomenal experience. One possible consequence is an effect on mood state. We've all been in certain moods with no good idea why and in a "funk" or just in a good mood, seemingly at random. We usually don't question our good moods—happy to have them whatever the reason—but when we are in a sad or angry mood, we often try to understand why. The problem is that we are often not very good at figuring out the real reason for our mood (e.g., S. Schachter & Singer, 1962; Schwarz & Clore, 1983) and are thus liable to make bad decisions about what to do about it (e.g., not continuing a relationship because the first date happened to be in a bad neighborhood). It is possible, then, that one reason we can be in moods without knowing why is because of the kind of automatic evaluations being made in our current environment. We recently conducted some studies to test this possibility (Chartrand & Bargh, 1999b).

In both studies, we first subliminally presented participants with nouns associated with either strongly positive (e.g., music, friends), strongly negative (e.g., cancer, cockroach), mildly positive (e.g., parade, clown), or mildly negative (e.g., Monday, worm) attitudes for most people. Following this alleged reaction-time task, participants moved on to what they thought was an unrelated experiment, in which they were given two self-report mood measures: the depression subscale of the Multiple Affect Adjective Check List (MAACL; Zuckerman & Lubin, 1965), and an "affect–arousal" (see Salovey & Birnbaum, 1989) mood measure. On both measures, mood was found to be a direct, increasing function of the evaluative nature of the subliminally presented stimuli—strongly negative attitude objects produced the saddest mood, and strongly

positive objects the happiest mood. As predicted, whether a person is making (without knowing it) mainly positive or mainly negative evaluations within the current environment plays out in changes in his or her mood. Because moods last longer than fleeting individual evaluations, they would seem to be a more stable, "rolling average" of the general favorability of one's environment. This is a second way in which automatic, unintended evaluations serve a kind of natural signaling function about the overall safety or danger one is in at the moment.

Behavioral Consequences of Automatic Evaluation

Another possible consequence of automatic evaluative processes is to predispose the individual's behavior toward positive objects and away from negative ones when the conscious mind is elsewhere, thinking about tonight's dinner perhaps or worrying about tomorrow's job interview. And so, Chen and Bargh (1999) tested whether nonconscious evaluations were linked to behavioral dispositions to either approach or to avoid the particular stimulus being evaluated. Recent research has suggested that there is a connection between evaluations and muscular readinesses: Cacioppo, Priester, and Berntson (1993), for example, showed that a participant liked novel stimuli more when his or her arm was currently in a state associated with approach reactions (flexing the arm, as if pulling something toward them) than if it was in a state associated with avoidance reactions (extending the arm, as if pushing something away). Participants were unaware of any relation between the position of their arm and their evaluations of the stimuli. In our experiments, we reversed the causal direction of this effect.

Half of the participants were instructed to push a lever away from them if the stimulus word presented was positive in evaluation and to pull the lever toward them if the stimulus word was negative (the other participants received the opposite instructions). As predicted, people were faster to respond to positive words when they were pulling the lever than pushing the lever, and faster to respond to negative words when they were pushing rather than pulling the lever. In a second experiment, we removed the conscious goal to evaluate the stimuli and just had half the participants push and half pull the lever as quickly as possible when the word appeared, in a straight reaction-time task. Again, those pushing the lever were faster for negative than positive stimuli, and those pulling the lever were faster for positive than negative stimuli, even though nothing in the experiment was explicitly about evaluating anything. Immediately and unintentionally, then, a perceived object or event is classified as either good or as bad, and this results, in a matter of milliseconds, in a behavioral predisposition toward that stimulus. When the conscious mind is elsewhere, automatic evaluative processes prepare the individual to make the appropriate response.

The Relation Between Automatic Evaluations and Conscious Judgments

How do immediate, automatic evaluations impact on deliberate, conscious judgments about the same person, object, or event? The former will occur temporally prior to the latter. Does the automatic influence the conscious? Does it determine it entirely? Ambady and Rosenthal (1992) conducted a meta-analysis of 38 studies of the accuracy of predictions of various behaviors, emotional states, and skills of a target person, made after observations of varying length. Across the studies, the length of time the predictor observed the individual in question ranged from 3 to 300 s. Predictions were made about a variety of outcome variables, such as the effectiveness of a teacher, the quality of a therapist, whether the individual was lying or telling the truth, how he or she was going to vote, how depressed or anxious he or she was, and so forth. Ambady and Rosenthal found that "thin slices" of behavioral and expressive evidence of under 30 s enabled predictions no different in accuracy than those based on observations of 4 or 5 minutes in length. They concluded that a great deal of information about a person is conveyed through unintended and unmanaged expressive behavior, and "these cues are so subtle that they are neither encoded nor decoded at an intentional, conscious level of awareness" (p. 256). More than this, the pick-up of this information occurs almost immediately, and longer, more leisurely conscious observation and deliberation about the judgment to be made leads to judgments no different than those based on only a "thin slice" of evidence.

This conclusion is consistent with other evidence (a) that strangers' personality trait ratings of an individual based on very little and even no interaction with that person are strikingly similar to that person's self-ratings on those traits and (b) that a group of observers rating another person at "zero acquaintance" (they can see the person but have not yet interacted with him or her) have remarkably high consensus about that person's personality (Albright, Kenny, & Malloy, 1988). Certainly, we can quickly pick up information and make judgments about others with little, if any, conscious deliberation. Indeed, other studies have shown that the longer one consciously deliberates about one's preferences and judgments, the less accurate and predictive they become (Wilson & Schooler, 1991).

So it may be, especially for evaluations and judgments of novel people and objects, that what we think we are doing while consciously deliberating in actuality has no effect on the outcome of the judgment, as it has already been made through relatively immediate, automatic means. We know that these evaluations are made constantly without any intention to make them (Bargh, Chaiken, et al., 1996), and so, as Zajonc (1980) first argued, our preferences and many other judgments may be made literally before we know it.

In summary, automatic evaluation of the environment is a pervasive and continuous activity that individuals do not intend to engage in and of which they are largely unaware. It appears to have real and functional conse-

quences, creating behavioral readinesses within fractions of a second to approach positive and avoid negative objects, and, through its effect on mood, serving as a signaling system for the overall safety versus danger of one's current environment. All of these effects tend to keep us in touch with the realities of our world in a way that bypasses the limitations of conscious self-regulation capabilities.

Conclusions

The heavier the burden, the closer our lives come to the earth, the more real and truthful they become. Conversely, the absolute absence of a burden causes man to be lighter than air, to soar into the heights, take leave of the earth and his earthly being, and become only half real, his movements free as they are insignificant. What then shall we choose? Weight or lightness? (Milan Kundera, *The Unbearable Lightness of Being,* 1984, p. 5)

For many years now, researchers have studied two main types of mental processes, both in isolation and in interaction with each other. The two types are known by a variety of names—conscious–nonconscious, controlled–automatic, explicit–implicit, systematic–heuristic—but it is clear which one is "heavy" and which one is "light." To consciously and willfully regulate one's own behavior, evaluations, decisions, and emotional states requires considerable effort and is relatively slow. Moreover, it appears to require a limited resource that is quickly used up, so conscious self-regulatory acts can only occur sparingly and for a short time. On the other hand, the nonconscious or automatic processes we've described here are unintended, effortless, very fast, and many of them can operate at any given time. Most important, they are effortless, continually in gear guiding the individual safely through the day. Automatic self-regulation is, if you will, thought lite—"one third less effort than regular thinking" (Gilbert, 1989, p. 193). The individual is free, in Kundera's (1984) sense, of the burden of their operation.

Some of the automatic guidance systems we've outlined are "natural" and don't require experience to develop. These are the fraternization of perceptual and behavioral representations and the connection between automatic evaluation processes on the one hand and mood and behavior on the other. Other forms of automatic self-regulation develop out of repeated and consistent experience; they map onto the regularities of one's experience and take tasks over from conscious choice and guidance when that choice is not really being exercised. This is how goals and motives can come to operate nonconsciously in given situations, how stereotypes can become chronically associated with the perceptual features of social groups, and how evaluations can become integrated with the perceptual representation of the person, object, or event so that they become active immediately and unintentionally in the course of perception.

To produce the empirical evidence on which these claims rest, we and others have conducted a variety of experiments in which goals, evaluations, and perceptual constructs (traits, stereotypes) were primed in an unobtrusive manner. Through use of these priming manipulations, the mental representations were made active to later exert their influence without an act of will and without the participants' awareness of the influence. Yet in all of these studies, the effect was the same as when people are aware of and intend to engage in that process. Thus it is no coincidence that Figures 1, 2, and 3 have the same essential structure, because the underlying principle is the same in all three: Mental representations designed to perform a certain function will perform that function once activated, regardless of where the activation comes from. The representation does not "care" about the source of the activation; it is blind to it and has no "memory" about it that might cause it to behave differently depending on the particular source. The activated mental representation is like a button being pushed; it can be pushed by one's finger intentionally (e.g., turning on the electric coffeemaker) or accidentally (e.g., by the cat on the countertop) or by a decision made in the past (e.g., by setting the automatic turn-on mechanism the night before). In whatever way the start button is pushed, the mechanism subsequently behaves in the same way.

And so, the evaluations we've made in the past are now made for us and predispose us to behave in consistent ways; the goals we have pursued in the past now become active and guide our behavior in pursuit of the goal in relevant situations; and our perceptions of the emotional and behavioral reactions of others makes us tend to respond in the same way, establishing bonds of rapport and liking in a natural and effortless way. Thus "the automaticity of being" is far from the negative and maladaptive caricature drawn by humanistically oriented writers (e.g., Bandura, 1986; Langer, 1997; Mischel et al., 1996); rather, these processes are in our service and best interests—and in an intimate, knowing way at that. They are, if anything, "mental butlers" who know our tendencies and preferences so well that they anticipate and take care of them for us, without having to be asked.

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