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Conditional Automaticity: Varieties of Automatic Influence in Social Perception and Cognition

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Although the notion of automatic cognitive processing has a tradition as old as the field of psychology itself (see review by James, 1890; also Bargh, 1984; Gilbert, Chapter 6, this volume), the widespread application of the concept to social perception, judgment, and behavior is a relatively recent occurrence. Its renaissance can be traced to the introduction of a theoretical distinction between "automatic" and "conscious" or "controlled" processes in the mid-1970s—a distinction that since has become increasingly important for an ever-wider range of social phenomena.

An automatic thought process was initially defined as one that is capable of occurring without the need for any intention that it occur, without any awareness of the initiation or operation of the process, and without drawing upon general processing resources or interfering with other concurrent thought processes (LaBerge & Samuels, 1974; Posner & Snyder, 1975; Shiffrin & Schneider, 1977). In other words, an automatic process was defined as satisfying the criteria of being *unintentional, involuntary, effortless* (i.e., not consumptive of limited processing capacity), *autonomous,* and occurring *outside of awareness*. Currently, the consensus definition of automaticity remains that it possess all of these features (see reviews by Johnson & Hasher, 1987; Kahneman & Treisman, 1984; Logan & Cowan, 1984; Zbrodoff & Logan, 1986); this unitary nature is what distinguishes the concept of automaticity from each of its defining qualities (see also Fiske, Chapter 8, this volume).

Conscious or controlled processes, on the other hand, were defined as

those that are under the flexible, intentional control of the individual, that he or she is consciously aware of, and that are effortful and constrained by the amount of attentional resources available at the moment (see also Atkinson & Shiffrin, 1968; Logan, 1980; Neely, 1977; Shallice, 1972). Any single cognitive process, then, was thought to be either controlled or automatic (although most processing *tasks* are sufficiently complex to involve a combination of automatic and controlled components; e.g., Shiffrin & Schneider, 1977), according to this dual-mode model of cognition.

AUTOMATICITY AND ITS DISCONTENTS

It is a central aim of this chapter to persuade the reader that the assumption that a given cognitive process is either automatic or controlled by these definitional criteria is incorrect. What is more, my thesis is that this assumption is misleading, resulting in faulty conclusions regarding the nature of social-cognitive processing. Let us start with the assumption that a cognitive process is either automatic or controlled, according to the definitional criteria of the two types. It logically follows that if a process fails to meet one or more of the criteria for one type, then it must be, by default, an instance of the other form of processing. For example, if a process is found to occur effortlessly, or outside of awareness, then it may be concluded that the process is automatic because, by definition, it is *not* a controlled process. On the assumption that the automatic and controlled processing modes are mutually exclusive and exhaustive, if a process does not meet all of the criteria for an automatic process, then it must be of the controlled variety. Ascribing the quality of automaticity or control to a process by default in this manner is therefore a direct consequence of assuming that the automatic–controlled dichotomy exhausts the universe of cognitive processes.

What Does It Mean for a Social-Cognitive Process to Be "Automatic"?

Because, by definition, a controlled process is not unintentional, or effortless, or autonomous, or involuntary, or occurring outside of conscious awareness, this "automaticity by default" has meant in practice that a social-cognitive process has been considered to be automatic if it possesses *any* of these qualities. Thus, automaticity has been invoked to explain the following processing effects:

1. Effects of which a person is *unaware* (in making attributions—Taylor & Fiske, 1978; during impression formation—Higgins & King, 1981; that result in emotional experience—Strauman & Higgins, 1987).

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2. Effects that are relatively *effortless,* such that they will operate even when attentional resources are scarce (e.g., Bargh & Thein, 1985; Bargh & Tota, 1988; Gilbert, Pelham, & Krull, 1988).
3. Effects that are *unintentional* and occur even in the absence of explicit intentions and goals (e.g., Winter & Uleman, 1984).
4. Effects that are *autonomous,* in that they will run by themselves to completion, without the need of conscious attentional monitoring (e.g., Smith, Branscombe, & Bormann, 1988; Smith & Lerner, 1986).
5. Effects that are *involuntary* or uncontrollable even when one is aware of them (e.g., Bargh & Pratto, 1986; Higgins, Chapter 3, this volume; Wegner & Schneider, Chapter 9, this volume).

It is clear from these examples that the concept of automaticity has become important in understanding a wide variety of social-perceptual and social-judgmental phenomena. It is also apparent that several of the component criteria of automaticity have been investigated in their own right because of their relevance for these research domains. But as the present review of the social research into automatic phenomena indicates, most of these findings meet only one or two of the defining criteria of automaticity, and not the others.

A few examples may illustrate the point to be developed more completely later. Several studies of automaticity in impression formation (e.g., Bargh & Thein, 1985; Gilbert & Krull, 1988) and social judgment (e.g., Smith & Lerner, 1986) have shown subjects to be able to engage in task-relevant forms of processing very efficiently, even when attentional resources are scarce. Because these routinized modes of thought are relatively independent of the availability of conscious attention, they are automatic in the "efficient" or "effortless" sense. But in these studies, subjects were given explicit instructions by the experimenter to form an impression or make the judgment. Thus, it could not be said that the subjects performed these cognitive operations unintentionally or involuntarily, or that they were not aware of doing so or could not stop themselves.

By the same token, many processing effects that have been shown to be unintentional depend on conscious and attentional processing of some form for their occurrence. Examples of these unintended outcomes of intended and aware thought are the activation of accessible attitudes upon perception of the attitude object (Fazio, Sanbonmatsu, Powell, & Kardes, 1986), trait categorizations of behavioral information (Uleman, 1987; Winter & Uleman, 1984), and most category-priming demonstrations (e.g., Higgins & King, 1981; Wyer & Srull, 1986).

Intention, Awareness, Efficiency, and Control as Separate Issues

These examples, and the other research to be reviewed herein, illustrate that there is a problem both with the unitary definition of automaticity

and with the assumption that automatic and controlled processes, as consensually defined, exhaust all possibilities. These difficulties with the concept of automaticity are not unique to social-cognitive research by any means, having been noted and debated for several years within cognitive psychology. Whereas in social cognition the research emphasis in this decade has been on documenting the automatic (albeit single-criterion—unintended or efficient) aspects of perceptual and judgmental processes previously assumed to be conscious and deliberate, in cognitive psychology just the reverse has been true. Processes previously believed to be prototypic examples of automaticity—for instance, the activation of a word's meaning during reading; effects of semantic priming and spreading activation; the Stroop color–word interference effect; and well-practiced visual target detection—have all been shown to require some attentional resources (and thus not to be completely effortless), and not to occur if the subject has certain processing goals (e.g., Dark, Johnston, Myles-Worsley, & Farah, 1985; Hoffman & MacMillan, 1985; Kahneman & Henik, 1981; Ogden, Martin, & Paap, 1980). In addition, as Logan and Cowan (1984) have pointed out, most processes that are popularly considered to be automatic, such as typing, reading, driving, and walking, are actually highly controlled, in that they are intentional and stoppable. Furthermore, one is usually aware of such routinized action sequences while they are occurring, although one does not need to pay active attention to them because of their autonomous nature (Norman & Shallice, 1986). It sometimes happens that people are aware of performing complex actions, even though they did not intend them, as in the "action slips" documented by Norman (1981).

Thus, attention, awareness, intention, and control do not necessarily occur together in an all-or-none fashion. They are to some extent independent qualities that may appear in various combinations. As there is ample evidence that automatic processing is not unitary, such that all of its component properties do not co-occur, so also are there no compelling theoretical reasons to believe in its unitary nature (Zbrodoff & Logan, 1986). On these grounds, Zbrodoff and Logan (1986) concluded that it would be more profitable to investigate the individual properties separately.

It is clear that continuing to treat intentionality, awareness, efficiency, and control as a composite, all-or-none package may well confuse rather than clarify these component issues, which are of great importance in their own right to the study of social perception, judgment, and behavior. Take, for example, the conclusion that stereotyping is "automatic" because one finds that it is an efficient and easily activated process. As Fiske (Chapter 8, this volume) argues, consumers of such research in the legal arena may quite logically take this conclusion to mean that there is evidence that stereotyping is uncontrollable as well, and there would be important and far-reaching consequences for findings of responsibility in discrimination cases. More than that, studies that have found stereotype activation to be

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Another example is the proposal that dispositional attributions are made "automatically" because they are made more easily and efficiently than situational ones (e.g., Gilbert, Chapter 6, this volume; Smith & Miller, 1983; Winter, Uleman, & Cunniff, 1985); this conclusion has been interpreted to mean that such judgments often are made unintentionally and involuntarily (e.g., Hastie & Park, 1986; Trope, 1986). Whether attributions are made with little or no conscious consideration, or only through a deliberate weighing of evidence following certain rules, has been an issue of great theoretical importance within attribution theory and research for many years (e.g., Hansen, 1980; Jones, 1979; Kruglanski, 1980; Langer, 1978; Winter & Uleman, 1984).

All Automatic Processing Is Conditional

If one examines the uses of the label "automatic" within social psychology, one finds that some of the processes are intended, whereas others require recent conscious and intentional processing of related informational input, or attentional resources. Still others are not intended, but do depend on goal-driven processing of a certain kind. As discussed in this chapter, the obtained automatic effects fall into certain regular classes: those that occur prior to conscious awareness ("preconscious" automaticity); those that require some form of conscious processing but that produce an unintended outcome ("postconscious" automaticity); and those that require a specific type of intentional, goal-directed processing ("goal-dependent" automaticity). Subtypes within each of these major classes can also be delineated, based on variations in their necessary instigating conditions. These types of processes clearly vary as to the conditions needed to produce the effect in question: whether subject's awareness of certain stimuli is a requirement, whether focal–spatial attention is necessary, and whether a certain goal or intention must be operative.

All automaticity is conditional; it is dependent on the occurrence of some specific set of circumstances. A cognitive process is automatic *given* certain enabling circumstances, whether it be merely the presence of the triggering proximal stimulus, or that plus a specific goal-directed state of mind and sufficient attentional resources. The various phenomena labeled as "automatic" within social psychology vary greatly in the number and quality of the conditions explicitly required for them to occur. Moreover, there are many such "automatic" effects that may have implicit or "hidden" preconditions, due to the specifics of the experimental procedures. Numerous studies administer mood or attitude or personality inventories just prior to experimental tests of the "automaticity" of the subject's cognitive processing in the domain of the questionnaire. Given what is known

about the residual effects of recent conscious thought (see below; also Higgins & Bargh, 1987; Wyer & Srull, 1986), one cannot tell from such experimental designs whether the obtained effect would occur *without* the extensive prior thought (see Bargh, 1984; Bargh & Tota, 1988). Another difficulty in interpretation results from the specific instructions given the subjects. If one instructs them to form an impression of a target person, for example, and then finds that they do so even when operating under severe attentional shortage (Bargh & Thein, 1985; Gilbert et al., 1988), one cannot conclude that such impression formation, however efficient and effortless, would have occurred in the absence of the explicit goal. If subjects have the task of differentiating between various stimuli, and then learn to do so (e.g., Lewicki, 1986b), their pattern identification abilities have not yet been shown to be independent of the intention and goal of learning the patterns.

When such implicit assumptions are put to the test, they are often found to be invalid. For example, impressions are not always formed in the absence of an impression formation goal (see Bargh & Thein, 1985, p. 1143; Sherman, Zehner, Johnson, & Hirt, 1983; Wyer & Gordon, 1982; Wyer & Srull, 1986), and implicit pattern learning does not occur unless one attends to the task and attempts to learn the target pattern (Nissen & Bullemer, 1987).

Johnson and Hasher (1987) concluded from their review of automaticity research that one must be very careful to specify all of the necessary conditions for producing a given effect (instructions, attention availability, direction of focal–spatial attention, etc.), because "theoretical ideas based on incomplete task analyses are likely to be wrong" (p. 655). If such task analyses are important to a complete understanding of the operation of the relatively simple cognitive tasks reviewed by Johnson and Hasher (e.g., lexical decision, word pronunciation), then they are even more critical for phenomena of interest in social perception and cognition.

The Ecology of Automaticity

Deconstructing the concept of automaticity into its component features also facilitates an assessment of the ecological validity of the phenomenon in question by focusing attention on the extent to which the phenomenon possesses each of the separate qualities, instead of just one or two. Among the issues that this would help to address are the following:

1. If the effect requires an explicit intention or goal on the part of the subject, how likely is the person to have such a goal outside the laboratory? Are there individual differences in motivation, values, or interests, for example, that would make it more or less likely for a person to have this goal or intention in the first place, and if so, to have it to a greater or lesser degree? And does the effect depend on not only the specific intention, but one of a certain minimal strength? Are there situational factors that are likely to produce such intentions?

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2. If the effect requires the availability of attentional capacity, then will such capacity be available in natural settings? For example, findings in the area of person memory (Srull, 1981, Experiment 4), causal attribution (see Gilbert et al., 1988), impression formation (Bargh & Thein, 1985; Strack, Erber, & Wicklund, 1982), and stereotyping (Pratto & Bargh, 1988) are different under a shortage of attentional resources than with ample attention available, and such minimal attention allocation may be the norm outside the laboratory.

3. Is the effect controllable, or will it occur even when the person does not intend it and is trying to stop it (see Tait & Silver, Chapter 12, this volume; Wegner & Schneider, Chapter 9, this volume)? If a person is not aware of the effect, will making the person aware allow him or her to control it (see Moretti & Shaw, Chapter 13, this volume)?

Clearly, the fewer the conditions that have to be in place to produce an effect, and the more likely those conditions are to occur in the social environment, the more general and constant the effect will be. Cognitive processes that require only registration of the triggering proximal stimulus pattern, and that will occur even if the person is trying to prevent them, will be the most generally influential in ongoing and subsequent judgment and behavior. These have been referred to by Fodor (1983) as "input processes"; they are unavoidable and uncontrollable (e.g., basic sensory encoding). For example, try as one might, it is not possible to see the oranges in a bowl as actually being purple, or the sky at noon as a vivid red. On the other hand, processes that require intention and attentional resources in addition to the triggering stimulus pattern are less general, because attention may not be available and other intentions might be in place when the proximal stimulus event occurs. The prediction and understanding of any given phenomenon will be greatly enhanced by the discovery of those component processes that automatically occur given the least provocation.

In summary, the concept of automaticity continues to be important to understanding social perception, judgment, and interaction, but it has assumed a variety of meanings that correspond to its separate defining qualities. If one is not aware of a process, or does not need to consciously monitor its operation, or does not intend it, the process often is considered to be automatic in nature, despite the fact that it is manifestly controlled and conscious in all other respects. This problem can be traced to the underlying assumptions that the defining features of automaticity will necessarily co-occur, and that the automatic–controlled dichotomy comprises the entire set of cognitive processes. However, it is becoming ever more obvious that these assumptions are inherently invalid.

As noted elsewhere in this volume as well (e.g., see the chapters by Fiske, Gilbert, Logan, and Uleman), the multiple meanings of the concept of "automaticity" that are currently in use have resulted in some confusion as to what one means by the term. Because social-psychological research is not really concerned with the question of whether automatic processing

exists in its purest form, but rather with the individual component issues of intentionality, awareness, autonomy, and efficiency, the field would be better served if research explored these separate issues in their own right. Namely, does a process require attention? Does it require one's intention that it occur? Does it occur involuntarily? Does it depend on recent preactivating or priming experience? In other words, theory should conceptualize the judgment or behavior process of interest as automatic *given* certain necessary conditions, and research should focus on establishing those minimal conditions needed to produce the effect.

VARIETIES OF AUTOMATICITY

The several demonstrations of automatic processing of social stimuli have varied widely as to their necessary conditions. Some require conscious awareness and attentional processing; some need preactivation alone without necessarily any awareness of the preactivating event; some are dependent on specific processing goals; and some require the intention that the

TABLE 1.1. Necessary Conditions for Each of the Several Varieties of Automatic Processing

Variety of automaticity	Precondition				
	Awareness of instigating stimulus	Specific processing goal in place	Intention that effect occur	Allocation of focal attention to process	Conscious guidance to completion
Preconscious					
Construct activation	No	No	No	No	No
Evaluation and affect	No	No	No	No	No
Postconscious					
Reverberatory	Yes	No	No	No	No
Residual	Yes	No	No	No	No
Goal-dependent					
Unintended					
Side effect	Yes	Yes	No	Yes	No
Context-dependent	Yes	Yes	No	No	No
Intended					
Autonomous procedures	Yes	Yes	Yes	No	No
Incubation	Yes	Yes	Yes	No	No

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Preconscious Automaticity

Preconscious processes require only the triggering proximal stimulus event, and occur prior to or in the absence of any conscious awareness of that event. In these forms of environmental analysis reside the interpretative analyses that produce the "givens" of consciousness and the starting point of controlled processing. Preconscious processes operate uncontrollably, autonomously, involuntarily, and nearly effortlessly. Fodor (1983) has likened preconscious input analyses to reflexes, as "they are automatically triggered by the stimuli they apply to" (p. 55).

To be precise, inside the precondition of the presence of the relevant proximal stimulus event is the additional one that the environmental event to be preconsciously analyzed be detected by the sensory apparatus. This requires, at least in the case of vision, the allocation of spatial attention to the relevant part of the environmental field (Kahneman & Treisman, 1984). In other words, a modicum of attention allocation may be necessary for registration of the proximal stimuli, even though the analysis of the stimulus takes place prior to conscious awareness (see Kahneman & Treisman, 1984, and Norman & Shallice, 1986, for more on the distinction between attention and awareness). Because many such preawareness and involuntary processes have been shown to require some minimal amount of attentional processing (Dark et al., 1985; Kahneman & Treisman, 1984), the term "preconscious" is preferred here to the term "preattentive" (e.g., Neisser, 1967), and the strong claim of completely effortless preconscious processing is not made here (see Kahneman & Treisman, 1984).

The importance of the preconscious variety of automaticity is twofold. First of all, the validity of the interpretations and evaluations that are made prior to awareness and that constitute one's subjective experience are then trusted as accurate and valid, precisely because the person is not aware of any inferential activity (Johnson & Raye, 1981; Jones & Nisbett, 1971). Thus, these interpretations are not questioned, but are seen as undoubtedly valid sources of information, and are as a result a prime source of judgments and decisions (Andersen, 1984; Andersen & Ross, 1984; Bargh, 1988; Jacoby & Kelley, 1987; Jones & Nisbett, 1971). Second, there is an increasingly influential model of consciousness (to be discussed presently), to the effect that consciousness is a *construction* of the world that integrates all current sources of activated memory locations, both those preconsciously and those intentionally activated. Thus, preconscious anal-

yses also may play an indirect role in memory and judgmental processes, even when the output or products of such analyses are not expressed in phenomenal awareness, through their influence on the outcome of the judgment or interpretation that is made consciously.

Chronically Accessible Social Constructs

Two major forms of chronic preconscious interpretative influences have been studied in social cognition: social construct activation and evaluation extraction. Through frequent and consistent activation by the environment, social constructs representing types of behavior (e.g., honesty, selfishness, aggressiveness) become capable of being activated by the relevant proximal stimulus information itself, without the need for conscious intention or goals or attention, or any awareness that the information has been thus categorized (Bargh, 1984; Higgins & King, 1981). As a consequence, chronically accessible constructs are more likely to become activated by relevant information than are constructs that require intentional, goal-directed processing to be used. Considerable individual differences emerge in the content of the chronically accessible constructs one possesses (Higgins, King, & Mavin, 1982); these are presumably due to differences in idiosyncratic life experiences (i.e., long-term social environment).

The interpretative influence of chronically accessible constructs was demonstrated in one study (Bargh, Bond, Lombardi, & Tota, 1986). We found that subjects with a chronically accessible construct for kind or shy behavior were more likely to interpret ambiguously kind or shy target behaviors in terms of that trait than were other subjects, in the absence of any priming or preactivation of these constructs, and in an experimental session held 2 months after the assessment of chronicity was made.

The implication that chronically accessible constructs should exert a preconscious influence on the selection of social information, so that chronic construct-relevant information would be more likely to influence conscious judgments, has found empirical support as well. Higgins et al. (1982) found that subjects were more likely to later remember those behaviors of a target person that corresponded to the subjects' chronically accessible constructs than those that did not. Using the Stroop color–word technique to test the involuntary and uncontrollable aspects of preconscious construct activation (see Logan, 1980; Kahneman & Treisman, 1984), we (Bargh & Pratto, 1986) found that subjects required more time to name the color of trait adjectives that corresponded to their chronically accessible constructs than those that corresponded to their inaccessible constructs. As the word meanings were irrelevant to the color-naming task, it was in the subjects' interest to ignore them, yet the chronically accessible material proved more of an involuntary distraction. And information relevant to subjects' self-concept also caused greater distraction from the conscious and intentional task (i.e., shadowing a list of words in the dichotic listening task), even

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These structures would thus constitute a preconscious influence on the interpretation of target behaviors and on decisions about the targets (see Bodenhausen & Wyer, 1985). Several studies have documented the unintentional aspects of stereotype activation (e.g., McArthur & Friedman, 1980; Mills & Tyrrell, 1983), and others have shown the efficient and relatively effortless nature of stereotype operation (Devine, 1987; Pratto & Bargh, 1988).

Evaluation and Affect

The second major form of preconscious meaning extraction that has been investigated is affect or evaluation (see Bargh, 1988; Spielman, Pratto, & Bargh, 1988, for reviews). Johnson (1983), Gordon and Holyoak (1983), Jacob and Kelley (1987), and Mandler and Nakamura (1987) have discussed how liking for a person or other environmental object or event may be due to the buildup of a sensory representation of the physical features of the stimulus that is not available to conscious introspection. Theoretically, the greater ease or fluency with which the sensory representation enables the stimulus to be perceived results in a positively valenced feeling of familiarity that is misattributed by the subject to qualities of the stimulus itself (Zajonc, 1968, 1980; but see Mandler, Nakamura, & Van Zandt, 1987). Thus, the mere exposure effect of frequency of experience on liking may be produced entirely preconsciously (Kunst-Wilson & Zajonc, 1980; Seamon, Brody, & Kauff, 1983; Wilson, 1979). The importance of such automatic and preconsciously extracted affect has been demonstrated for concurrent and subsequent consciously made social judgments and behavioral decisions. Bornstein, Leone, and Galley (1987) subliminally presented a photograph of a confederate repeatedly to subjects in a first task, and then the subjects interacted with him and another confederate in a subsequent group decision-making task. During the group discussion, subjects expressed agreement with the confederate whose photograph they had been exposed to reliably more often than they did with the other confederate, apparently because they had greater liking for the target confederate due to their prior subliminal processing of his facial features.

Postconscious Automaticity

Another variety of automaticity is that which depends on recent conscious experience and attentional processing of some type for its occurrence. This postconscious influence on processing can be defined as the nonconscious consequences of conscious thought. The conscious experience may be intentional, or it may be unintentional—what is important is that the material be in awareness. Much of the contents of awareness are driven by the environment, and one does not intend or control the flood of these perceptual experiences, yet they should still result in postconscious effects.

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(with strength defined in terms of speed of evaluation) automatically activate that evaluation upon the mere perception of the object, person, or event in the environment. Fazio et al. (1986) demonstrated the automatic evaluation effect by employing the names of subjects' strong-attitude objects as primes in an evaluative decision task. Subjects were instructed to attend to each prime in order to be able to repeat it out loud at the end of the trial.[2] When presented immediately before adjectives of the same valence, the names of these strong-attitude objects facilitated the task of evaluating the adjectives, compared to a baseline prime condition; when the object names were presented before oppositely valenced adjectives, decision times were slowed. Such priming influences did not accrue for weak-attitude objects (i.e., objects to which subjects were slow to respond). Apparently, conscious attention to a strong-attitude object name automatically activated the evaluation associated with it, so that subjects were faster to make that evaluative response for the target adjective and slower to make the opposite evaluative response (presumably due to the need to inhibit the primed evaluation from becoming the [incorrect] response; see Logan, 1980; Neely, 1977).

There was some indication in the Fazio et al. (1986) study that the automatic evaluation effect might not be restricted to just the most strongly held attitudes. In their Experiment 3, the evaluative priming effect was obtained even for attitude objects that were relatively weak (i.e., slowly evaluated). In a recent series of experiments, we (Bargh, Chaiken, Pratto, & Govender, 1988) found that at least 70% of the attitude objects in the Fazio et al. (1986) study showed the automatic evaluation effect, with the size of the effect nearly identical throughout the range of attitude response speeds. The only attitude objects that did *not* show the effects were the very weakest, and even these were found to show the effect under certain experimental conditions. Thus, the automatic and preconscious activation of evaluations may be a very general and pervasive phenomenon.

An intriguing aspect of these findings is that activation was found to spread from one activated representation to others of similar valence. Thus, even though Johnson and Tversky (1983) varied the degree of similarity between the event that subjects were asked to think about in order to induce the desired affective state, and the event of which they judged the likelihood, the degree of similarity did not affect the results. For example, subjects were more likely than a control group to believe they would get cancer, whether they had just read about someone who had cancer or someone who died in a fire. Moreover, the preconscious evaluative priming effects obtained in the Fazio et al. (1986) and Bargh, Chaiken, et al. (1988) studies, as well as by Greenwald, Liu, and Klinger (1986), occurred for *randomly* paired attitude objects and adjectives of the same valence, such that no other features besides valence were shared. On the basis of these findings, in which evaluative similarity was the only linking feature between prime and target concepts, it seems that there may exist separate

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Postconscious effects due to mood-congruent spreading activation often involve declarative knowledge as well as episodic memories; temporary construct accessibility may be increased either by recent activation by construct-relevant features or by activation spreading to that construct from other representations to which it is linked by evaluative valence (see Bargh, 1988). For example, subjects are most likely to incidentally recall those self-relevant trait adjectives that are congruent in valence with their experimentally induced mood state (Brown & Taylor, 1986). And not only can mood states influence construct accessibilities, but the reverse is true as well: Strauman and Higgins (1987) showed that presenting a subject with trait adjectives in a sentence completion task that were related to that subject's specific emotional vulnerabilities (e.g., agitation, depression) automatically activated those emotions on line, as indicated by physiological reactions.

Residual Effects ("Priming")

The best-known example of residual postconscious influences is the demonstration of temporary category accessibility effects. In these experiments, a social construct such as *hostile* or *independent* is activated by relevant information in one context, and the subject is then shown to be more likely to use that construct to interpret the behavior of a target person in an apparently unrelated second task (see Higgins, Chapter 3, this volume; see also reviews by Higgins & Bargh, 1987; Wyer & Srull, 1986). The activation of the construct in the "priming" task is typically nonsocial in nature, such as having subjects use construct-related words in a sentence construction task (e.g., Srull & Wyer, 1979), or presenting the priming stimuli as "memory words" to hold in mind while performing another task (Higgins, Rholes, & Jones, 1977).

Recent category-relevant conscious experience thus increases the accessibility (and likelihood of use) of that category in subsequent processing for some time thereafter, after the relevant input is no longer in conscious awareness (see Higgins, Bargh, & Lombardi, 1985; Lombardi, Higgins, & Bargh, 1987). The primed constructs, while active, exert a contextually preconscious influence on the selection and interpretation of relevant proximal stimuli.

Residual postconscious or priming effects have been obtained for more abstract memory representations as well. The self-concept may be primable; Fenigstein and Levine (1984), for example, found that subjects who were instructed to use the pronouns "I" and "me" in a preliminary task subsequently made more self-attributions in an ostensibly unrelated task than did subjects who had earlier used third-person pronouns (see also Higgins, Bond, Klein, & Strauman, 1986, Study 2; Pyszczynski & Green-

berg, 1987; Rhodewalt & Agustsdottir, 1986). And Chaiken (1987) and her colleagues have shown in a series of studies that simple decision rules for use in processing persuasive messages may be primable by recent experience. Subjects were exposed to a "rule of thumb" (e.g., "More is better," "Experts can be trusted") as the theme of a message in a first experiment. In an ostensibly unrelated second experiment that followed immediately, subjects were presented with a persuasive message, and those who had been primed with a decision rule were more likely to use it to evaluate the validity of the message than were nonprimed subjects. It should be noted that what was postconsciously automatic in these studies was not the processing of the persuasive message per se, which was clearly intentional, but the adoption of a particular heuristic strategy (as opposed to a more controlled and systematic mode) with which to evaluate the message (Sherman, 1987, pp. 80–81).

Postconscious Sources of Preconscious Influence

The preconscious automatic influences discussed earlier are structural interpretative biases that operate on the relevant informational input even when in a dormant (i.e., not recently active) state. What might be termed "contextual preconscious" influences result from the priming or preactivation of social constructs or knowledge structures, so that the temporarily active structures simulate the chronically active, preconscious processes in their effects on selection and interpretation of environmental information. The only difference between chronic and contextual preconscious automaticity in terms of their necessary preconditions is therefore that the latter and not the former requires an activating stimulus event prior to the automatic influence on subsequent interpretation of informational input. To the extent that such priming or preactivation requires the intervention of conscious processing and attention, the consequence influence on processing is properly considered as postconscious in nature.

Postconscious states thus can result in preconscious influences on subsequent processing. The similarity of chronic and contextual preconscious influences is shown by the fact that they independently produce the same effects on the interpretation of ambiguously relevant social events. The Bargh et al. (1986) experiment was designed to assess how chronic and contextual sources of preconscious construct accessibility influences interacted. Thus, half of the chronic and half of the nonchronic subjects were also primed outside of their awareness with trait-relevant adjectives; the remaining subjects were not primed. Both the chronic and the temporary accessibility (priming) factors demonstrated reliable main effects on the impression ratings of the target person: The chronics considered the person to be more kind (shy) than did the nonchronics, even in the no-priming condition, and subjects who were subliminally primed thought the target to be more kind (shy) than nonprimed subjects, even within the

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nonchronic group. Thus, for a given construct, chronic and contextual sources of preconscious influence appear to combine additively, and both sources have the same quality of influence over interpretation of construct-relevant information (see also Bargh, Lombardi, & Higgins, 1988).[3] In addition, contextual salience effects occur when the person or event is inconsistent either with the postconscious effects of the current situation (e.g., Taylor & Fiske, 1978) or with the preconscious effects of normative long-term knowledge (e.g., McArthur, 1981). And activation appears to spread among evaluatively similar memory representations, whether the initial activation is preconscious (e.g., Greenwald et al., 1986) or conscious (e.g., Isen et al., 1978). For the duration of their residual or reverberatory activation, postconscious processes may simulate preconscious effects on subjective experience and conscious judgments (see review by Higgins & Bargh, 1987).

Despite these functional similarities, the distinction between preconscious and postconscious processing is an important one. The two forms of automaticity differ in a fundamental way—the necessity of conscious awareness of the activating event—and this difference has important implications for their relative powers to influence subsequent judgment and behavior. As argued elsewhere in this chapter, the importance of preconscious automaticity lies in the fact that one implicitly trusts in the veracity of the interpretation made, because one is not aware of any processing effort being applied. In the case of postconscious effects, however, conscious awareness of and attention to the stimulus event are necessary, so that one is much more likely to be aware of the *possible* influence of that event on concurrent inferences and judgments (e.g., Jacoby & Kelley, 1987; Johnson, 1983). There is thus a greater probability in the postconscious case that when later considering their opinions or feelings about the person or event they have encountered, people will realize that the consciously noted occurrence might have an influence over their judgment. Moreover, it has been found that the residual postconscious effects of priming social constructs on subsequent judgments are dramatically different when the activating information still resides in consciousness at the time the judgment is made, compared to when the material is no longer in consciousness (Lombardi et al., 1987). As the likelihood of the activating event's remaining in conscious awareness at the time of its influence over judgment or behavior is necessarily greater for automatic effects that require conscious awareness of the event than for those that do not, the quality of the automatic influence as well as one's ability to control for it may depend on whether the effect is preconscious or postconscious.

Goal-Dependent Automaticity

A third major variety of automaticity in social psychology is that which is goal-dependent, because not only does it require conscious processing in

order to occur, it depends on the person's having a particular processing goal. There are two important forms of such goal-dependent automaticity, differing as to whether the *outcome* of the processing is intended or not. One form is goal-directed processing that produces concomitant effects that are not intended by the person. One example of such unintended goal-dependent automaticity is the encoding of target behaviors in terms of personality trait constructs by subjects who are instructed merely to memorize the sentences containing the behaviors (Winter & Uleman, 1984; Winter et al., 1985).

Intended goal-dependent automaticity, on the other hand, occurs autonomously and outside of awareness, and its output is what was intended by the current processing goal. Well-practiced procedures that one intentionally employs in social judgment (Smith & Lerner, 1986) or pattern discrimination (Lewicki, 1986b), or as part of a complex skilled action (Norman & Shallice, 1986), qualify as this type of automaticity.

Unintended Goal-Dependent Automaticity

Unintended goal-dependent automatic effects have as a necessary precondition the instantiation of specific processing contexts, but they are unintended consequences of those intentional thought processes. There are two major varieties: (1) the storage in memory of abstract encodings as unintended "side effects" of another, intended process; and (2) the unintended activation and subsequent influence of social constructs and construct systems as a consequence of the current processing context.

Perhaps the best-known form of side-effect encodings when social information is being processed is the encoding of behaviors in terms of personality trait concepts. Several studies have shown that exposure to behaviors in a task in which trait inferences are not necessary or relevant (e.g., constructing grammatical sentences from a randomly ordered word string) activates the abstract trait concept to which the behavior is relevant, which then is more likely to be used to encode subsequent ambiguously relevant information (e.g., Bargh, Lombardi, & Higgins, 1988; Higgins et al., 1985; Srull & Wyer, 1979). Winter and Uleman (1984; Winter et al., 1985) showed that subjects trying to memorize sentences that contained trait-relevant behaviors encoded that trait concept as part of the episodic memorial representation of the sentence, as demonstrated by the effectiveness of adjectives related to the trait concept as retrieval cues for the sentence (see Uleman, 1987).

A study by Moskowitz and Uleman (1987) showed that the trait-encoding effect depended on the subjects' particular processing goal. Subjects had to at least intend to comprehend the meaning of the sentence; if they focused on the physical (i.e., the typeface) or the phonemic aspects of the sentence, the effect did not occur. (This finding is similar to that in the area of semantic priming, in which activation does not spread between

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It may be, however, that such encodings are the default state, and occur *unless* a relatively unusual, overriding processing goal is in place. That is, these encodings may not depend on a specific goal state as much as they may be interfered with by a special type of processing. This distinction is important for ecological considerations, as in natural settings these special processing goals may rarely if ever occur. What the findings of Winter, Uleman, and their colleagues imply, therefore, is that an automatic and unintended way in which people understand and encode social behavioral information is in terms of personality trait dimensions, even when they are processing behaviors for purposes unrelated to their social aspects. A precondition for this effect is that one must be intending to understand the *meaning* of the behavioral information for such spontaneous encodings to occur; yet it may be that this comprehension goal is nearly always in place (see Srull & Wyer, 1986). The importance of the processing-context-dependent automaticity of trait encodings from behavioral input is that it is probably a major contributor to the tendency of people to make dispositional trait attributions from behavioral evidence, especially when their ability or inclination to consciously undertake an attributional analysis is precluded in some way (see Gilbert, Chapter 6, this volume; Trope, 1986).

Another form of side-effect encoding is the phenomenon known as "implicit learning" (e.g., Gordon & Holyoak, 1983; Reber, 1967). One is capable of picking up patterns in incoming information that one is attending to, even when one is not trying to learn that pattern. Gordon and Holyoak (1983, Experiment 1), for example, found that subjects trying to memorize letter strings nonetheless learned repeated pattern sequences, as shown by subjects' performance in classifying subsequently presented novel strings as being similar or dissimilar to the earlier set of strings. In a second experiment, the investigators found that subjects' liking judgments of test stimuli they had not seen before were a function of the stimuli's similarity to previously shown patterns that subjects were instructed only to "look at."

Does implicit learning such as this occur for social stimuli? Recently, Lewicki (1986a) has argued that the detection of covariation between personality traits and physical features (such as hair length and voice pitch) is "nonconscious." The pairing of these traits and features in the first part of the experiments was shown to influence the subsequent evaluation of novel target persons, with subjects evidencing no awareness of the relation between the traits and features in the earlier part of the study, nor of the influence of the features on their later judgments. That subjects were not able to report on the sensory features guiding their response in these ex-

periments is consistent with considerable recent research on the dissociation of sensory storage from conscious access to it (see reviews by Graf & Mandler, 1984; Jacoby & Kelley, 1987; Johnson, 1983; Johnson & Hasher, 1987).

It is important to note, however, that in all of Lewicki's demonstrations of covariation detection using social stimuli (Lewicki, 1982, 1985, 1986a, 1986b), subjects were instructed to form an impression of the target person to whom they were paying conscious attention, and were also informed that the study was an examination of their personality assessment abilities. As Nissen and Bullemer (1987) have shown, such implicit pattern learning does *not* occur unless one attends to the task and attempts to learn the target pattern. Nissen and Bullemer concluded that their findings "emphasize the importance of distinguishing between attending to the task itself and being aware of information carried by the task. Subjects could learn the sequence without being aware of it, but not without attending to the task itself" (1987, p. 29). Thus, the influence of the feature–trait exposure on the subsequent evaluation of novel target persons in the Lewicki experiments may have depended on the explicit impression formation instructions and the framing of the experiment in terms of "personality assessment." Yet the outcome of the processing—the encoding of feature–trait relations and their later influence—was not intended by subjects, and so these effects satisfy the criteria for side-effect automaticity.

Recently, some assumed processing effects of the side-effect, unintended variety of encoding have been found not to occur. Smith and Kihlstrom (1987) found that a subject's "implicit personality theory" of how traits covary did not affect the organization of personality-relevant material about a target person encoded into memory (see also Lewicki, 1986a, p. 111). Moreover, the evidence frequently cited to support the assumption that social perceivers routinely go beyond the information given and encode schema-consistent information that was not actually present has been found lacking, and the assumption of internally generated intrusions at encoding has been found to be unsubstantiated (Higgins & Bargh, 1987; see also Johnson & Raye, 1981). Another widely held assumption has been that during reading, material is automatically associated if it shares a common overarching theme. Seifert, McKoon, Abelson, and Ratcliff (1986) showed that different stories that shared a common underlying theme were not associated together in terms of the common theme in subjects' memory for the information, unless subjects had the goal of detecting the abstract similarity. Seifert et al. (1986) concluded that such thematic connections are not made automatically in reading narrative material, but are strategy-dependent. These studies highlight the importance of testing the conditions under which effects assumed to be automatic do and do not occur.

The second type of unintended goal-dependent automatic processing, *context-dependent* automaticity, is the unintended activation of memory locations by the intended instantiation of a specific processing goal, so that

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in motion, operates with little or no attentional involvement. Sometimes the less frequent behavioral variations on such routine themes default into the routine actions themselves, because the needed attentional control and direction are not asserted. William James's (1890) example of the man who goes upstairs to dress for dinner and winds up in bed after undressing illustrates this point.

Intended Goal-Dependent Automaticity

According to the most recent edition of Webster's *New International Dictionary*, the central meaning of the term "automatic" is "involuntary" or "unintentional." Thus it is somewhat paradoxical to refer to an "intentional!" form of automaticity—one for which both the instigation and the outcome of the process are desired and controlled. However, the notion of a form of automaticity that requires an intentional instigation follows logically from the present thesis of conditional automaticities. Such processes are autonomous, not needing to be controlled once started, and "autonomy" perhaps may be what most people (other than Webster) mean when they use the term "automatic" (Zbrodoff & Logan, 1986). (Note that all of the varieties of automaticity outlined in Table 1.1 are autonomous, as none of them require conscious guidance to run to completion.) Well-learned situational scripts (Abelson, 1980; Langer, 1978) and routinized complex action sequences (Norman & Shallice, 1986), such as those involved in driving or athletic skills, are perhaps the best-known examples of these autonomous processes. The automatized memory structures guide attention, make behavioral decisions, and direct action within the situation with a minimum of attentional control necessary (Langer & Abelson, 1972; Langer, Blank, & Chanowitz, 1978).

Because these processes are directed toward a current conscious goal, they are flexible in their application. The same general restaurant script, for example, can be applied at most restaurants within a given culture (Schank & Abelson, 1977), and the "subroutine" knowledge structures involved in the complex skill of driving can be invoked to achieve whatever is the desired destination (Norman & Shallice, 1986; see also Vallacher & Wegner, 1987). The relative autonomy of these processes is determined by how well the environmental features match the input sought by the autonomous structures. More attentional control and conscious decision making are needed when the situation has novel characteristics, such as finding one's way while driving through a new city, or encountering an unusual occurrence in a familiar setting (e.g., when the waiters in a restaurant surround your table and sing "Happy Birthday").

The fact that such processes immediately demand and attract conscious attention at these nonroutine junctures indicates how closely controlled they are, despite their otherwise autonomous nature (Logan & Cowan, 1984). Scripts and action sequences have as components conscious decision steps when the given situation typically calls for attentional pro-

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These processes are more properly termed "semiautomatic" than "automatic," because of their intentional and controlled nature, and because they continually require reinitiation by an intentional process to continue. Logan and Cowan (1984) noted that such autonomous phases of otherwise intended and controlled processes, once started, will run to completion no matter what. An act of control is needed to initiate the next autonomous phase, however, and an act of control may stop the process after such a phase has been completed. For semiautomatic processes, the duration of such autonomous processing phases has been found to be quite short (about half a second or less) across a variety of mental and motor tasks—even for complex processing sequences that are routinized and well practiced (Logan & Cowan, 1984). Examples of such processes are the finger, hand, and arm movements involved in typing, which only occur given the intentional goal to type, but which do not need conscious attention and control for the skilled typist. Other examples are the foot and leg movements that occur when one is driving and a stop sign suddenly appears around a corner in the road—the act of hitting the brake occurs reflexively and without conscious deliberation. However, the same stop sign when one is walking up to the intersection, and the goal of driving a car is thus not currently in place, does not result in the reflexive leg and foot movements. Thus, what is needed for this type of goal-dependent automaticity is the relevant goal's being currently active, plus the presence of the triggering proximal stimulus (see Norman & Shallice, 1986).

In addition to the performance of skilled behaviors (Abelson, 1980; Norman & Shallice, 1986; Vallacher & Wegner, 1987) and nonsocial mental operations (Logan & Cowall, 1984; Zbrodoff & Logan, 1986), there are two other types of intentional goal-directed automaticity. One consists of procedural knowledge structures that have become autonomous with practice or frequent application (e.g., Anderson, 1983; Smith, 1984). The second type, "incubational automaticity," is goal-directed thought that continues after one's conscious attention has moved on to other concerns, typically when the goal was not satisfied during the material's residence in consciousness.

Smith and his colleagues (Smith, 1984; Smith et al., 1988; Smith & Lerner, 1986) have studied the development of autonomous procedures that perform social inferences from relevant sets of behavioral data. Given the intention to do so, such procedures take a relevant input and perform a transformation or apply an inferential decision rule to it. Smith and Lerner (1986) showed that components of social judgments decreased in their attentional demands to an asymptotic level after only a small amount of practice. The generality of these efficient classificatory procedures to other content domains was evidenced by the lesser amount of practice a person skilled in making one type of inference (e.g., a waitress stereotype) needed

to transfer that skill to a different content area (e.g., a librarian stereo-type), compared to control subjects with no practice in making the judg-ment.

In incubational processing, goal-directed processes that have not achieved their goal of a problem solution nonetheless continue to operate subconsciously, after the conscious mind has moved on to other matters. This second variety of intentional goal-dependent automaticity is thus less closely controlled by the individual than is procedural automaticity, but it nonetheless satisfies the definitional criteria, as it is unintentional and au-tonomous once initiated. A well-known example of this situation is the "tip-of-the-tongue" phenomenon (Brown & McNeill, 1966): One is trying to remember something, definitely feels as though one knows it and is very close to remembering it, but cannot. Later, when one is thinking about something else entirely, the answer pops into consciousness (e.g., Norman & Bobrow, 1976; Yaniv & Meyer, 1987). Apparently, the search for the answer goes on in these cases autonomously without conscious awareness or control, to achieve the desired goal after all. Ghiselin (1952) has assem-bled examples of such nonconscious problem solving and creativity in the writings of scientists, poets, and artists. The common theme suggested by these excerpts is that such nonconscious solutions appeared only after a great deal of conscious thought and effort had gone into the attempts.

Apparently, then, processing goals that have been frequently activated over a substantial period of time can become themselves capable of oper-ating outside of awareness. This is not surprising, considering the evidence of the subconscious operation of complex subgoals in skilled action, given the initiating intention (Norman & Shallice, 1986); in the process of de-veloping the complex skill, the component skill originally required consid-erable attentional monitoring and control (see Newell & Rosenbloom, 1981). But the implications of chronically activated goal structures (Srull & Wyer, 1986) that can operate autonomously are considerable. It is possible that chronic motivations may manifest themselves in a totally automatic way, beginning with preconscious activation by triggering situational features of the overarching goal structure (see Bargh, in press; Srull & Wyer, 1986). (Note that this is very different from the Freudian notion of "unconscious" goals and motivations, in which the person is never aware of having such goals in the first place.)

This tendency for goals to continue operating after the individual has made a deliberate choice to move on to other things may result in abnor-mal thought patterns under certain circumstances. Several chapters in this volume (those by Moretti & Shaw, Tait & Silver, and Wegner & Schnei-der) are concerned with uncontrollable ruminations or obsessive thinking about negative and traumatic events. Martin and Tesser (Chapter 10, this volume) argue that this intrusive and uncontrollable conscious thinking may in fact be attributable, at least in part, to the operation of unsatisfied goals of long-standing importance to the person. Tait and Silver (Chapter

12, this volume) also contend that these unwanted ruminations may be due to the attempt to find some explanation or resolution of the traumatic event.

To summarize, the varieties of automatic processing documented by recent social-cognitive research fall into distinct groupings as a function of their necessary conditions. The three major types—preconscious, postconscious, and goal-dependent—can be distinguished by whether or not the automatic process requires recent conscious processing of the relevant stimulus, and whether a certain processing goal must be in place. Postconscious automaticity, which requires conscious awareness of the relevant stimulus event, can be further analyzed into residual effects of the specific construct activated by conscious processing, and reverberatory effects, in which the effect is attributable to spreading activation from that construct to others associated with it. The effects produced by goal-dependent automatic processing may be either unintended or intended. An unintended representation of the stimulus information may be encoded into memory as a side effect of an intended processing of the information, or knowledge structures may become activated without the person's awareness or intent due to the current conscious processing context. Finally, efficient processing procedures may operate autonomously, given one's intent to obtain their output; sometimes this output is not available immediately, but must first "incubate" for some time subconsciously.

Figure 1.1 is presented as a guide to this classification scheme. With fond memories of summer camp field guides to the identification of birds and trees, I have organized Figure 1.1 as a series of yes–no questions based on distinguishing features. These questions progressively narrow down the alternatives until only one remains.

In developing the present taxonomy of automaticities, I have found it necessary to discuss each type of process separately and in isolation from the others. Yet automatic processes, of whatever variety, do not occur in a vacuum, but in parallel or in combination with other ongoing automatic and controlled cognitive work (Logan, 1980; Posner, 1978; Shiffrin & Schneider, 1977). In present terms, this interaction is most apparent with goal-dependent automaticities, as the occurrence of the automatic effect requires specific forms of controlled processing. Postconscious effects as well are a function of the current or recent contents of conscious awareness. Thus, conscious awareness and goals in part determine the nature and course of automatic processing.

But, as alluded to already in this chapter, the reverse is true as well: There is an interface between preconscious/postconscious processing and consciousness, such that the latter is very much a function of the former. In the next section, I focus on the ways in which conscious experience and judgments are influenced by preconscious and postconscious processing, and the extent of this influence.
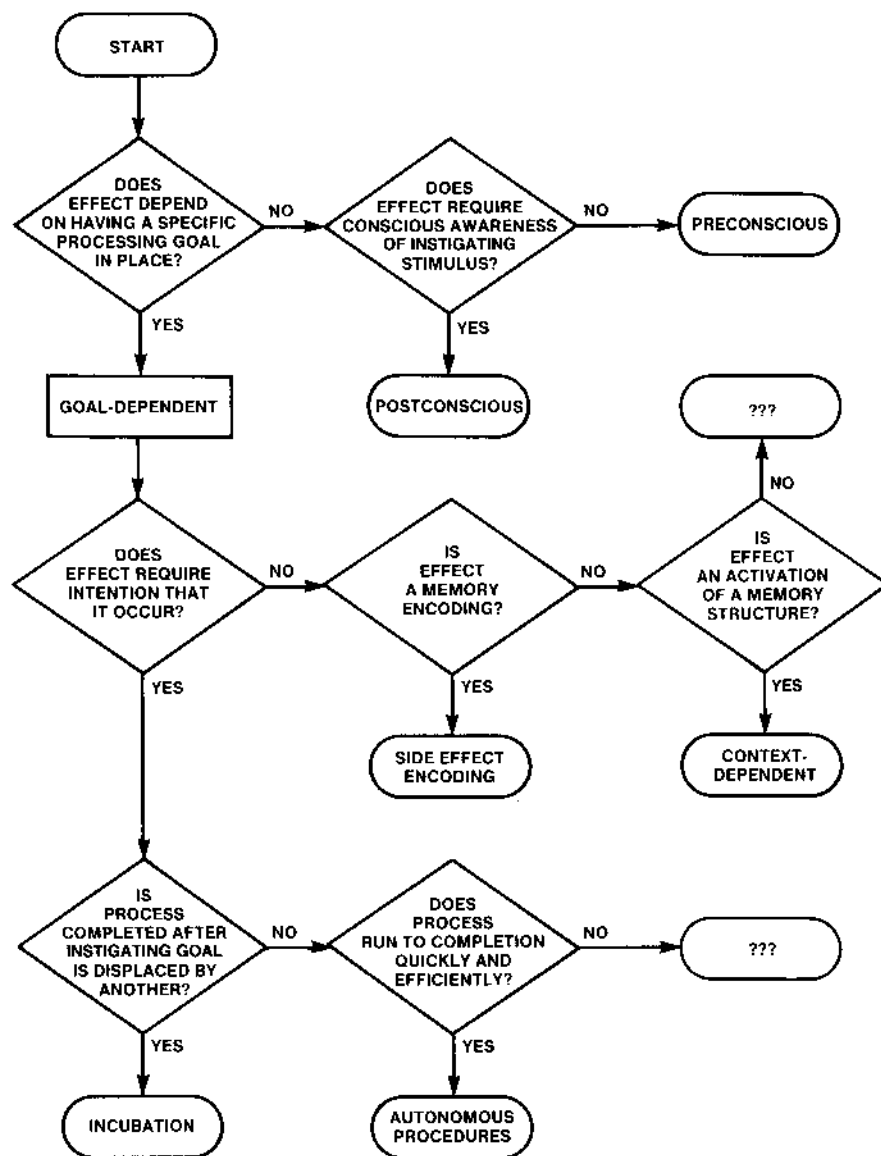
FIGURE 1.1.   A "field guide" to the classification of automatic processes.

HOW PRECONSCIOUS AND POSTCONSCIOUS PROCESSING SHAPE CONSCIOUSNESS

Conscious experience is shaped by preconscious and postconscious influences in three ways: through an influence on the direction and allocation of conscious attention to environmental events; through a direct impact on

phenomenal experience via interpretative and evaluative processing of input; and through an indirect effect on consciously made decisions and judgments by preconsciously and postconsciously activated memory locations that do not themselves attain conscious awareness.

Attentional Salience Effects

Preconscious Determinants

The focus of conscious attention is to an extent under the direction of the preconscious analysis mechanism. Friedman (1979), for example, found the duration of first fixations of the eyes to elements in common scenes to be much longer for those aspects that are not usually features of such scenes (e.g., a hippopotamus in a farm pond); the mental "frame" for each scene was activated preconsciously, so that the very first time the incongruent input fell upon the retina, it required greater processing effort to be comprehended. (The importance of the measurement of *first* eye fixations is that the greater attention allocation was immediate, and was not a function of a conscious, attentional process that would have taken longer to note the inconsistencies; see Neely, 1977.) The greater attention allocated to social events that are unexpected or unusual, given long-term knowledge such as social norms (Fiske, 1980) and the typical physical features of people (McArthur, 1981), is well established, as are the judgmental consequences of the differential attention allocation (see Fiske & Taylor, 1984; Higgins & Bargh, 1987, for reviews).

A more direct preconscious influence on attention consists of automatic attention responses (Shiffrin & Schneider, 1977), in which conscious attention is automatically drawn to stimuli upon the detection of the relevant stimulus. There is very little research on such a phenomenon with regard to social stimuli, despite the fact that the original demonstration of the effect used the subject's name as the attention-grabbing stimulus (Moray, 1959). Recently, however, Hansen and Hansen (1988) showed that subjects with the task of picking out the emotionally discrepant face from an array of faces were able to detect angry faces in happy "crowds" very efficiently, such that angry faces appeared to "pop out" of the arrays. In showing that subjects' speed in detecting angry faces in happy crowds was relatively independent of the size of the crowds, Hansen and Hansen (1988) provided strong evidence of an automatic attention response to the angry face, as the time needed for a controlled, sequential search of the arrays would be necessarily increased by the number of faces to be searched (Shiffrin & Schneider, 1977).

It should be noted that in the Hansen and Hansen (1988) study, as in the Shiffrin and Schneider (1977) experiments, subjects were given the goal of detecting a target from an array. In studies in which subjects were not trying to attend consciously to targets assumed to be automatically processed, but instead to ignore them, we (Bargh, 1982; Bargh & Pratto, 1986)
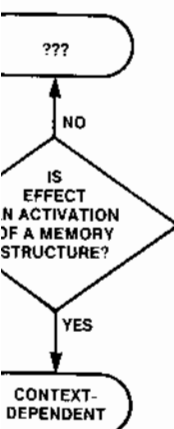
showed that such stimuli (adjectives relevant to the self-concept and to chronically accessible constructs, respectively) attracted processing resources automatically; however, in both studies subjects were able to inhibit this activation from affecting their actual task responses (although the necessity of inhibition did result in slower response times). Clearly, then, if automatic attention responses to social stimuli exist, they are at least partially controllable with an intention to exert such control. Thus, whether conscious, focal attention is automatically drawn to specifiable classes of social stimuli in the absence of an explicit intention to attend to them—or, in the stronger case, despite attempts to ignore them—must remain an open question at present.

Postconscious Determinants

Salience effects in which certain environmental features or events unintentionally and autonomously attract conscious attention are also attributable to residual postconscious processing. Aspects of the current situation activate their corresponding memory representations, with this activation persisting as a background state of perceptual readiness against which the foreground of focal attentional processing takes place. Greater attention is then automatically allocated to people or events that are inconsistent with the representations activated postconsciously in this manner, such as the one male in an otherwise all-female group, or the few aggressive behaviors in a set of passive acts (Bargh & Thein, 1985; Hastie & Kumar, 1979; Higgins & King, 1981, Study 5; Taylor, Crocker, Fiske, Sprinzen, & Winkler, 1979; Taylor & Fiske, 1978). Whereas the natural direction of attention in this way is unintended and autonomous, requiring no top-down deliberative control, it is not uncontrollable, as it can be overriden by intentional concentration of attention. Of course, such concentration is more or less difficult, depending on the strength of the automatic attention response (James, 1890; Shiffrin & Schneider, 1977). As is discussed in the section to follow, preconscious and postconscious sources of activation together constitute an activated, working memory model of the environment as it usually is and recently has been.

The Social Reality Monitor

The working model of the current environment that is set up by the "social reality monitor"[4] of preconscious and postconscious processes appears to be tuned to both the long-term and the short-term expected features of that environment, in that the corresponding mental representations of those features are more accessible and easily triggered in comprehending subsequent input. We (Bargh, Lombardi, & Higgins, 1988) pitted a chronically accessible construct against a competing temporarily accessible construct to examine which would capture an event relevant to both. It was found

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Phenomenal Experience

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that the postconscious, temporarily accessible construct more often captured the ambiguous behavior after a short delay (15 seconds) between the priming and the labeling tasks, whereas the preconscious, chronically accessible construct emerged as the majority choice after a longer postpriming delay (2 minutes). Apparently, a recently primed construct is more accessible than a chronic, unprimed one for a brief time, after which the longer-term accessibility influence reasserts itself.

A similar pattern occurs for competing sources of postconscious priming influences: the more frequently a construct has been recently activated, the longer the duration of its influence (see also Bargh & Pietromonaco, 1982; Srull & Wyer, 1979), but the more recently activated construct is more accessible and likely to be used than the frequently activated one for a short time after it has been primed (Higgins et al., 1985; Lombardi et al., 1987). Moreover, the social reality monitor is flexible and not rigidly locked into a certain exclusive set of preconscious interpretative biases, because one is more likely to interpret an event in line with what has just happened instead of one's relevant chronic construct if the two suggest conflicting meanings (Bargh, Lombardi, & Higgins, 1988). Thus, the preconscious filter of social experience is automatically tuned to interpret events on the basis of the probabilities of those events, given past and recent experience.

It may be that the operation of the social reality monitor to process efficiently those aspects of the environment that are consistent with the current working model has the natural consequence of causing conscious attention to be drawn to those features of the environment that are inconsistent with that model, the constructs associated with which would not be as accessible (see Hastie, 1981; Logan, 1980), and perhaps even inhibited (see Shallice, 1972). Those aspects of the environment that are consistent with the working model (see Yates, 1985) do not require as many attentional resources to activate their already activated representations, but to the extent that an environmental event does not match this model, it requires a greater amount of attentional processing to activate its corresponding memory location (Logan, 1980). What should receive the greatest amount of attention allocation in this automatic fashion are those events that contradict an aspect of the chronically or contextually activated model. These events not only require enough attention to activate their own representation; they also require the additional amount of processing effort needed to inhibit the competing representation, as only one of the two can capture the input (see Bruner, 1957; Logan, 1980; Shallice, 1972).

Phenomenal Experience

Subjective experience is shaped by the hidden operation of input analyses of which a person is not aware. The interpretation of a behavior in line with a chronically accessible or primed social construct is seen by the sub-

ject to be due to a property of the behavior; there is no awareness of the interpretative work done by the capturing construct (e.g., Bargh, 1984; Higgins & Bargh, 1987; Higgins & King, 1981). The effect of previous exposure to a stimulus is to make that stimulus easier to perceive in the future; however, a person often misattributes this feeling of perceptual fluency to qualities of the stimulus rather than to the previous experience (Jacoby & Kelley, 1987; Johnson, 1983; Mandler et al., 1987). From their review of these and similar findings, Jacoby and Kelley (1987) concluded that "people do not develop a general ability to distinguish between what is given in a stimulus and what is an interpretation" (p. 332). And earlier, from a quite different vantage point, Jones and Nisbett (1971) argued that the different attributional tendencies of actors and observers are "amplified by bias from . . . the tendency to regard one's reactions to entities as based on accurate perceptions of them. Rather than humbly regarding our impressions of the world as interpretations of it, we see them as understandings or correct apprehensions of it" (p. 86).

Perhaps the most important consequence of preconscious input to conscious processes, therefore, is the confidence one has in the validity and accuracy of such input, given the effortless way it comes to our attention (Bargh, 1988). Such "social-perceptual fluency" is often misunderstood as being due to the clarity or obviousness of the data; the unquestioning way in which we accept preconscious interpretations, beyond the fact that we are not aware of them, may go a long way toward explaining the resistance to change of our preconceptions and stereotypes, and the strength of our convictions about people.

The history of social psychology is replete with demonstrations of people's lack of awareness or knowledge of the true influences on their judgment or behavior. Cognitive dissonance experiments relied on the fact that subjects would not be aware of the power of the social influence exerted by the experimenter or other features of the task environment, and so would have the "illusion" that they had free choice in how they behaved (e.g., Festinger & Carlsmith, 1959; Wicklund & Brehm, 1976). Exactly this notion of a lack of introspective access was embraced by self-perception theorists (e.g., Bem, 1972) as an alternative explanation for the same phenomena. In bystander intervention studies, subjects are not aware of and dismiss the possibility that the number of other people present influenced their own decision to help or not (Latane & Darley, 1970). Attributional research has uncovered a myriad of misattributional tendencies—for example, that people can easily mistake the source of their emotional arousal (e.g., Schachter & Singer, 1962; Zillman & Bryant, 1974). Furthermore, Nisbett and his colleagues (e.g., Nisbett & Bellows, 1977; Nisbett & Wilson, 1977) have demonstrated how people might not have access to the real influence on their judgments of both social and nonsocial stimuli. And Lewicki (1982, 1985, 1986a) has provided similar evidence that people can be influenced in their social judgments without their knowledge by recently encountered covariations between personality traits

and physical features of target persons. Thus, there is a tradition of social-psychological research documenting the myriad of hidden influences on phenomenal experience and judgments based on it.

The Constructive Nature of Consciousness

One is consciously aware of only a subset of all of the memory representations currently activated by perceptual and cognitive activity (Bowers, 1985; Johnston & Dark, 1986; Mandler & Nakamura, 1987; Posner, 1978; Posner & Snyder, 1975). This dissociation between activation and one's awareness of that activation has been demonstrated in a wide variety of contexts, in addition to the studies of subliminal mere exposure already described. Recent exposures to words may influence perceptual thresholds and identification ability for them, independently of recognition memory (Jacoby & Dallas, 1981; Tulving, Schacter, & Stark, 1982). Several studies have found subjects to be able to discriminate stimuli of which they are not aware on the basis of lexical and semantic characteristics of the words (Balota, 1983; Cheesman & Merikle, 1986; Fowler, Wolford, Slade, & Tassinary, 1981; Marcel, 1983; Posner, 1978). Such preconscious semantic activation seems to be general across subjects, as the average person fluent in his or her native language has sufficiently frequent and consistent experience in mapping a given word to its meaning(s) for such automatic encoding pathways to develop (see Posner, 1978; Shiffrin & Dumais, 1981). Experiments in our laboratory have shown that such general preconscious effects also hold for categories of social behavior with which people have had considerable experience (Bargh et al., 1986; Bargh & Pietromonaco, 1982). We (Bargh & Pietromonaco, 1982) presented synonyms of the concept "hostile" to subjects in such a way that they were not aware of the presentation. The greater the frequency of such presentation, the more hostile were subjects' subsequent impressions of a target person who performed ambiguously hostile behaviors. We (Bargh et al., 1986) replicated this finding for the trait concepts of *kindness* and *shyness*, and Erdley and D'Agostino (1988) replicated it for *honesty* and *meanness*. Apparently, the presentation of trait-relevant words outside of awareness activates the trait construct, making it more accessible and likely to be used subsequently to interpret the ambiguous behaviors.

Finally, the "feeling-of-knowing" phenomenon documented by several recent studies (Blake, 1973; Glucksberg & McCloskey, 1981; Metcalfe, 1986; Nelson, Gerler, & Narens, 1984; Schacter, 1983; Yaniv & Meyer, 1987) refers to subjects' ability to predict accurately their subsequent ability to recognize material they cannot currently recall. Metcalfe (1986), for example, found that subjects' feeling-of-knowing ratings for trivia questions they could not answer predicted their later correct recognition of those answers. Thus, something about the degree of activation of the relevant memory location gave people the "feeling" of knowing in the absence

of actual awareness of the answer, documenting the potential independence of activation from awareness.

In addition to the automatic interpretations experienced by the perceiver as stimulus properties (i.e., not as inferences), preconscious sources of activation that do not attain conscious awareness and postconscious sources that have receded from consciousness influence judgments and decisions as well. Recently, there have been a growing number of theoretical and empirical arguments in support of the constructive nature of consciousness (Fodor, 1983; Mandler & Nakamura, 1987; Marcel, 1983; Trope, 1986; Yates, 1985). Consciousness is considered to be an integration of all sources of activation relevant to current goals and purposes. People may be aware of some information, such as the products of intentional retrieval of reasoning processes; however, other sources may be nonconscious, and their influence on judgment may thus be hidden from the individual. Lewicki (1986a, Experiment 7.8), for example, has demonstrated a postconscious effect of a recent negative experience with an experimenter, resulting in avoidance behavior in an ostensibly unrelated experiment toward another experimenter having similar physical features. Niedenthal and Cantor (1986) showed that the favorability of subjects' impressions of target persons is influenced by the dilation of the targets' pupils, with subjects apparently unaware of this influence on their judgments.

The "Eternal Vigilance" of Preconscious Input Analysis

The importance of preconscious automatic input processes for consciousness is also increased by the fact that such input will always be present to influence conscious decisions, whereas input that relies on intentional and attention-demanding processes will not. Fodor (1983) postulated that mandatory input processes transform the proximal stimuli and furnish the results to central (i.e., controlled or conscious) processes, which are optional and which operate on any and all available activated memory locations that might be relevant to their goals. Trope's (1986) model of dispositional attribution similarly posits an automatic (preconscious) *identification* process, which transforms the relevant informational input into attribution-relevant features (e.g., situational influences, behavioral features), with these features serving as the input for optional and intentional inferential processes. Controlled processes, on the other hand, only occur if they are intended, and if there are sufficient attentional resources at the time to sustain them (Bargh & Thein, 1985). If the intention or motivation is not present, or if there are insufficient attentional resources because of time constraints or the focusing of attention elsewhere, then conscious reasoning and information-gathering processes will not have an influence on the judgment or decision, which will consequently be based only on the automatic input.

Thus, without sufficient motivation to engage in the effortful evaluation of a persuasive message, only the efficient and relatively effortless relevant information concerning superficial aspects of the message source, such as his or her attractiveness or expertise, will be present as input into the attitude judgment (e.g., Chaiken, 1980, 1987; Chaiken, Liberman, & Eagly, Chapter 7, this volume). Langer et al. (1978) showed that the amount of attention paid to a routine request was minimal when the personal cost of compliance was low, resulting in a decision to comply that did not take into account the nonroutine features of the request. However, when the personal cost was greater, the consequent additional conscious and effortful processing of the request resulted in detection of those unusual features and a lower compliance rate (see also Kitayama & Burnstein, 1988). When one is making attributional judgments about a person's actions and attention is loaded or scarce, preventing the effortful and intentional computation of the possible role of situational influences, the only information available is that of the actor performing a trait-like behavior, and so a dispositional attribution is made solely on the basis of this information (Gilbert et al., 1988; see also Trope, 1986). And when one is trying to form an impression of another person, attentional scarcity restricts the information available for the judgment to only those aspects of the person that can be extracted preconsciously—that is, those that are salient and automatically draw attention (Higgins & Bargh, 1987; Taylor et al., 1979), or that correspond to one's chronically accessible constructs (Bargh & Thein, 1985). Strack et al. (1982) found that judgments of a salient target's influence in a social situation were a function of prior beliefs about the target's general ability to influence others, but only when those judgments were made under time pressure, thus restricting the ability to perform a controlled search of memory for relevant evidence. When subjects had sufficient time to make the judgment, the effects of salience and prior knowledge dissipated.

As Rothbart (1981, p. 178) noted, it is often the case that we must make "snap" decisions under certainty because of an immediate need to act. Once made, these decisions and judgments are used as the basis for further decisions and judgments (e.g., Carlston, 1980; Hastie & Park, 1986) as well as the actions necessary to implement those decisions (Beckmann & Gollwitzer, 1987). Therefore, it is essential for models of social judgment, memory, and behavior to include an account of the preconscious mechanisms that transform sensory data into the stuff that conscious experience and judgments are made of.

The Limits of Preconscious Processing

What are the limits to preconscious processing's influence over the course of social cognition? Given the necessity of conscious involvement and at-

tention for material other than sensory features (Johnson, 1983) to be stored permanently in memory (Bargh, 1984; Carlson & Dulany, 1985; Fisk & Schneider, 1984; see review by Johnson & Hasher, 1987), preconscious processes themselves are unlikely to result in the production of judgments or attributions and their storage in memory. Still, it has been argued that dispositional attributions are made automatically from behavioral input alone (see Gilbert, Chapter 6, this volume; Smith & Miller, 1983; Winter & Uleman, 1984; Winter et al., 1985). There is no convincing evidence as yet that attributions are made without conscious and intentional intervention, however; the evidence often cited for this effect is problematic because subjects did not actually make attributional judgments (see Higgins & Bargh, 1987; Uleman, 1987), or the effect required an intentional goal on the part of subjects.

Moreover, if attributions or impressions are made given only the relevant behavioral data, then they should be made at the time a person encounters such behaviors—that is, on line, at the time of information acquisition, whether or not the person has the intention of making any judgments. It has been shown that when a judgment is made (intentionally) on line, at the time of information acquisition, subsequent relevant judgments are based on that original judgment instead of being recomputed from the information accessible in memory on which the initial judgment was based (see Bargh & Thein, 1985; Carlston, 1980; Hastie & Park, 1986; Lingle & Ostrom, 1979). This holds true even when the original information is re-presented to the subject prior to the second judgment (Schul & Burnstein, 1985). Yet there are many documented circumstances when such initial judgments during information acquisition are *not* made, forcing subjects to rely on whatever information about the event is accessible in memory by that time (Bargh & Thein, 1985; Hastie & Park, 1986; Wyer & Srull, 1986). In addition, the failure to make on-line judgments, and subjects' consequent later dependence on memory for the behaviors, occur even when subjects are instructed to form impressions and are presented with very diagnostic behavioral information, but do not have sufficient attentional resources to compute an impression (Bargh & Thein, 1985). On-line judgments also are not always formed when subjects have sufficient attention but are instructed to memorize the information (i.e., not instructed to form an impression; Sherman et al., 1983; Wyer & Gordon, 1982). In short, if social judgments and attributions were made automatically and on line upon the mere presence of the relevant proximal stimuli, such judgments would not need to be based on subsequent memory for the original information.

Still, all of the studies that found that no on-line judgments were made under conditions of a lack of intention or attention presented the stimulus information to subjects in a verbal form, and it may be that in naturalistic social-interactive settings, judgments are indeed made automatically. Gil-

bert and Krull (1988), for example, found that subjects watching a target person on videotape formed more accurate impressions of the target when they were prevented from paying much attention to what the target was saying. As the authors concluded, it may be that dispositions are more easily inferred from nonverbal than from verbal behavior (but see Krauss, Apple, Morency, Wenzel, & Winton, 1981). Thus, a definitive conclusion as to whether impressions and dispositional attributions are formed and stored entirely preconsciously must await studies of the necessity of intention and attention that employ nonverbal as well as verbal stimulus materials.

As for whether social behavior could be under preconscious control (e.g., Langer, 1978), the evidence is fairly consistent that overt actions are under conscious control (Abelson, 1980; Logan & Cowan, 1984; Norman & Shallice, 1986; Vallacher & Wegner, 1987).[5] However, the behavioral decision itself may be based only on automatically supplied sources of information. In the theories of action control recently proposed by Vallacher and Wegner (1987) and Norman and Shallice (1986), skilled and highly practiced actions are capable of being performed autonomously and without the need for conscious monitoring, but even these (as well as all others) must be initially set in motion by an overarching intention (see "Goal-Dependent Automaticity" section).

In summary, there is frequently a confusion between the preconsciously or automatically supplied input that may influence a consciously made judgment, and this judgment itself, as if it did not need the intention or goal to occur. Preconscious processing categorizes, evaluates, and imputes the meaning of social input, and this input is available for conscious and controlled judgment and behavioral decisions; however, those judgments and decisions are not mandatory and uncontrollable, given the proximal stimulus event alone. Similarly, the uncontrollable and mandatory nature of preconscious analyses should not be mistaken for the impossibility of counteracting or adjusting their influence on judgment and behavior when one is aware of them, if that is what one wishes to do. When one knows that input processes are misleading and leading one astray, as in perceptual illusions, one does not *have* to make judgments or act as though what is apparent is real. One can grit one's teeth and drive through what one's senses insist is a lake ahead on the desert highway. Or one can prevent one's stereotypically generated preconceptions of a person from affecting one's judgments, *if* one wishes to (Devine, 1987; see also Fiske, Chapter 8, this volume) *and* if one has the attentional capacity and time to monitor the judgment process (Bargh & Thein, 1985; Pratto & Bargh, 1988). In other words, although the operation and output of preconscious processes are uncontrollable, this does not mean that the use of the output in consciously made judgments is mandatory (see Bargh, 1988; Jacoby & Kelley, 1987).

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In summary, there is frequently a confusion between the preconsciously or automatically supplied input that may influence a consciously made judgment, and this judgment itself, as if it did not need the intention or goal to occur. Preconscious processing categorizes, evaluates, and imputes the meaning of social input, and this input is available for conscious and controlled judgment and behavioral decisions; however, those judgments and decisions are not mandatory and uncontrollable, given the proximal stimulus event alone. Similarly, the uncontrollable and mandatory nature of preconscious analyses should not be mistaken for the impossibility of counteracting or adjusting their influence on judgment and behavior when one is aware of them, if that is what one wishes to do. When one knows that input processes are misleading and leading one astray, as in perceptual illusions, one does not *have* to make judgments or act as though what is apparent is real. One can grit one's teeth and drive through what one's senses insist is a lake ahead on the desert highway. Or one can prevent one's stereotypically generated preconceptions of a person from affecting one's judgments, *if* one wishes to (Devine, 1987; see also Fiske, Chapter 8, this volume) *and* if one has the attentional capacity and time to monitor the judgment process (Bargh & Thein, 1985; Pratto & Bargh, 1988). In other words, although the operation and output of preconscious processes are uncontrollable, this does not mean that the use of the output in consciously made judgments is mandatory (see Bargh, 1988; Jacoby & Kelley, 1987).

CONCLUSIONS: THE POWER BEHIND THE THRONE OF JUDGMENT

The phenomena discussed in this chapter vary greatly in the conditions needed to produce them. Some require intention or goals; some require conscious attention or awareness; some are controllable and some are not. What all seem to have in common is that they are autonomous, not requiring conscious control (at least to some extent) once they are initiated. But the fact that many of the phenomena do require an act of control to begin, and that some even require periodic monitoring and control to be completed, suggests that the automatic–controlled processing dichotomy, especially as applied in social psychology, is misleading. On the basis of the widely held assumption that this dichotomy is composed of mutually exclusive and exhaustive types of information processing, a process that is found not to meet one or more of the criteria for one form of processing can be properly concluded to possess all of the defining qualities of the opposite form. The review of research in this chapter shows very clearly that this assumption is incorrect. Intention, awareness, attention, and control do not covary in many social-perceptual and social-cognitive phenomena, but are distinct qualities that may or may not be necessary to produce a given effect.

Whether an effect occurs unintentionally, or in the absence of awareness, or efficiently without needing many attentional resources, or autonomously once set into motion is a question of fundamental importance, especially to the ecological validity of laboratory and experimental phenomena. If an effect only occurs when the subject is instructed to think in a certain way, then whether or not he or she ever or usually has the intention to think that way outside of the laboratory should be a question of primary importance. The methodological corollary is not to assume that a processing effect would occur without the types of conditions needed to produce it in the laboratory, but to assess the extent to which those conditions of intention, attention availability, or priming, for example, are necessary to produce the effect. The fewer the preconditions, the more general, pervasive, and important the influence of the process in question.

The classification of extant research into the categories of preconscious, postconscious, and goal-dependent processing in this chapter should not be taken as the definitive word on the phenomena discussed. Further research could well determine that effects that seem today to require specific goals or instructions, for example, may only require awareness of the triggering stimuli (i.e., to be postconscious); effects that appear to require recent conscious experience may not require awareness, but preactivation alone (i.e., to be contextually preconscious). Of course, such research may instead demonstrate that effects previously believed to occur automatically, given only the triggering relevant environment event (i.e., to be pre-

conscious), actually require a specific processing goal. This was the case with Uleman's (1987) reinterpretation of the Winter and Uleman (1984) findings, given the result of the Moskowitz and Uleman (1987) study, in which the possible influence of processing goals was tested.

Preconscious processes (and, to a somewhat lesser extent, the postconscious effects that simulate them) are important both because of the automatic selective and interpretive work they perform, and also because of the unhesitating way in which people tend to use preconsciously supplied information about the environment in constructing subjective experience and in computing judgments and decisions. The interaction of preconsciousness and consciousness can be conceptualized as "automatic input for controlled output" (Bargh, 1988), with the implication that to the extent that other information is not being supplied concurrently by intentional information-gathering processes, judgments and decisions will be largely determined by the preconscious input (Bargh & Pratto, 1986; Chaiken, 1987; Chaiken et al., Chapter 7, this volume; Gilbert, Chapter 6, this volume). Goal-dependent effects that generate unintended encodings and inferences as a side effect of an intended process are yet another important source of hidden influence.

Is this to say that one is usually not in control of one's own judgments and behavior? If by "control" over responses is meant the *ability* to override preconsciously suggested choices, then the answer is that one *can* exert such control in most cases (see Fiske, Chapter 8, this volume; Logan & Cowan, 1984). The occurrence of preconscious influences on interpretation of input and generation of evaluations is probably not controllable in the immediate, on-line sense (but is perhaps alterable through extensive and controlled rechanneling of unwanted interpretative biases, as through cognitive therapy; see Beck et al., 1979; Moretti & Shaw, Chapter 13, this volume). However, one can reduce or perhaps eliminate such preconscious influences on judgments by an intentional search for and examination of relevant evidence. Such effortful processes require the availability of sufficient attentional capacity (Bargh & Thein, 1985; Gilbert, Chapter 6, this volume) and the motivation to exert the needed effort, such as when one's own outcomes depend on the person one is evaluating (Erber & Fiske, 1984), or when an issue has important personal consequences (e.g., Chaiken, 1980; Chaiken et al., Chapter 7, this volume; Petty & Cacioppo, 1981). And even highly routinized and habitual behavior is controllable in this sense of intentionally stopping or changing it (Logan & Cowan, 1984; Norman & Shallice, 1986).

But if by "control" is meant the actual *exercise* of that ability, then the question remains open. The assertion of control over preconscious, postconscious, and context-dependent automatic influences—the three types discussed in this chapter that produce unintended outcomes—can only occur if one is aware of those influences. My own hunch is that control over automatic processes is not usually exercised, not so much because of a lack

of motivation as because people tend not to accept the idea that there are many ways in which awareness, judgment, and behavior may be influenced without one's knowledge. As long as most people believe that they are aware of all such influences, that subjective awareness is an objective reflection of reality, and that their introspective ability is fully capable of sorting out the true causes of one's emotions and evaluations, then they will not take care to counteract the hidden preconscious biases and other unintended influences upon thought and behavior that are discussed in this chapter. Furthermore, the constructive nature of consciousness will result in the use of whatever sources of activation information are available and relevant at that moment, whether or not the person is aware of those sources of information.

Finally, there is the bedrock trust that people place in the validity of their subjective experience, and especially those forms of information that are the "givens" of conscious awareness (i.e., for which people do not feel that much active inferential work was needed or done). The confidence that people have in the accuracy and validity of input selection and analyses can therefore cause the pieces of evidence furnished by preconscious interpretations to awareness to be weighted more heavily than other sources of data in conscious judgmental and decision-making processes, even when a person is motivated to be deliberate and "objective" in making judgments and decisions.

For all of these reasons, it would appear that only the illusion of full control is possible, as the actual formation of a judgment or decision is intended and controllable, although the inputs and influences largely may not be. A fitting metaphor for the influence of automatic input on judgment, decisions, and behavior is that of the ambitious royal advisor upon whom a relatively weak king relies heavily for wisdom and guidance. The actual power of decision always rests with the king, who by no means has to follow the proferred advice; yet the counselor who "has the king's ear" wields the real power over decisions and the policy of the kingdom. Preconscious, postconscious, and context-dependent automatic influences have this behind-the-scenes power over judgments and action, to the extent that the conscious and intentional processes that actually make those decisions trust the automatically supplied information and do not seek to supplement it with advice from other quarters.

ACKNOWLEDGMENTS

NOTES

1. When discussing the mediating role of awareness, it is important to be explicit as to what the awareness is *of* (Bargh, 1984; Uleman, 1987). Postconscious effects require awareness of the stimulus events, not awareness of the subsequent influence of the activation resulting from them.

2. It may be that the amount of attentional effort required to hold the prime word in working memory in order to be able to repeat it after the evaluation of the adjective is a necessary precondition of the automatic evaluation effect (see Bargh, Chaiken, et al., 1988). If so, the effect would not be classifiable as a reverberatory, spreading-activation effect needing merely conscious awareness of the relevant stimulus event. It would more accurately be considered as "context-dependent"— that is, as unintended but conditional on the goal of memorizing the prime (see "Unintended Goal-Dependent Automaticity" section).

3. The duration of the priming effect, on the other hand, does appear to be a function of the extent of processing of the prime (see Bargh & Pratto, 1986, p. 301).

4. This phrase is derived from the work of Johnson and Raye (1981), whose research on "reality monitoring" concerned how one knows the difference between memories driven by sensory experience and those generated by imagination and other internal sources of thought.

5. The validity of this assertion, of course, depends on at what level one defines "behavior." It appears that behavior in the form of facial expressions and visceral reactions to affectively laden stimuli may not be as controllable, for example (Winton, Putnam, & Krauss, 1984). But it seems reasonable in light of present evidence to state that verbal behavior and bodily motion, and even facial expression to a considerable extent—in short, the components of social-interactive behavior—are never under the direct control of the environment (see also Bargh, 1984).

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