
Unconscious Influences Revealed

Attention, Awareness, and Control

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Recent findings of dissociations between direct and indirect tests of memory and perception have renewed enthusiasm for the study of unconscious processing. The authors argue that such findings are heir to the same problems of interpretation as are earlier evidence of unconscious influences—namely, one cannot eliminate the possibility that conscious processes contaminated the measure of unconscious processes. To solve this problem, the authors define unconscious influences in terms of lack of conscious control and then describe a process dissociation procedure that yields separate quantitative estimates of the concurrent contributions of unconscious and consciously controlled processing to task performance. This technique allows one to go beyond demonstrating the existence of unconscious processes to examine factors that determine their magnitude.

A layperson might ask, “Can techniques that rely on unconscious processes be used to make me act in ways that are counter to my own purposes?” The layperson’s question about unconscious processes has little to do with problems of definition, thresholds, or experimental design—problems that have occupied psychologists. We side with the layperson by treating the question of unconscious influences as a question of control over thought and behavior. Indeed, we rely on demonstrations of effects that are counter to a person’s conscious intent as a methodological tool for revealing unconscious influences. Perhaps discomfiting for the layperson, our research, along with research done by others, indicates that unconscious influences are very common. People sometimes consciously plan and then act, but more often behavior is influenced by unconscious processes; that is, people act and then, if called upon, make their excuses.

As noted by Greenwald (1992, this issue), academic psychologists have held a skeptical view of psychoanalytic conceptions of unconscious cognition. Recent investigations of unconscious processes have been grounded in more “respectable” areas, such as neuropsychology, and in cognitive-oriented theories of memory and perception. The result has been the acceptance of a *cognitive unconscious* that differs in important ways from the *psychoanalytic unconscious* (Kihlstrom, 1987). However, we argue that the procedures used to gain evidence of the cognitive unconscious share important similarities (and weaknesses) with those used to gain evidence of the psy-

choanalytic unconscious. In this article, we describe an approach to the study of unconscious processes that centers on the question of control. Our goals here are to (a) review experiments that demonstrate the existence of (cognitive) unconscious influences, (b) highlight the importance of subjective experience in the control of thought and behavior, and (c) describe a technique that allows us to separately estimate the contributions of unconscious and consciously controlled processing to task performance. Our technique is based on the distinction between automatic and controlled processing; it allows one to go beyond demonstrating the existence of unconscious processes to examine factors that differentially influence the two forms of processing. We begin with a selective review of findings that have generated renewed interest in unconscious processes.

Task Dissociations

Current approaches to the study of unconscious processes have a number of similarities with older, psychoanalytic methods used to investigate the unconscious. Consider, for example, projective tests of personality, such as the Rorschach (1921/1981). The rationale for using the Rorschach is that it is thought to reveal unconscious needs, motivations, and expectancies that would not be revealed by self-report measures. A similar logic underlies recent interest in indirect tests of memory and perception. On an indirect test, subjects are not instructed to report on a past or present event, but rather engage in some task that can indirectly reveal the influence of memory or perception of the event. In contrast, a direct test, like a self-report measure, asks the subject to consciously recollect or identify the event in question. Dissociations between direct and indirect tests of memory and perception are analogous to dissociations between self-report measures and projective tests of personality. In both cases, the pattern of results is interpreted as showing that a source of influence unavailable to consciousness has an effect on thought and behavior.

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The use of indirect tests to reveal unconscious influences of memory is illustrated by experiments examining the memory performance of amnesics. Amnesics perform poorly when directly asked to report on the past, but show near normal effects of memory in their performance on a variety of indirect tests (for a review, see Shimamura, 1989). For example, reading a word makes it more likely that amnesics will later be able to complete a fragment of that word, even though they are unable to recall or recognize the word as one that they had read earlier (e.g., Warrington & Weiskrantz, 1974). These results and others suggest that amnesics may often use memory for prior events, but have little or no subjective experience of remembering. Similar dissociations between performance and awareness have been found in other neurological syndromes. For example, in "blindsight," patients make visual discriminative responses without the subjective experience of seeing (Weiskrantz, 1986). In prosopagnosia, patients show discriminative galvanic skin responses to familiar faces without the subjective experience of recognizing those faces (see Young & De Haan, 1990).

People with normally functioning memory also show dissociations in their performance on direct versus indirect tests of memory (for reviews, see Richardson-Klavehn & Bjork, 1988; Roediger, 1990; Schacter, 1987). For example, reading a list of words increases the likelihood that subjects can later read those words when they are flashed very briefly on a computer screen, and such effects can be independent of the ability to recognize the words as earlier studied (Jacoby & Dallas, 1981). Direct and indirect measures of perception have also been shown to be dissociable (for reviews, see Bornstein & Pittman, in press). Marcel (1983), for example, showed that brief presentation of a word influenced subsequent decisions about related words even though subjects were unable to report that a word had been flashed when given a direct test of perception.

Thus, dissociations between direct and indirect tests of memory and perception take the same form as do dissociations between projective tests of personality and self-report measures. Both provide evidence for the existence of unconscious processes. However, as is well-known by researchers in the psychoanalytic tradition, although projective tests of personality are aimed at measuring unconscious influences, the tests are also open to other influences, such as attempts to deceive. Similar problems plague the use of indirect tests of memory and perception. We consider those problems after describing experiments showing unconscious influences on the subjective interpretation of events.

Unconscious Influences on Subjective Experience: Memory Illusions

The layperson is likely to take the existence of a single, shared "real world" as a given. By that naive realist view, the present is truly as it presents itself, and memory for the past can be trusted. The naive realist view was attacked by both psychoanalytic theory (e.g., Erdelyi, 1985) and

the New Look theory of perception (Bruner & Postman, 1949). In fact, there is now a great deal of support for the notion that an unconscious inference or attribution process underlies the subjective experience of perceiving (e.g., Helmholtz, 1867/1968; Marcel, 1983; Trope, 1986) and of remembering (Jacoby, Kelley, & Dywan, 1989; Ross, 1989; Spence, 1982).

Much as perceptual psychologists have used perceptual illusions to investigate the information used to construct perceptual experience, we have used memory illusions to investigate the construction of subjective experience. Memory for prior experience automatically influences the processing and interpretation of later events. One ubiquitous effect of past experience is to make current processing more efficient, rapid, or fluent. Such fluent processing is then unconsciously attributed to a source, thereby giving rise to a particular subjective experience. Errors in this attribution process can result in a variety of memory-based illusions.

Noise Judgments

The effect of prior exposure on perception of background noise serves as an example of memory-based illusions. In one experiment, Jacoby, Allan, Collins, and Larwill (1988) presented previously heard and new sentences against a background of white noise of varying loudness. Subjects judged the background noise as less loud when the sentences were old (had previously been heard) than when they were new. The relative ease of perceiving old sentences was misattributed to a lower level of background noise. That is, people were unable to separate out the contribution of memory to perception when judging noise level and so had the subjective experience of a low level of noise. Later experiments by a McMaster student, Jane Collins, have shown that this effect of prior experience on noise judgments is automatic in that people are unable to escape it. Even when subjects were informed about the effect and told to avoid it, they continued to judge the background noise accompanying old sentences as less loud than that accompanying new sentences. Current experience—even of fundamental physical dimensions—is colored by past experiences, and these effects are sometimes inescapable. Having had a particular experience, one cannot go back and recover one's naivete.

Measures of subjective experience may prove useful as indirect tests of other processes, in addition to memory. We have done preliminary research using noise judgments as indirect tests of categorization and of attitudes. Collins, McLeod, and Jacoby (1992) found that the perceived loudness of a background noise against which questions were asked was influenced by the emotion provoked by the questions. For example, the background noise accompanying the question "Would it be upsetting if your parents stopped supporting you?" was judged as much less loud than the same objective level of background noise presented with a neutral question. Our intent is to use tests of noise judgments as a new and improved Rorschach test. Among the advantages are that noise judgments are easily scored and that measures of subjective

experience might be more sensitive than are other projective tests.

False Fame

Memory for an earlier event can influence subjective experience even when people are unable to consciously recollect that earlier event. Jacoby, Woloshyn, and Kelley (1989) found that prior presentation of names leads to an increase in the familiarity of the names and that familiarity can be misinterpreted as fame. They showed that although divided attention, as compared with full attention, to reading names impaired subjects' ability to recognize the names as previously presented, it did not diminish this *false fame effect*. Even more impressive, Jelicic, De Roode, Bovill, and Bonke (in press) found a false fame effect for names presented to patients under general anesthesia. To ensure that the patients were unaware of the auditory presentation of names, the list was not presented until after the first surgical incision had been made and was ended prior to suturing. Their results are dramatic in showing that names can gain fame even when people were not aware of their initial presentation. Banaji and Greenwald (in press) have used the magnitude of the false fame effect as an indirect or implicit measure of attitudes. They found that, for some subjects, only names of men acquired false fame. Banaji and Greenwald interpreted this as indicative of an unconscious influence of sexism on the attribution of fame.

There are a host of other experiments showing memory-based illusions and illusions of remembering. To list a few: Kunst-Wilson and Zajonc (1980; see Bornstein, 1989) showed that aesthetic preferences increase for briefly presented items, even though people are unaware that the items were previously presented. This *mere exposure effect* is similar to our false fame effect in its lack of reliance on conscious recollection. Effects of prior experience can also be misattributed to a statement being true (Begg & Armour, 1991), an answer being correct (Kelley & Lindsay, 1992), or a problem being easy (Jacoby & Kelley, 1987). In addition, memory for past emotional states and evaluations may also be automatically retrieved and thereby color subjective experience (see Johnson & Sherman, 1990). Each of these phenomena show that unconscious influences of the past can affect the subjective experience of the present. Other studies have shown that factors that influence processing in the present can affect the subjective experience of the past. If oriented to the past, people may misattribute ease of processing to prior experience, thereby producing an illusion of remembering akin to *déjà vu* (Jacoby & Whitehouse, 1989; Whittlesea, Jacoby, & Girard, 1990). Similarly, Ross (1989; cf. Bartlett, 1932) has shown that memories can reflect people's theories as well as their past experience.

Illusions created by misidentifying the source of effects distort subjective experience. Importantly, when such interpretive processes operate automatically (i.e., unconsciously), their products are experienced as direct or "true" perceptions or memories, rather than as interpretations (cf. McArthur & Baron, 1983). Subjective experience

is important because it serves as a basis for judgments and action. For example, a person would behave differently if difficulties in comprehension were experienced as being due to the loudness of background noise, rather than to lack of relevant prior experience. As described in the next section, differences in subjective experience (awareness) can be inferred from effects on the control of behavior.

Unconscious Influences as a Question of Control

Task dissociations and distortions of subjective experience provide evidence of unconscious processes that is reminiscent of the sorts of evidence used to support the psychoanalytically inspired conception of the unconscious (see Erdelyi, 1985). Interpretation of indirect test performance has also inherited the same problems that plague interpretation of projective tests. Few are tempted to treat a Rorschach test as selectively measuring *only* unconscious processes, that is, as being process or factor pure. However, indirect measures of memory and perception are often treated as such. Against that practice, there is good reason to think that intentional, consciously controlled processes often "contaminate" performance on indirect tests (Holender, 1986; Jacoby, 1991; Jacoby, Toth, & Yonelinas, 1992; Reingold & Merikle, 1990). In addition, self-report measures of awareness (e.g., J. S. Bowers & Schacter, 1990) are unlikely to provide an accurate index of conscious processing or awareness (Reingold & Merikle, 1990; White, 1982).

Rather than relying on dissociations between self-report measures and indirect tests, we have used effects on the control of behavior to infer differences in awareness. Our main interest in awareness is in the extent to which it can be translated into control over thought and behavior. Awareness sometimes serves as a prerequisite for initiating consciously controlled processing of the sort that is necessary for intentional action (e.g., Kuhl, 1986; Shallice, 1988). However, an equally important function of awareness is that it allows one to inhibit action by opposing influences that would otherwise prevail (e.g., K. S. Bowers, 1975, 1984). Indeed, errors that result when unconscious influences are unsuccessfully opposed by conscious control (e.g., Freudian slips) can be particularly revealing. We have used the opposition of consciously controlled and unconscious (automatic) processes as a methodological tool to identify factors that selectively influence the two forms of processing. The following example illustrates the rationale for treating unconscious influences as a question of control over thought and behavior.

Suppose that you wanted to determine whether an acquaintance was truly a friend. You might ask a known friend to ask the acquaintance about his or her feelings toward you. However, expressions of friendship in this context might not be very informative because social pressures would produce those expressions just as would true friendship. You would be better advised to have the acquaintance questioned by your worst enemy rather than

by your best friend. Any positive attitude expressed to your worst enemy could be given heavy weight because responses of that sort would be opposed by social factors. This example illustrates the advantages of procedures in which alternative sources of influence are opposing one another rather than acting in concert. As we will describe, we have used such opposition procedures to provide unambiguous evidence of unconscious processing.

Even more information can be obtained by comparing an opposition condition with an in-concert condition. To continue our example: Although positive evaluations expressed to a known enemy could probably be taken as genuine, it is likely that those expressions would underestimate the acquaintance's true feelings. An important advantage could be gained by having both a known friend and a known enemy question the acquaintance. By that means, one could assess the extent to which the acquaintance exercised conscious control over attitude expression in response to social demands—a measure of “diplomacy” or “hypocrisy.” Given an estimate of conscious control, one is in a good position to assess the acquaintance's true attitude. The point of our example is to introduce a general method that can be used to separate the contributions of unconscious and consciously controlled processes to task performance. As we will show, having both an opposition condition and an in-concert condition allows us not only to demonstrate the existence of unconscious influences, but to estimate their magnitude.

The Advantages of Opposition

Many supposed demonstrations of unconscious perception and unconscious influences of memory have been called into question on the grounds that the experimenter mistakenly measured conscious rather than unconscious bases for performance (Holender, 1986; Richardson-Klavehn & Bjork, 1988). Those problems of interpretation arise because the experimental arrangement was such that both unconscious and conscious influences would facilitate task performance. Just as in the case of a known friend questioning an acquaintance, when effects act in concert, behavior might reflect unconscious influences or consciously controlled processes or both. Advantages can be gained by arranging the situation such that unconscious and conscious influences have opposite effects.

Consider, by way of example, Jacoby, Woloshyn, et al.'s (1989) use of a fame judgment task in which conscious and unconscious influences of memory were placed in opposition. Subjects in one condition devoted full attention to reading a list of nonfamous names, whereas those in a divided attention condition read the list of nonfamous names while monitoring an auditory string of digits. The old nonfamous names were then mixed with new famous and new nonfamous names and presented for a test of fame judgments. At test, subjects were correctly informed that all of the names on the previously read list were nonfamous, so that conscious recollection of reading a name on that list allowed subjects to be certain that the name was nonfamous. This conscious use

of memory opposed the increased familiarity produced by earlier reading a name. Formally, old nonfamous names would mistakenly be called *famous* only if the name was familiar (F) but subjects did not recollect (R) the name as having been presented earlier: $F(1 - R)$. Divided attention during study was predicted to impair conscious recollection and thus, to make it harder for subjects to oppose the effect of familiarity.

As predicted, subjects who devoted full attention to reading the nonfamous names were *less* likely to mistakenly call those old nonfamous names “famous” than they were the new nonfamous names. These subjects presumably could consciously recollect reading old names on the list, and so could know that they were nonfamous. The opposite occurred in the divided attention condition. Dividing attention resulted in old nonfamous names being *more* likely to be mistakenly called “famous” than new nonfamous names. That is, the effect of dividing attention was to limit the possibility of conscious recollection, leaving automatic or unconscious influences in the form of familiarity largely unopposed. We can be certain the false fame effect arose from an unconscious influence of memory, because conscious recollection would have produced the opposite effect.

Separating Conscious and Unconscious Influences: Process Dissociations

Placing effects in opposition can produce unambiguous evidence of automatic or unconscious influences, but does not allow one to estimate the magnitude of those influences. In fact, performance in an opposition condition actually *underestimates* unconscious influences (e.g., familiarity), because those influences are opposed by conscious recollection ($F[1 - R]$). To gain a true measure of unconscious influences, it is necessary to fully eliminate recollection (Set $R = 0$) or, alternatively, find some way of estimating the separate effects of unconscious and consciously controlled processing. It is the second alternative that we have pursued.

Informing subjects that earlier read names were nonfamous puts unconscious influences and conscious recollection in opposition—similar to an acquaintance being questioned by one's enemy. In contrast, an in-concert condition can be created by misinforming subjects that all of the earlier read names were actually “obscure” famous names. In this case, both recollection and familiarity would produce judgments of “famous.” This is because an old name could be judged famous either because it was recollected as being on the earlier read list (R) or because, although recollection failed ($1 - R$), the name was sufficiently familiar (F) to be accepted as famous; that is, the probability of calling an earlier read name “famous” would be $R + F(1 - R)$ and would reflect automatic and intentional uses of memory acting in concert—similar to an acquaintance being questioned by a known friend. With these two conditions, recollection can be estimated by subtracting the probability of calling an earlier read name “famous” on the opposition test ($F[1 - R]$) from that probability on the in-concert test

($R + F[1 - R]$). That is, recollection, like hypocrisy, is measured as the difference between performance in an in-concert and an opposition test condition. Given an estimate of recollection, the influence of familiarity can be estimated using simple algebra (e.g., $F = [\text{opposition score}]/[1 - R]$).

Jennings and Jacoby (1992) used this procedure to estimate the separate contributions of recollection and familiarity to fame judgments. The purpose of their experiment was to determine whether dividing attention while reading names would influence the later familiarity of the names or would only affect the later ability of subjects to recollect having read the names earlier. Results showed that divided, as compared with full, attention while reading the names radically reduced recollection but left familiarity unchanged. In the same experiment, fame judgments of elderly subjects were compared with those of younger subjects. Similar to conditions of divided attention, aging reduced recollection but did not change unconscious influences of memory (i.e., familiarity).

Extensions

We call this the *process dissociation procedure* because what we are looking for are factors that produce dissociative effects on the *estimates* of the different types of processes. The starting point for the procedure is a set of simple simultaneous equations whose terms correspond to unconscious and consciously controlled processes. These equations represent a model of how these processes interact, with one equation representing cases in which both kinds of processes have effects in the same direction and the other equation representing cases in which they have opposite effects. Experimental conditions are then designed to map onto those equations, and the observed probabilities are used to solve for the unknowns.

So far, we have used process dissociation procedures to estimate automatic and intentional processes in a variety of domains, including recognition memory (Jacoby, 1991, 1992; Toth, 1992; Yonelinas & Jacoby, 1992), cued recall (Jacoby et al., 1992), and Stroop performance (Lindsay & Jacoby, 1992). Debner and Jacoby (1992) have used the procedure to separate conscious from unconscious perception in a way that parallels the procedure used to separate conscious from unconscious influences of memory. In those experiments, we made use of a word-stem-completion task and briefly flashed completion words immediately before presenting the word stems. In the opposition condition, subjects were instructed *not* to use the briefly flashed completion words, whereas in the in-concert condition, they were told *to* use the words as completions. By using this procedure, we avoided problems encountered by those attempting to develop process-pure tests and were able to gain a quantitative estimate of the effects of unconscious perception. Ian Begg (1991) has extended the procedure to separate logic from intuition in syllogistic reasoning. Other studies are planned to separate conscious from unconscious influences of attitudes (cf. Devine, 1989). Of course, as the approach is extended to other domains, details of the experimental

conditions or equations, or both, will need to be modified. Given sufficient ingenuity, one might even be able to estimate the extent to which an acquaintance is truly a friend or merely polite.

The assumptions underlying the process dissociation procedure are more fully described by Jacoby (1991). For overviews of research using that procedure, see Jacoby and Kelley (1991); Jacoby, Ste-Marie, and Toth (in press); and Jacoby, Toth, Lindsay, and Debner (in press).

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Greenwald (1992) reviews evidence for the existence of unconscious processes and identifies "unconscious cognition" with the absence of attention. By identifying the unconscious with the absence of attention, Greenwald inherits the problem of ensuring that attention has been fully eliminated in supposed demonstrations of unconscious influences. The operations relied on by Greenwald to ensure "attentionless unconscious cognition" are similar to those used to measure "automatic processing." Automatic processing has traditionally been defined in terms of a fast process that consumes no attentional capacity, is under the control of stimuli rather than intention, and occurs without awareness (e.g., Hasher & Zacks, 1979; Posner & Snyder, 1975; Shiffrin & Schneider, 1977). These characteristics are reflected in the layperson's belief that answers that are given quickly to a question, answers given when distracted, or (perhaps) answers given under the influence of alcohol are likely to be true (i.e., uncontaminated by consciously controlled attempts to deceive). However, although it is clear that these conditions and others (e.g., briefly presented pattern-masked stimuli) do limit the opportunity for intentional, consciously controlled processing, they are not likely to do so completely or reliably enough to serve as satisfactory definitions of automatic or unconscious processing (Neumann, 1984).

We also identify unconscious influences with automaticity, but have redefined automaticity in terms of a measure of consciously controlled processing (Jacoby, Ste-Marie, et al., in press). Our redefinition changes the status of characteristics that have traditionally been used to define an automatic process to variables whose effects can be assessed. With the process dissociation procedure it is not necessary to eliminate consciously controlled processing in order to measure the effect of unconscious processes. By dividing attention during the presentation of an event, for example, we do not mean to fully eliminate consciously controlled processing so as to produce a process-pure test of automaticity. In fact, we believe that the pursuit of process-pure tests is largely a hopeless enterprise. Rather, we use the procedure to examine the separate contributions of consciously controlled and unconscious processes to performance of a single task; by doing so, we eliminate the necessity of assuming that some particular test or combination of experimental conditions provides a process-pure measure of automatic or unconscious processes.

Experiments using the process dissociation procedure have shown that the operations used by others to

define unconscious processes do have *differential* effects on consciously controlled and unconscious processes. For example, limiting the attention given to briefly presented, pattern-masked words can reduce consciously controlled processing to near zero, as shown by performance in an in-concert condition being nearly identical to that in an opposition condition (Debner & Jacoby, 1992). Rarely, however, do such operations completely eliminate consciously controlled processing, and so they do not reliably provide a process-pure measure of automatic or unconscious processes. In contrast to their large effects on consciously controlled processes, factors such as full versus divided attention, aging, and speed of responding leave the contribution of unconscious processes invariant. Process dissociations of this sort provide support for the assumption that consciously controlled and unconscious processes *independently* contribute to task performance.

Our procedure measures conscious control as the difference between performance in conditions in which a person tries *to* versus tries *not to* engage in some act. The value of that measure of control is well-known to the layperson. Earlier, we illustrated the procedure with the example of testing friendship. As a second example, consider the problem of measuring the amount of control that one person has over another person, such as the control a parent has over a child. If a child is as likely to engage in an act when he or she is told not to as when told to, then the parent has no control. Control cannot be measured only by telling a child to or not to engage in some act; rather, control is assessed by the difference in performance between the two conditions. In contrast to consciously controlled processing, automatic or unconscious processes do not support selective responding but, rather, produce the same effect, regardless of whether that effect is in concert or opposed to one's intentions.

Elsewhere (Jacoby, Ste-Marie, et al., in press; Jacoby, Toth, et al., in press), we further describe the advantages of identifying unconscious influences with automaticity, as redefined by our procedures. One advantage is that recent theorizing about automaticity (e.g., Logan, 1988; Neumann, 1984) sheds light on questions about unconscious processes—for example, that theorizing is consistent with the possibility that unconscious influences are context specific rather than being general across contexts, as held by psychoanalytically inspired conceptions of the unconscious (cf. Fromkin, 1973). Important for producing unconscious influences may be the larger context in which an event occurs. People may be particularly susceptible to unconscious influences when an event fits into the flow of ongoing activity (cf. Wicklund, 1986). Concerns of that sort suggest that the power of unconscious processes may be badly underestimated by experiments that present single words or phrases out of context (cf. Greenwald's, 1992, "two-word challenge").

Greenwald (1992) holds that it is necessary to distinguish between two senses of the term *unconscious*—that is, to differentiate between unconscious perception and unconscious or automatic influences of memory. By his view, the important difference is that people were likely

to be aware of the events that later gave rise to unconscious influences of memory, whereas awareness is fully denied by claims of unconscious perception. With our focus on control, there are reasons to question the importance of that difference. Although the interval of time between presentation of an item and its test is shorter in investigations of unconscious perception than in investigations of memory, forgetting may occur during that interval. Unconscious perception might actually involve a fleeting awareness. At the extreme it is impossible to discriminate between a failure to remember and true unconscious perception, and fortunately, it does not seem terribly important to do so. This follows from our emphasis on control. Awareness at the time an effect operates is more critical than any earlier difference in awareness. If one is to avoid a source of influence, one must be aware of that influence when it exerts its effect. For both unconscious influences of memory and unconscious perception, behavior is affected by processes that are not under current volitional control.

Dividing attention either during study or at test can produce effects that parallel those produced by briefly presented, pattern-masked items. Although a useful tool, there really is nothing special about presenting items in impoverished perceptual conditions. Indeed, larger unconscious influences can probably be produced by manipulations of attention than by flashing items for a brief duration. In that regard, it is interesting to consider the controversy surrounding the effects of subliminal "back-masked" messages that are supposedly embedded in some rock music (Vokey & Read, 1985). Given the effects of divided attention, there may be more to fear from the "supraliminal" messages in background music than from any "subliminal" messages hidden in that music. The backgrounding of music, akin to dividing attention, likely makes one more open to the lyrics as a source of unconscious influences and persuasion. We might, then, have better reason to worry about the ill effects of backgrounding than those of back masking.

Conclusions

New Looks 1 (e.g., Bruner & Postman, 1949) and 2 (Erdelyi, 1974) were not entirely successful, because their proponents could not refute the claim that supposed measures of unconscious processing were contaminated by conscious processing. Recent findings of cognitive task dissociations, whereas fascinating, provide little real advance over New Looks 1 and 2, because their interpretation also rests on the assumption that a particular task provides a process-pure measure of unconscious processing. In that vein, the use of task dissociations as evidence for the existence of separate perceptual or memory systems (e.g., Cohen & Squire, 1980; Tulving & Schacter, 1990) is similar to the use of projective tests to identify particular personality characteristics. Under some conditions, task dissociations can be used to demonstrate the existence of unconscious processes, but they cannot measure the magnitude of those effects. Also, because of the few constraints on theorizing, by relying on task disso-

ciations one runs the risk of finding as many memory representations or personality characteristics as one has tasks (cf. Roediger, 1990).

If New Look 3 (Greenwald, 1992) is to be successful, the problem of measuring unconscious influences must be solved. Our solution to that problem treats questions about unconscious processes as questions of control over thought and action. The process dissociation procedure was devised to estimate the separate contributions of automatic and intentional processes to performance of a single task. Gaining an estimate of the magnitude of effects allows one to go beyond demonstrating the existence of unconscious processes, and on to specifying the conditions that maximize their effects. Use of the process dissociation procedure to separate unconscious and consciously controlled processes is a refinement of techniques whose value is well-known to the layperson. Just as gaining a true measure of friendship requires "bad times" as well as "good times," a measure of unconscious influences requires both a condition in which unconscious processes oppose and a condition in which they act in concert with the aims of conscious intention.

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