F. Anthropology/Social Psychology of Consciousness

Social Psychological Approaches to Consciousness

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Abstract

A central focus of contemporary social psychology has been the relative influence of *external* (i.e., environmental, situational) versus *internal* (i.e., personality, attitudes) forces in determining social judgment and social behavior. But many of the classic findings in the field – such as Milgram's obedience research, Asch's conformity studies, and Zimbardo's mock-prison experiment – seemed to indicate that the external forces swamped the internal ones when the chips were down. Where in the social psychological canon was the evidence showing the internal, intentional, rational control of one's own behavior? Interestingly, most models of a given phenomenon in social psychology have started with the assumption of a major mediational role played by conscious choice and intentional guidance of judgment and behavior processes. Then, empirical work focuses on the necessity or validity of this assumption. As a consequence there has been a greater research focus on the non-conscious than the conscious aspects of any given phenomenon. However, because these studies focus on the relative influence of both conscious and automatic processes, there has been a strong influence within social psychology of dual-process models that capture these distinctions (e.g., intentional versus unintentional, effortful versus efficient, aware versus unaware). Another reason that dual-process models became popular in social psychology is that the distinction nicely captured an important truth about social cognition and behavior: that people seem to process the identical social information differently depending on its relevance or centrality to their important goals and purposes.

Introduction

Historically, social psychology has been concerned with the determinants of social behavior; specifically, the relative influence of external (i.e., environmental, situational) versus internal (i.e., personality, attitudes) causal forces. Many of the most famous

studies in social psychology focused on this issue of internal versus external determinants of behavior (Wegner & Bargh, 1998). For example, early attitude research was driven by the belief that attitudes would prove to be a strong predictor of actual behavior. Yet it wasn't long after Thurstone (1928) first demonstrated that internal, private attitudes could be measured that LaPiere (1934) caused great consternation by seeming to show that one's stated attitudes toward a social group did not predict one's actual behavior toward that group very well at all.

Asch's (1952) famous conformity studies were surprising at the time because they seemed to show that a person's publicly made judgments of the relative lengths of lines presented clearly on a chalkboard were swayed by the (stage-managed) opinions of the other "subjects" present in the experimental session. Thus even in cases where the judgment or behavior should have been determined entirely by internal perceptual experience, external forces still played a role. Milgram's (1963) obedience experiments, in which subjects believed they were administering painful shocks to another subject, were disturbing and controversial because they demonstrated the power of a situational influence over the subject's behavior (i.e., the experimenter's authority) to override presumed internal influences (i.e., the subject's presumed personal values not to cause pain or harm to another).

Darley and Latane's (1968) seminal studies of bystander intervention showed how the simple presence of other people in the situation seemed to inhibit individuals from helping another person in clear distress. And last but not least, the well-known Stanford Prison Study (Haney, Banks, & Zimbardo, 1973) provided a powerful demonstration of situational forces (social roles, as prisoner versus guard) swamping dispositional forces (values, good intentions) in determining the behavior of the participants in a realistic prison simulation.

Where oh where, in all of these findings, was the internal, intentional, rational control of one's own behavior?

Conscious by Default

These findings were surprising at the time (to social psychologists as well as to the general public) because they violated people's strongly held assumption that one's own behavior was under one's internal and intentional control. Compared with cognitive psychology or cognitive neuroscience, social psychology tends to focus on psychological processes of a relatively high order of complexity: for instance, judgment, goal pursuit over extended time periods, and behavior in social interaction. Going back at least to Descartes (1633) there is a deep philosophical tradition of assigning such complex processes to an agentic "mind" instead of the mechanical "body." That is, for any given process of such complexity, the initial assumption tends to be that the individual plays an active, agentic role in its instigation and operation, as opposed to it being a purely mechanical, determined phenomenon (see Bargh & Ferguson, 2000).

Perhaps as an inheritance or vestige of this long-standing philosophical stance, then, social psychology tends to begin its analysis of any complex, important phenomenon by assuming a central role for conscious (intentional, effortful, and aware; see next section) choice and monitoring processes. Research then has the effect of discovering the extent and role of *non-conscious* components of the process or phenomenon. Note how, in the classic studies above, the initial starting assumption is that the judgment or behavior is under internal, strategic (i.e., conscious) control. This pattern can be found in other traditional areas of social psychological inquiry as well. Early attribution theories began with a model of humans as rational scientists, using effortful and intentional "analysis-of-variance" methods to draw inferences of causality (Kelley, 1967). However as the research evidence started to come in, attribution theory then moved to a more automatic and less deliberative model (e.g., Gilbert, 1989; Taylor & Fiske, 1978). Similarly, the phenomena of stereotyping and prejudice were initially assumed to be driven

by motivated, conscious processes (see Nisbett & Ross, 1980), but then were shown by a considerable amount of research to have a significant automatic, non-conscious component (Brewer, 1988; Devine, 1989).

This is how research related to issues of consciousness has proceeded in social psychology. The initial models start with the default assumption that the phenomenon under investigation involves conscious, aware, intentional appraisals or behavior on the part of the participants, and then this set of presumed necessary conditions is whittled down as the research findings warrant. As a consequence there has been a greater research focus on the non-conscious than the conscious aspects of any given phenomenon.

The main exceptions to this rule are models of self-regulation and goal pursuit (see Bandura, 1986; Carver & Scheier, 1981; Deci & Ryan, 1985; Locke & Latham, 1990; Mischel, Cantor, & Feldman, 1996), in which conscious choice and willpower are featured as mediating, explanatory variables. This is probably because, even among the relatively complex phenomena studied in social psychology, self-regulatory processes are the most complex, dynamic, and inter-active with the shifting, uncertain environment (see Baumeister, 1998; Fitzsimons & Bargh, 2004). Because of the level of abstraction and complexity of these processes, it is understandable that it has taken longer to find and isolate their mechanisms and components. Yet even in the domain of self-regulation research, studies are beginning to identify non-conscious, automatic components (see Fitzsimons & Bargh, 2004). For example, complex goal pursuit can be put into motion by situational features instead of exclusively by consciously made intentions or choices, and it can operate in a flexible manner, interacting with the changing environment over time, just as can conscious goal pursuit (Chartrand & Bargh, 2002).

All of these domains of research, then, recognize the influence and importance of both conscious and automatic processes. It is not surprising then that there has been a strong influence within social psychology of

dual-process models that capture these distinctions (e.g., intentional versus unintentional, effortful versus efficient, aware versus unaware). Cognitive social psychology has emphasized the study of non-conscious processes, whereas motivational social psychology is still mainly the study of conscious processes. But clearly, conscious and non-conscious components of a complex psychological process are two sides of the same coin. By testing the default initial assumptions of a necessary and pivotal role for conscious processes – showing where conscious processes are needed versus where they are not – we learn a great deal about the role and function of consciousness. In this subtractive manner, the social psychological study of non-conscious judgment and behavioral phenomena adds to our understanding of the purpose of conscious processes.

Dual-Process Models: Automatic Versus Controlled Processes

Cognitive approaches to social psychology were greatly influenced by the dual-process models of the 1970s (Posner & Snyder, 1975; Shiffrin & Schneider, 1977) that distinguished between conscious and automatic modes of information processing (see Chaiken & Trope, 1999). Conscious or controlled processes were said to be *intentional, controllable, effortful*, and in *awareness*, whereas automatic processes were characterized by the opposite set of features: They were *unintended, uncontrollable, effortless*, and *outside of awareness* (Johnson & Hasher, 1987). However, at least for psychological processes of the level of complexity studied by social psychologists, these qualities did not seem to co-vary together in an all-or-nothing fashion (Bargh, 1989). For instance, stereotypes might become activated automatically (unintentionally and efficiently), but their influence on judgment was controllable (Devine, 1989; Fiske, 1989); making dispositional attributions might be the efficient and reflexive default process, but still required the intention to understand the causes of the person's behavior (Gilbert,

1989). Consequently, social psychologists have tended to study the separate and distinct aspects of automatic and controlled processes, and I have organized the brief review below in these lower-level terms (for more complete reviews see Bargh, 1994, 1996; Wegner & Bargh, 1998).

Effortful Processing: Only When it Matters

One reason that dual-process models became popular in social psychology is that the distinction nicely captured an important truth about social cognition and behavior: that people seem to process the identical social information differently depending on its relevance or centrality to their important goals and purposes. For example, people process a persuasive message differently if it concerns or affects them directly versus when it does not. If a proposed comprehensive exam requirement is allegedly to be instituted next year at a student's own university, she will spend more time and think more effortfully about the various arguments for versus against it; if it is to occur 5 years from now or at another university, she will not expend the same degree of effort. Instead she will tend to rely on heuristics or shortcuts – such as the attractiveness or expertise of the source of the message – to decide her position (Chaiken, 1980; Petty & Cacioppo, 1984).

People also were found to use short-cut heuristics in making causal attributions (Taylor & Fiske, 1978) and even behavioral choices in social interaction settings (Langer, Blank, & Chanowitz, 1978). Langer and colleagues argued that people develop mental representations of common situations ('scripts'; see Abelson, 1981) that then guide their behavior "mindlessly" within those situations. Heuristic cues such as the size of a request (e.g., for 1 minute versus 10 minutes of your time) determined whether people would assent to it, not the quality of the reason given for the request.

This basic principle – that the personal importance or goal relevance of target infor- mation moderates whether the individual will deal with it in an effortful and systematic manner versus in an off-hand and efficient way – holds across many different social psychological phenomena. One of the most important is *impression formation*, in particular the degree to which the perceiver will pay attention to and be influenced in his or her judgment by the target person's individual characteristics, as opposed to more superficial (but less effort-requiring) features, such as race, gender, age, or ethnicity. If a person's own outcomes depend on the target person (i.e., there is goal relevance), a more individuated and less stereotype-based impression is formed (Erber & Fiske, 1984; Neuberg & Fiske, 1987) than if the target person does not have control over the perceiver's outcomes.

Taylor and Fiske (1978) coined the term "cognitive miser" to refer to this human tendency not to think effortfully about other people or attitude issues unless really necessary. Underlying this idea is the notion that effortful processing is limited in its capacity at any given moment and so should be used only sparingly, to be reserved for the most important stimuli and events. Consistent with this notion, recent research by Baumeister, Bratslavsky, Muraven, and Tice (1998) has confirmed the limited-capacity nature of effortful social-information processing: They found that using it in one domain – even just to make a simple choice – seems to severely limit its availability for other tasks, for some time thereafter.

Efficient Processing: Automatic Components of Social Perception

Another important variable moderating whether people will engage in effortful versus heuristic or superficial processing is whether they are able to do so under the current circumstances. Conscious, effortful processing is relatively slow and so takes time; often the individual does not have the time, as when under time pressure or when there are multiple people or events to attend to

at once. Indeed, such *information overload* conditions are not unusual in the busy, noisy "real world" outside the psychology laboratory. Under these conditions, efficient, automatic forms of information processing have greater influence than usual, because they are not constrained as much by capacity or time limitations or by the current focus of conscious thought.

ATTITUDE ACTIVATION

An excellent example of this can be found in Fazio's (1986, 1990) model of the relation between attitudes and behavior. The extent to which one's attitudes determine one's behavior has long been a central research question in social psychology (see Eagly & Chaiken, 1993). Faced with evidence that the general correspondence between attitudes and behavior was weak at best (e.g., LaPiere, 1934; Wicker, 1969), attitude researchers began to look for the conditions that supported or fostered the relation. One such proposal was Fazio's (1986) *automatic attitude activation* model.

In this model he contended that attitudes varied in *strength*, or the degree of association between the representation of the attitude object and its evaluative tag (i.e., as good or bad). Strong attitudes are those characterized by a relatively automatic association, such that the mere perception of the attitude object in the environment was sufficient to also activate its associated attitude – no intentional, effortful thinking (such as about how one feels about the object) was necessary. Weak attitudes, on the other hand, did not possess this automatic association and so did not become active unless the person happened to think about his or her feelings toward the object.

In several studies, in which attitude strength was either manipulated or measured, automatic attitudes showed a more consistent influence on behavior than did weak attitudes. Indeed, Fazio and Williams (1986) showed that those participants who possessed strong, relatively automatic attitudes toward the candidates in the 1984 U.S. presidential contest (compared to those

who did not) showed much higher correspondence between those attitudes and their actual voting behavior (several months later) in the election.

CAUSAL ATTRIBUTION

Because of the immediacy and fluency of automatic forms of information processing, such as stereotyping, several researchers have proposed sequential or stage models of phenomena in which the first or default stage is relatively reflexive or automatic, with the second, more controlled stage occurring only if the person has both the ability (i.e., lack of time or overload constraints) and motivation to do so. Gilbert (e.g., 1989) argued that people have a default or automatic bias to locate causality for another person's behavior "in" that person him- or herself – in other words, making a *dispositional attribution* about the reason for that behavior. In his model, a causal attribution to situational factors is only made within a second, conscious processing stage – but that stage only occurs if the person has the time and processing resources available to engage in it.

In several studies, Gilbert and colleagues showed that people did not take clear situational influences into account when under conditions of distraction or attentional load. When watching a videotape of a woman being interviewed and being asked rather embarrassing questions, those participants under attentional overload (performing a secondary attention-demanding task while watching the tape) concluded she was a dispositionally shy and anxious person. People in the control condition, on the other hand, who watched the tape without having to do the secondary task, did not draw that conclusion – instead, they attributed the reason for her anxious behavior to the situation of having to answer embarrassing questions.

IMPRESSION FORMATION

Much research in social psychology has focused on the immediate or spontaneous effects of social stimuli – those that occur so efficiently that all it takes for the process to

occur is the mere perception of the object, person, or event in the environment (Bargh, 2001). For example, in the case of Fazio's (1986) model of the attitude-behavior relation, discussed above, seeing a rose activates not only the associated concept "rose" but also one's feelings or attitude toward roses. The activation of the attitude occurs in an uncontrollable manner similar to how written words activate their meanings during reading.

When forming initial impressions of other people, certain forms of information about them appear to have a similarly privileged status; we tend to detect and be influenced by these features in the course of perception, in an automatic fashion, without being aware of it. For example, Higgins, King, and Mavin (1982) showed that each of us is chronically sensitive to certain kinds of social behavior but not others, with wide individual differences in the exact content of these chronic sensitivities. Bargh and Thein (1985) then showed that under information overload (rapid presentation) conditions that prevented people in a control group from being able to differentiate in their impressions between a mainly honest and a mainly dishonest target person, those participants who were chronically or automatically sensitive to the dimension of honesty were still able to differentiate the two target persons. This is because they were able to process and be influenced by the honest and dishonest behaviors in an automatic, efficient manner.

STEREOTYPING AND PREJUDICE

By far the most researched form of such spontaneous cognitive reactions to the social environment is social stereotyping (see Bargh, 1999; Brewer, 1988; Devine, 1989). In a now classic study, Devine (1989) found that even non-prejudiced people (at least by one fairly explicit paper-and-pencil measure of racism) show evidence of automatic stereotype activation. In one study (1989, Experiment 2), she presented participants subliminally with stimuli related to positive aspects of the African-American stereotype (e.g., musical, athletic) and showed that this caused the negative aspects (e.g., hostility)

to become active as well to influence impressions of a target person.

Devine's study stimulated a great deal of research into the conditions under which the automatic stereotype activation effect is more or less likely to occur (see review in Devine & Monteith, 1999). The bottom line seems to be that cultural stereotypes can be picked up at a quite early age and can exert a biasing influence on social perception, judgment, and even behavior (Fazio et al., 1995) without the person being aware of such influence (Bargh, 1999). Fortunately, however, racial and gender stereotyping is one form of unconscious bias that many people now seem to accept as a possibility (i.e., they have a correct "theory of influence" in this case; see next section) and so can adjust and correct for it if they have the motivation to do so.

Awareness and Control

People are often unaware of the reasons and causes of their own behavior. In fact, recent experimental evidence across several different areas of psychology points to a deep and fundamental dissociation between conscious awareness and the mental processes responsible for one's behavior; many of the wellsprings of behavior appear to be opaque to conscious access. Although that research has proceeded somewhat independently in social psychology (e.g., Dijksterhuis & Bargh, 2001; Wilson, 2002), cognitive psychology (e.g., Knuf, Aschersleber, & Prinz, 2001; Prinz, 1997), and neuropsychology (e.g., Frith, Blakemore, & Wolpert, 2000; Jeannerod, 1999), using quite different methodologies and guiding theoretical perspectives, all three lines of research have reached the same general conclusions.

In social psychology, awareness of sources of influence on judgment and social behavior has long been an important research topic. Beginning with the seminal work of Nisbett and Wilson (1977), researchers observed that people were often unaware of actual strong influences on their choices and behavior. In one study, for example, some experimental participants watched a job interview

in which the interviewee spilled some coffee; others saw the identical tape without the spill incident. Although the former group rated the interviewee as significantly less qualified for the job, they also reported that the coffee spill (among a list of many possible influencing factors) did not affect their judgment.

Wilson (2002; Wilson & Brekke, 1994) has extended this line of research to document the many ways in which people seem out of touch with the actual determinants and influences of their judgments and behavior. An emergent principle from this research is that people have lay "theories" about what influences their feelings and decisions, or causes them (and others) to behave in certain ways, and often if not usually these theories do not accurately reflect the actual influences and causes.

Priming research, in which social concepts (e.g., traits and stereotypes) are first activated in an off-hand, subtle manner and then influence the person's subsequent judgments or behavior (see reviews in Bargh & Chartrand, 2000; Higgins, 1996), provides another example of the dissociation between important environmental influences and the person's awareness of those influences. Across many studies, the critical variable as to whether a person is able to control the external effect is not whether the person is aware of the influencing stimulus per se (i.e., whether it was subliminal or supraliminal), but rather whether the person is aware of the potential influence of that stimulus. Thus, priming stimuli presented subliminally have the same quality of effect as those presented supraliminally (i.e., visible, reportable), as long as the person does not believe or appreciate that the stimulus could have an effect on him or her (Bargh, 1992).

For example, in the popular scrambled sentence test method of priming (Srull & Wyer, 1979; see Bargh & Chartrand, 2000), experimental participants complete an ostensible language test in which they reorder strings of words into grammatically correct sentences. Embedded in this test are some words semantically related to a certain social concept; merely being exposed to these stimuli is believed to "prime" or make that concept temporarily accessible in memory. In such experiments, participants are of course aware of the critical word stimuli at the time of working on the test, yet they have no awareness that such mere exposure to words could possibly influence their judgments or behavior (they can and do). However, when participants do become aware of a potential influence, such as when the priming stimuli are extreme and salient (e.g., "Dracula" as a prime for hostility; Herr, Sherman, & Fazio, 1986), the usual priming effects are no longer obtained. Thus, in social psychology, an important distinction is that between awareness of the stimulus versus awareness of its possible effects (Bargh, 1992). The latter and not the former appears to be the key moderator of whether unconscious influences of that stimulus will occur.

Intentionality: What We Do Without Meaning To

IMPRESSION FORMATION

Uleman and his colleagues (1989; Uleman, Newman, & Moskowitz, 1996; Winter & Uleman, 1984; see also Carlston & Skowronski, 1994) have documented a "spontaneous trait inference" effect, in which social perceivers tend to encode the behavior of others in trait-concept terms (e.g., as an *honest*, *intelligent*, or *selfish* behavior), automatically and without intending to do so. Using Tulving and Thompson's (1973) encoding specificity paradigm, these researchers showed that trait terms corresponding to the behavior (e.g., *generous* for "she donated her stock gains to charity") later served as effective retrieval cues for the behavior, even though the experimental participants had not been instructed to form impressions of the sentence actors (merely to remember the behaviors). Apparently, then, the trait term had been spontaneously encoded by the participants when reading that behavior.

Spontaneous attitude, trait-concept, and stereotype activation are three important ways in which people "go beyond the information given" (Bruner, 1957), such that semantic and affective information not actually

present in the current environment becomes activated automatically in the course of perception to then exert an "unseen" influence on judgments and behavior.

IMITATIVE BEHAVIOR AND IDEOMOTOR ACTION

Two streams of research in social psychology have converged on the idea that complex social behavior tendencies can be triggered and enacted non-consciously. One line of research focuses on ideomotor action or the finding that mental content activated in the course of perceiving one's social environment automatically creates tendencies to behave the same way oneself (Prinz, 1997). Thus, for example, one tends to mimic, without realizing it, the posture and physical gestures of one's interaction partners (Chartrand & Bargh, 1999).

This "chameleon effect" has been found to extend even to the automatic activation of abstract, schematic representations of people and groups (such as social stereotypes) in the course of social perception (see Dijksterhuis & Bargh, 2001). For example, subtly activating (priming) the professor stereotype in a prior context causes people to score higher on a knowledge quiz (Dijksterhuis & van Knippenberg, 1998), and priming the elderly stereotype makes college students not only walk more slowly but have poorer incidental memory as well (Bargh, Chen, & Burrows, 1996). Thus, the passive activation of behavior (trait) concepts in the natural course of social perception (as experimentally simulated by priming manipulations) increases the person's tendency to behave in line with that concept him- or herself.

UNCONSCIOUS MOTIVATION AND AUTOMATIC GOAL PURSUIT

The second stream of research has shown that social and interpersonal goals can also be activated automatically through external means (as in priming manipulations). The individual then pursues that goal in the subsequent situation, but without consciously intending to or being aware of doing so (Bargh, 1990; Bargh, Gollwitzer, Lee-Chai, Barndollar, & Troetschel, 2001; Chartrand & Bargh, 1996).

For example, words related to achievement and high performance might be embedded along with other, goal-irrelevant words in a puzzle, or words related to cooperation might be presented subliminally in the course of an ostensible reaction time task. Just as with single forms of social behavior such as politeness or intelligence, presenting goal-related stimuli in this fashion causes the goal to become active and then operate to guide behavior over time toward that goal. People primed with achievement-related stimuli perform at higher levels on subsequent tasks than do control groups, those primed with cooperation-related stimuli cooperate more in a commons-dilemma game, and those primed with evaluation-related stimuli form impressions of other people while those in a control group do not (see reviews in Chartrand & Bargh, 2002; Fitzsimons & Bargh, 2004).

Neither the ideomotor action nor the automatic goal pursuit effects are restricted to the laboratory environment; for example, merely thinking about the significant other people in our lives (something we all do quite often) causes the goals we characteristically pursue when with them to become active and to then guide our behavior without our choosing or knowing it, even when those individuals are not physically present (Fitzsimons & Bargh, 2003). And the non-conscious ideomotor effect of perception on action becomes a matter of widespread social importance considering the mass exposure of people to violent behavior on television or in movies (see Anderson & Bushman, 2002; Berkowitz, 1984).

Dissociations Between Intention and Action

These findings within social psychological research of non-conscious control over higher mental processes, such as support behavior in social settings, may seem a bit magical or mysterious without a consideration of related recent findings in cognitive psychology and cognitive neuroscience. Together, though, these streams of research tell a coherent story about the non-conscious

wellsprings and governing structures of social judgment, behavior, and goal pursuit.

Non-Conscious Action Control

Several lines of cognitive neuroscience research support the idea of a dissociation between conscious awareness and intention, on the one hand, and the operation of complex motor and goal representations on the other (Prinz, 2003). One major area of such research focuses on the distinct and separate visual input pathways devoted to perception versus action.

The first such evidence came from a study of patients with lesions in specific brain regions (Goodale, Milner, Jakobsen, & Carey, 1991). Those with lesions in the parietal lobe region could identify an object but not reach for it correctly based on its spatial orientation (such as a book in a horizontal versus vertical position), whereas those with lesions in the ventral-visual system could not recognize or identify the item but were nonetheless able to reach for it correctly, when asked in a casual manner to take it from the experimenter. In other words, the latter group showed appropriate action toward an object in the absence of conscious awareness or knowledge of its presence.

Decety and Grèzes (1999) and Norman (2002) concluded from this and related evidence that two separate cortical visual pathways are activated during the perception of human movement: a dorsal one for action tendencies based on that information, and a ventral one used for understanding and recognition of it. The dorsal system operates mainly outside of conscious awareness, whereas the workings of the ventral system are normally accessible to consciousness. Thus the dorsal stream (or activated pragmatic representation) could drive behavior in response to environmental stimuli in the absence of conscious awareness or understanding of that external information. It could, in principle, support a non-conscious basis for ideomotor action effects that are primed or driven by recent behavioral informational input from other people.

Additional support for non-conscious action initiation comes from the discovery of "mirror neurons" – first in macaque monkeys (Rizzolatti & Arbib, 1998) and then in humans (Buccino et al., 2001). In these studies, simply watching mouth, hand, and foot movements causes the activation of the same functionally specific regions of the premotor cortex as when performing those same movements oneself. These mirror neurons could be a neurological basis for the "chameleon effect" of non-conscious imitation of the behavior of one's interaction partners (Chartrand & Bargh, 1999).

Non-Conscious Operation of Working Memory During Goal Pursuit

Clearly, non-conscious goal pursuit must utilize the structures of working memory to guide behavior within the unfolding situation toward the desired goal (see Hassin, 2004). Such complex behavior, which is continually responsive to ongoing environmental events and coordinated with the behavior of others, has to involve the operation of the brain structures that support working memory – namely the frontal and prefrontal cortex. However, under the original concept of working memory as that portion of long-term memory that was currently in conscious awareness (e.g., Atkinson & Shiffrin, 1968), the idea of *non-conscious* operation of working memory structures is incoherent at best. If working memory was a single mental "organ" that held both the current goal and the relevant environmental information on which that goal was acting (selecting relevant information and transforming it according to the requirements of the current goal; see Cohen, Dunbar, & McClelland, 1990), then one should always be aware of the intention or goal that is currently residing in active, working memory.

The answer to this apparent paradox, of course, is that working memory is not a single unitary structure. This idea was originally proposed by Baddeley and Hitch (1974; see also Baddeley, 1986), who envisaged a system comprising multiple components, not just for the temporary storage of information (the phonological loop and visuospatial scratchpad) but also for the direction and allocation of limited attention (the "central

executive"). In a parallel development, psychiatrists working with patients with frontal lobe damage – the frontal lobes being brain structures underlying the executive control functions of working memory (Baddeley, 1986) – were noting how the behavioral changes associated with frontal lobe damage were exceedingly complex and variable, depending on the exact locations of the damage (Mesulam, 1986, p. 320). This too was consistent with the notion that executive control was not a single resource but rather comprised several distinct specialized functions, located in different parts of the frontal and prefrontal cortex.

If so, then at least in theory it becomes possible that there are dissociations between consciously held intentions on the one hand and the goal-driven operation of working memory structures on the other. This is what is manifested in Lhermitte's (1986) syndrome; "an excessive control of behavior by external stimuli at the expense of behavioral autonomy" (p. 342). Lhermitte's patients had suffered a stroke which had produced lesions in the same (inferior prefrontal) location of the brain in both cases. The behavior of these patients became continually driven by cues in the environment and by little else. For example, bringing the man onto a stage in front of a small audience caused him to deliver an award acceptance speech; bringing the woman into the (medical) doctor's office caused her to give Dr. Lhermitte a physical exam complete with injections of vaccines. Across these and several other situations, neither patient noticed or remarked on anything unusual or strange about their behavior. Lhermitte (1986) concluded that they had suffered "a loss of autonomy: for the patient, the social and physical environments issue the order to use them, even though the patient himself or herself has neither the idea nor the intention to do so" (p. 341).

Subsequent research in cognitive neuroscience has largely supported Lhermitte's deductions that this area of the prefrontal cortex is critical for the planning and control of action. Frith et al. (2000) concluded from their review of this research that intended

movements are normally represented in the prefrontal and premotor cortex, but the representations actually used to guide action are in the parietal cortex. In other words, intentions and the motor representations used to guide behavior seem to be held in anatomically separate, distinct parts of the brain. This makes it possible for some patients to no longer be able to link their intentions to their actions if there is impairment in the location where intended movements are represented, but no impairment in the location where action systems actually operate.

The finding that, within working memory, representations of one's intentions (accessible to conscious awareness) are stored in a different location and structure from the representations used to guide action (not accessible) is of paramount importance to an understanding of the mechanisms underlying non-conscious social behavior and goal pursuit. If it had been the case that intentions and corresponding action plans were stored in the same location, so that awareness of one's intention was solely a matter of conscious access to the currently operative goal or behavior program, then it would be difficult to see how non-conscious control over social behavior could be possible. Instead, as Posner and DiGirolamo (2000) recently remarked, the information-processing and the neurophysiological levels of analysis of psychological processes have achieved a level of mutual support greater than previously imagined.

Implications for the Nature and Purpose of Consciousness

> There is a baffling problem about what consciousness is for. It is equally baffling, moreover, that the function of consciousness should remain so baffling. It seems extraordinary that despite the pervasiveness and familiarity of consciousness in our lives, we are uncertain in what way (if at all) it is actually indispensable to us. (Frankfurt, 1988, p. 162)

Action tendencies can be activated and put into motion without the need for the

individual's conscious intervention; even complex social behavior can unfold without an act of will or awareness of its sources. Evidence from a wide variety of domains of psychological inquiry is consistent with this proposition. Behavioral evidence from patients with frontal lobe lesions, behavior and goal-priming studies in social psychology, cognitive neuroscience studies of the structure and function of the frontal lobes as well as the separate actional and semantic visual pathways, cognitive psychological research on the components of working memory and on the degree of conscious access to motoric behavior – all of these converge on the conclusion that complex behavior and other higher mental processes can proceed independently of the conscious will. Indeed, the neuropsychological evidence suggests that the human brain is designed for such independence.

But this is not to say that consciousness does not exist or is merely an epiphenomenon. It just means that if all of these things can be accomplished without conscious choice or guidance, then the purpose of consciousness (i.e., why it evolved) probably lies elsewhere. And the research described above points to one prime candidate.

That is, although we do not yet know much about how non-conscious goal pursuit capabilities develop, the most plausible guess is that they develop much as other automatic processes develop – out of frequent and consistent experience (Bargh, 1990; Bargh & Gollwitzer, 1994; see Shiffrin & Dumais, 1981). This means in the case of automatic goal pursuit that the individual most likely *consciously chose* at one point to pursue that particular goal in that particular situation, then chose it again, and so on until that goal representation became associated so strongly with that situation representation that the former became automatically associated with the latter. Then, entering the situation from then on causes both the situation and the goal representations to become active, no longer with any need for conscious choice of that goal (see Bargh & Chartrand, 1999). As William

James (1890) argued, consciousness tends to drop out of those processes where it is no longer needed and thereby frees itself for where it is.

In a very real sense, then, the purpose of consciousness – why it evolved – may be for the assemblage of complex nonconscious skills. In harmony with the general plasticity of human brain development (see Donald, 2001), human beings – unlike even our nearest primate kindred – have the capability of building ever more complex automatic "demons" that sublimely fit their own idiosyncratic environment, needs, and purposes. Intriguingly, then, one of the primary objectives of conscious processing at the level of the individual person may be to eliminate the need for itself in the future as much as possible, freeing itself up for even greater things. It would be ironic indeed, given the juxtaposition of automatic and conscious processes in contemporary social psychology, if the evolved purpose of consciousness turned out to be the creation of ever more complex nonconscious processes.

Author's Note

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