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Unconscious, Conscious, and Metaconscious in Social Cognition

PIOTR WINKIELMAN and JONATHAN W. SCHOOLER

INTRODUCTION

Social cognition explains the mechanisms of social behavior using concepts and methods shared with related fields of cognitive psychology and cognitive science as well as new fields such as cognitive, social, and affective neuroscience. This approach led to remarkable progress in understanding social perception, memory, reasoning, emotion, and judgment and offered insights into real-world social issues, such as optimal decision making, stereotyping, and cultural differences (see other chapters). We consider the role of consciousness in a variety of social cognition phenomena. We ask what people are conscious of, and not conscious of, during perception, memory, emotion, and decision making and how this matters for social interaction. We review several findings, but more important, we offer a fresh theoretical perspective on consciousness that differs from currently dominant views in social cognition. Our perspective is informed by recent developments in cognitive psychology, particularly in the area of metacognition, and draws on new discoveries in neurosciences.

Mention specific chapters.

We start with a few historical remarks, mostly to highlight that, over the years, psychology oscillated from viewing consciousness as indispensable to claiming it is unnecessary. We then discuss how to define consciousness and its possible functions and mechanisms. This gives us an opportunity to comment on some current debates in social cognition, including the automaticity of purposive behavior and sophistication of unconscious perception, thinking, and decision making. We then make a distinction critical for the remainder of our chapter among levels of awareness and review research on dissociations among mental events that are unconscious, conscious, and meta-aware. Reflecting the book's aims, throughout

we discuss mechanisms of consciousness across different levels of explanation and include phenomena from different stages of social cognition, including perception, representation, memory, judgments, and decisions.

HISTORY

Reflecting its philosophical roots, early scientific psychology was fascinated with consciousness. In fact, one major goal was to accurately characterize conscious contents, which would establish a catalogue of basic mental elements that resembles in precision the Mendeleyev periodic table (Boring, 1953). The method of introspection assumed that critical elements of mental life (thoughts, feelings, volitions) are in principle consciously accessible. They might initially escape explicit attention, but with proper training of focus and reporting, researchers can capture most essential mental elements and discover lawful relations between them. An important assumption was that psychology should be fundamentally interested in "mental" events (i.e., content-bearing, intentional states) but not so much in nonmental events (e.g., associative chains, reflexes, physiological processes, etc.). Still, even the early psychologists admitted some role for unconscious processes. For example, Helmholtz famously proposed that vision is mediated by unconscious inferences, whereas James debated the role of habits and the subconscious (Kihlstrom, 2007). Behaviorism, and the ambition to make psychology "objective" and equal to other natural sciences, brought a disfavor for introspection and mentalistic concepts like consciousness. Along with this came the belief that behavior is ultimately under the control of the environment, and that somehow providing mechanistic explanations of behavior would make concepts like "consciousness" or "volition" superfluous (Kihlstrom, in press). The situation started to change in the mid-1970s when cognitive psychologists revived the "black box" and began to tackle issues like controlled and automatic processing (Shiffrin & Schneider, 1977), attentional selection (Kahneman, 1973; Posner & Snyder, 1975), and unconscious perception (Marcel, 1983). Although few dared to speak its name, there was a growing recognition that consciousness might be "respectable, useful, and probably necessary" (Mandler, 1975). Soon, the legitimacy of the topic was fully reestablished and now "everyone who is conscious, is studying consciousness" (Churchland, 2005). Psychological journals routinely carry articles on consciousness, as do general journals such as *Science* and *Nature*, and there are journal outlets (e.g., *Consciousness and Cognition*) and serious annual conferences (*Association for Scientific Study of Consciousness*) exclusively dedicated to this topic. The enthusiasm is not only limited to psychology. The codiscoverer of DNA, Francis Crick, left genetics for neuroscience and declared consciousness the greatest puzzle of contemporary science. Subsequently, he even called the possibility of a biological account of consciousness *The Astonishing Hypothesis* (Crick, 1994). Indeed, some of the most interesting recent discoveries in neuroscience come from consciousness researchers (Edelman, 1989; Singer, 2000; Tononi, 2004). There is also exciting work in computer science on mechanistic, but not eliminative, explanations of consciousness and choice (e.g., Cleeremans, 2005; Hazy, Frank, & O'Reilly, 2007). And, philosophers try to bewitch the reader or outwit each other with book titles such

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as *Mystery of Consciousness*, *Consciousness Reconsidered*, *Reclaimed*, and even *Explained* (Zeeman, 2002).

It is encouraging that social cognition researchers have always been in the game, even proving some of the early impetus toward revival of interest in consciousness. Thus, an influential study showed that stimulus value can be enhanced via unconscious mere exposure (Kunst-Wilson & Zajonc, 1980). Another pioneering study showed that people's conscious beliefs about the causes of their own behavior can be at odds with actual causes (Nisbett & Wilson, 1977). Since then, there have been many influential studies of unconscious influences on social perception, affect, reasoning, judgment, and behavior. Ironically, much of the social cognition work on consciousness has always been aimed at showing its limits, if not unimportance (Bargh, 1989). This emphasis continues (Dijksterhuis & Nordgren, 2006; Wegner, 2002; Wilson, 2002), even as other disciplines progressively focus on understanding consciousness itself. Along with it comes fascination of social cognition with all things "implicit"—perception, learning, attitudes, self-esteem, self-concepts, stereotypes, partisanship, goals, and so on (Greenwald et al., 2002).[1] However, there have also been attempts to explore the limits of the unconscious mind (Baumeister, in press; Greenwald, 1992).

DEFINITION AND DISTINCTIONS

But, what is *consciousness*? The term itself is quite slippery. The *Concise Oxford English Dictionary* lists two major meanings: (1) the state of being conscious and (2) one's awareness or perception of something. However, Webster's dictionary lists as many as five different definitions, and books on consciousness devote pages elucidating different meanings (e.g., Zeeman, 2002). Thus, it is useful to highlight different senses in which the term appears in psychological literature. This will also allow us to briefly comment on some debates in social cognition.

Which one?

Conscious as "Awake and Mindful"

The word *conscious* can refer to a global state of an individual. One use of this word is similar to "awake" or "vigilant" as opposed to "asleep" or "comatose." The sleepy-vigilant dimension is typically investigated by neurologists, although some interesting social cognition studies showed that anesthetized patients form implicit, but not explicit, memory for events during the surgery (Kihlstrom, Schacter, Cork, Hurt, & Behr, 1990). Perhaps, a more relevant meaning of conscious as a description of a global state refers to a "mindful" as opposed to a "robot-like" dimension. In that sense, being conscious is the ability to have subjective experiences, wishes, desires, and complex thoughts and to perform flexible, self-initiated, purposeful behaviors. For example, patients in a pervasive vegetative state (PVS) maintain regular sleep-wake cycles, respond to simple simulation (e.g., withdraw their hand from sharp objects), yet are not considered conscious and possessing of "personhood" because of their inability to make choices, process complex information, show flexible behavior, and initiate purposive actions (Laureys et al., 2002).[2] It is actually useful to contrast the above medical and legal view that consciousness is essential

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for personhood with the social cognition view that often minimizes the role of consciousness in complex thought, choice, and purposive behavior. Despite some radical "anticonsciousness" declarations (for samples, see Kihlstrom, in press), we actually doubt that social cognition researchers seriously believe that there is little distinction between people and robots and would readily concede that only *some* goals or decisions are unconscious, and that only *sometimes* a sense of voluntary control is illusory. We return to this issue in this chapter.

Conscious as "Subjectively Experienced"

The second major meaning of the word *conscious* is in reference to the subjective status of a particular mental content (perception, thought, or feeling). Being conscious means being represented in subjective experience and, as a result, potentially available to report and to use in intentional control of behavior. It is in that sense that psychologists are interested in whether there are unconscious perceptions, memories, goals, attitudes, or emotions (Bargh, 1989; Greenwald, 1992; Winkielman & Berridge, 2004).

The interest in what makes certain mental content conscious and what makes it available for report and control binds together the research on consciousness with research on meta-cognition, for which the central effort is to uncover the relation between people's mental states and their beliefs about those mental states (Koriat, 2006). The meta-cognitive perspective, which guides much of our review in this chapter, highlights that mental content can stand in one of three relations to consciousness. First, mental content can be genuinely unconscious. One classic example comes from research on so-called blind-sight patients with damaged primary visual cortex (area V1 of the striate cortex) but intact subcortical visual pathways. These patients can discriminate simple visual information (e.g., location or shape) and use it in their motor pointing behavior without being able to verbally report on that discrimination (Weiskrantz, 1986). In that case, the mental representation (e.g., "x is a square") is genuinely unconscious—the patient truly does not know that he or she "knows" what shape was presented. Second, mental content could be "experientially conscious," existing in the ongoing experience without being reflected on. For example, preverbal infants are typically assumed to have conscious experiences (e.g., recognize and be happy to see their mother; feel pain, hunger, and pleasure) but limited meta-awareness. A less-speculative example comes from classic experiments on iconic memory, which showed that people are temporarily aware of a much larger amount of information presented in a visual matrix than they can spontaneously report (Sperling, 1960). Third, mental content can be "meta-conscious" (or "meta-aware") and be explicitly represented as a content of one's own consciousness (Schooler, 2001, 2002; Schooler, Ariely, & Loewenstein, 2003; Schooler & Schreiber, 2004). It is this type of consciousness that is typically assessed when an experimenter asks participants questions like, "How happy do you feel now? "Did you notice any briefly presented words?" or, "Did you pursue goal X in your behavior?"

FUNCTIONS OF CONSCIOUSNESS

A central assumption in social cognition is that mental information is represented on several levels. Accordingly, much research attention focuses on understanding how these different levels, or perhaps systems, relate to each other (Strack & Deutsch, 2004; Smith & DeCoster, 2000). So, what distinguishes unconscious, conscious, and metaconscious representation? This question touches on a more general problem of the purpose of consciousness—a problem that received a variety of functional and mechanistic answers in the psychological literature. In general, researchers have emphasized the idea that consciousness is associated with (a) special access to mental content and (b) special functions that can be performed on this content.

Conscious Access

Several theories posit that consciousness is a representational system characterized by special access to mental content. One useful framework is the global workspace theory, which proposes that consciousness functions to allow communication, transparency, and coordination between the many isolated, parallel subprocesses in the human mind (Baars, 1988). Consciousness constitutes a global workspace in which various local processes can "broadcast" their outcomes and talk to each other in a common "language" (more like a language of thought, rather than actual language). As a result, the previously independent and isolated local processes can coordinate, sequence, and structure their actions, thus helping the organism achieving its goals. For example, by representing tactile, visual, and auditory processes in a common matrix, global workspace allows novel cross-modal and cross-temporal connections (e.g., "The sequence of musical notes I just heard has the same order as the sequence of colored lights I saw before."). It also presumably helps us understand expressions such as "blue mood," "bitter cold," "sharp cheese," or "loud tie" (Ramachandran, 2004).[3] But, more important, this "global accessibility" of conscious representations makes them available for verbal report and for high-level processes such as conscious judgments, reasoning, and the planning and guiding of action.

But, what gives representations conscious or "global" access? Cognitive researchers often emphasize the role of "strength" (Cleeremans, 2005). The notion of strength captures the idea that representations require a certain stability and quality before they can enter working memory, where they can be actively maintained, and become accessible for potential report. One determinant of strength is activation, which in turn is determined by many factors, such as stimulus energy (longer presented items are more likely conscious than briefly presented items); familiarity (all things equal, more familiar items become conscious easier then less-familiar items); recency (more recent items are more likely to be conscious than older items); and so forth. Representational strength is also influenced by focused attention—a perceptual amplifier and selector of events (conscious and nonconscious) that fall into its scope. Thus, an objectively very weak stimulus can reach consciousness if it receives attentional processing, and there is little perceptual

competition (Breitmeyer & Ogmen, 2006). Interestingly, recent research shows, somewhat paradoxically, that focused conscious attention may be necessary for some unconscious processes (Koch & Tsuchiya, 2007). For example, subliminal priming is enhanced by attentional cuing of location (Sumner, Tsai, Yu, & Nachev, 2006), and limbic responses are stronger if brief affective stimuli fall in the scope of focused attention (Pessoa, McKenna, Gutierrez, & Ungerleider, 2002). These observations may explain why so many successful subliminal priming paradigms in social cognition require that the subject is paying attention to a specific area on the screen (even if the prime remains invisible). It may also explain why many social cognitive studies on unconscious processes use "unobtrusive" rather than subliminal priming. In those studies, participants are exposed to stimuli in a definitely conscious, attended, and prolonged fashion (e.g., as a part of a sentence-unscrambling task or a crossword puzzle), with the "unconscious" element the relevance of the task to subsequent judgment or the importance of a particular stimulus dimension. In short, focused attention might be a precondition for many unconscious effects.

Another factor that modulates whether mental content is conscious has to do with anatomical and functional disconnection. Thus, a visual representation in previously mentioned blind-sight patients can be strong (it can drive pointing behavior) but remains unconscious because it is restricted to lower visual pathways (Weiskrantz, 1986). Similarly, habits (e.g., biking) may involve representations that are very robust, but unconscious, because they are only instantiated in the motor system (Cleeremans, 2005). A functional disconnection may occur when input is incoherent with the currently processed information. For example, a distinct, prolonged, unusual, and dynamic event (e.g., a gorilla slowly walking through a room of people passing balls to each other) can remain unconscious, even when participants "look" at the scene (Simons & Chabris, 1999). One explanation of this "blindness" is that the event is incompatible with the current mental model (i.e., generalized schema) of the situation or participants' current perceptual goals.

Finally, there is some exciting neuroscientific research on the mechanisms of conscious access. Some evidence suggests that consciousness represents a form of multiregional activation that is perhaps integrated by oscillatory activity (Singer, 2000; Tononi, 2004). For example, conscious perception of a stimulus is associated with a synchronous activation of higher associative cortices, particularly parietal, prefrontal, and anterior cingulate areas, whereas unconscious perception is associated only with a local activation (Dehaene, Changeux, Naccache, Sackur, & Sergent, 2006). Consistent with these ideas, clinical work has shown that the previously mentioned patients in a PVS (awake but unconscious) show only localized, modality-specific responses to stimuli, whereas patients in a minimally conscious state show coherent responses across multiple sensory and associative systems (Laureys et al., 2002).

Conscious Thinking

Some argue that consciousness enables higher-order, meaning-based, truth-value-preserving processing of information (Block, 1995; Searle, 1997). In contrast, the unconscious is restricted to a simpler, associative type of processing. This

distinction resembles, although does not completely overlap, with "dual-process" theories in social cognition. For example, Strack and Deutsch (2004) suggested that social cognition is carried out by two systems: a reflective system that relies on knowledge about facts and values and an impulsive system based on associative links and motivational orientations. The differential information base on which the two systems rely determines the types of responses they engender. The reflective system, drawing on propositions about the world, leads to responses based on rational considerations. In contrast, the impulsive system, drawing on associations and impulses, leads to nonreasoned actions.

Does processing of meaning require consciousness? This question is a subject of long debate, which touches on tricky issues of the relation between semantic cognition and associationism (McClelland & Rogers, 2003). It is now widely accepted that subliminally presented pictures and words can activate related semantic and affective categories (Greenwald, Draine, & Abrams, 1996; Marcel, 1983). Even subliminally presented single digits can activate magnitude information (Dehaene et al., 2006). Thus, there is no doubt that complex content can be unconsciously activated across meaning dimension. However, the evidence for unconscious semantic *processing*, rather than automatic *activation*, is sparse. For example, unconscious priming responds to partial- rather than whole-word information, is not sensitive to basic operations like negations ("not," "un-," or "dis-"), and cannot process two-digit numbers (Abrams & Greenwald, 2000). One could wonder if these limitations arise because subliminal presentations afford very weak stimulus input. However, similar results hold when the input is conscious, and only conscious processing capacity is reduced. Thus, processing relational information such as negation ("no disease") or causality ("smoke causes fire") requires conscious capacity, whereas processing information about association does not (Deutsch, Gawronski, & Strack, 2006; Hummel & Holyoak, 2003). In a colorful demonstration of this point, DeWall and Baumeister (under review) presented participants with a standard set of Graduate Record Examination (GRE) analytical problems and asked them solve them under typical conditions or under cognitive load. Not surprisingly, loaded participants did much worse.

More generally, these findings highlight the difference between the position that many complex mental processes can be made to run automatically from the position that these processes do not require consciousness (i.e., never required it). To use an example, most adults can do the basic multiplication table automatically via associative recall (2 times 2 is 4). However, no one believes that the unconscious actually does multiplication. It simply means that highly trained operations become automatic over time and can eventually be performed by "dumb" associative retrieval (Logan, 1988; Rickard, 2005; Smith & DeCoster, 2000).[4]

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The image of the "dumb unconscious" (Loftus & Klinger, 1992) has recently been challenged by claims of "unconscious thinking" (Dijksterjhuis, Bos, Nordgren, & van Baaren, 2006). For example, in one study, participants were quickly (although consciously) presented with a set of 12 positive and negative attributes each about four different cars (i.e., 48 attributes total, with one car having 75% positive attributes, two having 50% positive attributes, and one having 25% positive attributes). One group of participants (termed "conscious thinkers") made their decision after

4 min of deliberation and another group (termed "unconscious thinkers") after 4 min of engaging in a distracting anagram-solving task. Interestingly, the unconscious thinkers group was most likely to choose the "good" car, with the conscious group remaining at chance. For the authors, these results showed that unconscious thinking not only facilitates decisions but also might be better than conscious thinking. However, other interpretations are possible. First, it is not clear why distraction by anagrams eliminates conscious thought rather than simply reduces its amount. If so, perhaps the advantages of distraction occur because they help to prevent overthinking and encourage a reliance on more effective simple heuristics. In fact, when the best solution to the problem is simply to count the number of positive attributes, engaging in deeper processing that focuses on the attribute meaning might lead to suboptimal decision making (Gigerenzer & Goldstein, 1996). Accordingly, the benefits of unconscious thought may only apply to so-called linear integration problems, in which the attribute content either does not matter or can be consciously translated into attribute weights before unconscious "thought." Also, note that it is strange that giving people 4 min to think consciously about a simple choice produces only a chance response—after all, it is not that complicated to figure out that a car with 12 (75%) positive attributes is better than a car with 4 (25%) positive attributes. This suggests that the problem encountered by conscious thinkers may simply lie in confusion about the original attributes, perhaps because recall is susceptible to primacy or recency effects and interference by the intermediate task (Shanks, 2006). In short, while recent evidence does suggest some limitations to extensive deliberation, the degree to which this research implicates truly intelligent unconscious processing remains to be determined.

Conscious Control

Consciousness is associated not only with special access to mental content but also with special operations that can be performed on this content. Several of these operations fall under the umbrella name "control," thus linking consciousness to what cognitive scientists call "executive functions" (Norman & Shallice, 1986).[5] One aspect of control is selection. Thus, conscious content can be preferentially attended to and maintained in working memory or discarded if not needed. Another aspect of control is intentionality. Action can be deliberately started and stopped or can be delayed until appropriate conditions appear. Scheduling conflicts can be resolved, and new hierarchies can be established. Finally, with control comes flexibility. Thus, mental content can be used in adaptive, nonroutine ways, and old response chains can be broken and rearranged. This simple point was recently elegantly demonstrated in a study in which participants had to come up with novel titles, musical improvisations, or interesting drawings. Not surprisingly, participants under cognitive load produced repetitive, inflexible, and uninspiring works (Baumeister, Schmeichel, DeWall, & Vohs, under review).

One interesting aspect of conscious control is its restricted capacity. Thus, only few elements can be manipulated at a time; operations must be performed in a serial, rather than parallel fashion; and there are severe bottlenecks (Pashler, 1998). In fact, it is hard to be overwhelmed by the power of the unconscious

given how many accidents are caused by people attempting to multitask (e.g., talking on the cell phone while driving; Levy, Pashler, & Boer, 2006), not to mention various social and physical disasters caused under the influence of various consciousness-impairing substances. Conscious operations also require effort and so are metabolically costly. As an illustration of this point, a recent series of studies has shown that manipulating an individual's blood glucose level affects mental control in basic tasks like the Stroop task, thought suppression, emotion regulation, attention control, or more social tasks like coping or helping (Gaillot et al., 2007). This is, of course, not terribly surprising given that measures of neuronal functioning, such as positron emission tomographic (PET) scanning, work by measuring glucose consumption in the brain, which is enhanced in mentally challenging tasks (Ward, 2006).

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Of course, not all forms of control are conscious. The world is filled with mechanical devices, not only thermostats, that automatically check for a condition of a subordinate process and adjust its operation (Shinskey, 1992). The human body has many systems of complex control loops (e.g., homeostatic temperature and blood sugar mechanisms). Further, several "mental" processes automatically adjust their operation based on contextual conditions (Carver & Scheier, 1990). Thus, people unconsciously regulate eye movements to facilitate text processing (Reichle, Pollatsek, Fisher, & Rayner, 1998) and unconsciously adjust hand movements to capture the desired object (Triesch, Ballard, Hayhoe, & Sullivan, 2003). Finally, people are typically unaware of several aspects of control required for coherent speaking and writing.

In the domain of social cognition, there are many proposals that individuals engage in all kinds of automatic control (Fitzsimons & Bargh, 2004). One case is the pursuit of "unconscious goals." The evidence for this comes from studies in which individuals primed subliminally or unobtrusively with goal-related words (e.g., "cooperate," "achieve," "memorize") show corresponding adjustment in their behavior (e.g., show more helpful behavior, solve more problems, or remember more details). Further, they appear to be sensitive to conditions under which the goal is appropriate and track success at goal pursuit. These findings are interesting, but note that control explored in these studies is very different from control in research on executive functions. First, the unconscious goal paradigms rely on an unobtrusive activation of preformulated, standard goals, rather than formulation of novel goals. Second, those goals do not require participants to overcome a stronger alternative behavior (e.g., go against prepotent tendency), but operate when behavioral choices are already predetermined (participants can either cooperate or compete, with the likelihood of either action relatively equal). Third, the outcomes are fairly unimportant and do not require participants to reflect on the meaning or consequences of their actions. Accordingly, we suspect that many effects attributed to unconscious goals simply reflect influence of primes on interpretation of a vague experimental situation, including giving participants an idea of what and how much they are supposed to do (see Förster, Liberman, & Friedman, 2007, for discussion).[6] Finally, while unconscious goal activation clearly operates under some conditions, unconscious goals have yet to be shown to possess anything approaching the potency or flexibility of conscious goals.[7]

Indeed, in addition to offering a skewed perspective of the role of consciousness in mediating behaviors, the present trend toward attributing the bulk of human action to unconscious mechanisms may potentially have undesirable effects on people's self-regulatory ability. A study (Vohs & Schooler, 2008) exposed some participants to an excerpt from Francis Crick's *The Astonishing Hypothesis* that articulates the view that conscious control is an epiphenomenon, that is, that people lack any meaningful sort of free will. Compared to controls, participants exposed to the message that conscious control is illusory behaved more immorally on a passive cheating task. Moreover, their increased cheating was mediated by decreased belief in free will. In a second experiment, exposure to deterministic statements led participants to overpay themselves on a cognitive test relative to participants who were exposed to statements endorsing free will. Of course, such findings do not speak to the actual efficacy of conscious control. Nevertheless, they do raise concerns about the impact that a scientific dismissal of conscious control might have on the population at large and thus further highlight the importance of not overstating the degree to which science has shown consciousness to be impotent (Shariff, Schooler, & Vohs, in press).

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Metaconscious Monitoring

As we discussed, some forms of control might be automatized and unconscious, but others clearly involve consciousness. In fact, one form of control may require explicitly articulating the content of the conscious state to bring it into metaconsciousness. A good example is mind wandering (or "zoning out") during reading. Although we hope that readers have managed to keep their minds on our chapter as they have been reading it, we suspect that all readers have had the experience of suddenly realizing that, despite their best intentions and the fact that their eyes have continued to move across the page, they had no idea what they had been reading. Mind wandering suggests that the tacit monitoring systems failed to catch the mind's drifting and instead require a higher-level explicit monitoring process to take stock of the specific contents of thought and alert one to the fact that they have wandered off task. Schooler and colleagues have used the mind-wandering phenomenon to examine the function of meta-awareness in a domain in which mind wandering is antithetical to success (see Smallwood & Schooler, 2006, for a review). Specifically, Schooler, Reichle, and Halpern (2005) developed a paradigm to identify temporal lapses of meta-awareness during the attentionally demanding task of reading. In this research, participants read passages of text and indicated every time they caught their minds zoning out. They were then asked whether they had been aware that they had been zoning out prior to reporting it. In a second condition, participants were also probed intermittently and asked to indicate whether they had been zoning out at that moment. The results revealed that participants (a) frequently caught themselves zoning out during reading, (b) were still often caught zoning out by the probes, and (c) frequently reported that they had been unaware that they had been zoning out, particularly when they were caught by the probes. These findings demonstrate that individuals frequently lack meta-awareness of drifting off task, even when they are in a study in which they

are specifically instructed to be vigilant for such lapses. In sum, explicit monitoring level (metaconsciousness) acts in effect like the pilot of an airplane. Although the autopilot system can handle mild adjustments due to normal shifts in wind and other conditions, when anything major occurs, the pilot is still needed to handle the situation. This second level of regulation has many more resources available to it, but because it draws on conscious processing, it is resource demanding and, as argued in this chapter, can even interfere with carrying out concurrent tasks. Thus, it is important to activate it only when needed as often the most effective performance may occur when individuals can smoothly operate without having to deliberately reflect on what they are doing.

DISSOCIATIONS BETWEEN LEVELS OF AWARENESS

The discussion so far suggests that at any given moment individuals' behavior reflects a variety of influences. There is the unconscious information, including various tacit monitoring processes that make routine adjustments. There is also information in their stream of consciousness (experiential consciousness). Periodically, however, the mind encounters situations that require more resource-dependent conscious monitoring process. In effect, it occurs anytime one explicitly attempts to answer the question, "What am I thinking or feeling?" Given that this answer represents a description of one's state, rather than the state itself, it offers individuals the opportunity to step out of the situation, which may be critical for many of the innovative behaviors of which individuals are capable. However, it also raises the possibility that in the re-description process individuals might get it wrong.

More specifically, there are three kinds of dissociations between levels of mental representation. There are *access dissociations,* in which a mental state occurs and has influence on behavior but is never directly accessed by consciousness. There are also two additional dissociations that follow from the claim that metaconsciousness involves the intermittent rerepresentation of the contents of consciousness (Schooler, 2002). *Temporal dissociations* occur when metaconsciousness temporarily fails to take stock of the current contents of thought (e.g., failing to notice that one is mind wandering during reading). *Translation dissociations* occur if the meta-representation process misrepresents the original experience. Such dissociations are particularly likely when one verbally reflects on nonverbal experiences or attempts to take stock of ambiguous experiences. Several interesting social cognitive phenomena illustrate these different dissociations.

Access Dissociations

An interesting dissociation occurs when a person is an affective state (as demonstrated by its impact on behavior, physiology, and cognition) without having conscious access to that state (see Winkielman, Berridge, & Wilbarger, 2005, for comprehensive discussion). This idea of "unconscious affect" may seem initially strange, but note that, evolutionarily speaking, conscious representation of affect is a late achievement compared with the ability to respond affectively to relevant stimuli, which is presented in animals as simple as fish and reptiles. Accordingly,

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the basic affective neurocircuitry is contained in the subcortical brain and can operate even in the absence of cortex (Berridge, 2003). However, evolutionary and neuroscientific considerations can only be suggestive of unconscious affect in typical humans. Accordingly, Winkielman et al. (2005) have tested this proposal in psychological studies aimed at dissociating the impact of simple affective stimuli on behavior from their impact on conscious feelings. For example, in one study participants were subliminally presented with a series of happy, neutral, or angry emotional facial expressions. Immediately after the subliminal affect induction, participants rated their conscious feelings and poured and consumed a novel drink. The results showed that the ratings of conscious feelings were unaffected by affective faces, even though the faces influenced consumption behavior, especially when participants were thirsty. Importantly, participants in those studies had no access to their affective reaction even when attending on-line to their feelings or even when they were told these feelings could bias their judgment (Winkielman, Zajonc, & Schwarz, 1997). Similarly, Förster (2003) found that manipulations of basic affective tendencies, via arm flexion versus arm extension, influence food intake without influencing conscious experience of moods. In sum, all these findings suggest that one can obtain genuine "access dissociation" between an underlying affective process and its conscious awareness.[8]

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Temporal Dissociations

Sometimes, mental content is consciously experienced without being explicitly appraised in metaconsciousness. Temporal dissociations are illustrated by cases in which the induction of metaconsciousness causes one to assess aspects of experience that had previously eluded explicit appraisal. Several phenomena represent such dissociations.

Well-Being Appraisals We often fail to explicitly notice our own emotional states (e.g., sullenness, cheerfulness) until someone points them out to us. If we commonly lack metaconsciousness of affective states, then it follows that inducing continuous metaconsciousness of affect may alter that experience. Schooler et al. (2003) explored this issue by asking participants to report on-line happiness while listening to hedonically ambiguous music (Stravinsky). The results showed that continuous hedonic monitoring reduced individuals' postmusic ratings of happiness relative to a condition in which participants listened to music without monitoring. The fact that hedonic monitoring altered participants' experience suggests that by default individuals are, at most, only intermittently metaconscious of their affective state.

Automaticity Automatic behaviors are often assumed to be unconscious (Bargh, 1997; Jacoby, Yonelinas, & Jennings, 1997; Wood, Quinn, & Kashy, 2002). However, there is a peculiarity to this designation. Consider a person driving automatically while engaging in some secondary task (e.g., talking). Although such driving is compromised, one still experiences the road at some level. Thus, a more appropriate characterization of the consciousness of automatic behaviors may be

that they are experienced but lack metaconsciousness, the latter only taking hold when individuals run into difficulty.

Unwanted Thoughts Wegner (1994) suggested that individuals possess an implicit monitoring system that tracks unwanted thoughts (e.g., of a white bear) in order to veer away from them. But, what exactly is this system monitoring? Wegner suggests that it is monitoring the contents of preconsciousness (i.e., thoughts that are near, but below, the threshold of consciousness). However, another, and perhaps more intuitive possibility, is that system actually monitors the contents of consciousness itself. That is, perhaps individuals can consciously think about a white bear without explicitly realizing that they are doing so. In this case, the monitoring system can catch the unwanted thought and raise it to the level of meta-awareness, in effect saying: "There you go again, thinking about that unwanted thought." Recent evidence for this account comes from a study in which participants were asked to try not to think about a previous romantic relationship while reading or while simply sitting quietly (Fishman, Smallwood, & Schooler, 2006). As in standard unwanted thought paradigms, participants were asked to self-report every time they noticed an unwanted thought coming to mind. In addition, however, they were periodically randomly asked whether at that particular moment they were having the unwanted thought. The results revealed that participants frequently experienced "unnoticed unwanted thoughts" about their previous relationship that they experienced but failed to notice until they were probed. Further, these unnoticed unwanted thoughts were detrimental to participants' performance on a test of the reading material, suggesting again that they were conscious. Intriguingly, participants for whom the unwanted thoughts carried emotional weight (i.e., they still wished they were in the relationship) were less likely than participants who no longer wanted to be in the relationship to notice the thoughts themselves and more likely to be caught having the thought. This suggests that cognitive defenses do not banish disturbing thoughts to the unconscious but rather prevent us from reflecting on them (Schooler, 2001).

Translation Dissociations

The idea that metaconsciousness requires rerepresenting the contents of consciousness suggests that some information may become lost or distorted in the translation, as with any recoding process. The likelihood of noise entering the translation process may be particularly great when individuals (a) verbally reflect on inherently nonverbal experiences, (b) are motivated to misrepresent their experience, or (c) possess a lay theory that is inconsistent with their actual experience.

Verbal Reflection There are some experiences that are inherently difficult to put into words: the structure of a face, the taste of a wine, complex tonalities of Stravinsky, the intuitions leading to insights. If individuals attempt to verbalize these inherently nonverbal and holistic experiences, the resulting rerepresentations may fail to do justice to the original experience. Schooler and Engstler-Schooler (1990) examined the effects of describing faces, which, because of their holistic

nature, are notoriously difficult to commit to words. Participants viewed a face and subsequently either described it in detail or engaged in an unrelated verbal activity. When given a recognition test that included a different photograph of the target face, along with similar distractors, verbalization participants performed substantially worse than controls. This effect of verbalization, termed *verbal overshadowing*, has been found in variety of other domains of visual memory (Schooler, Fiore, & Brandimonte (1997), including colors (Schooler & Engstler-Schooler, 1990) and shapes (Brandimonte, Schooler, & Gabbino, 1997) as well as other modalities such as audition (Schooler et al., 1997) and taste (Melcher & Schooler, 1996). Similar disruptions resulting from verbal reflection have also been observed in various other domains hypothesized to rely on nonverbal cognition. Thinking aloud during problem solving can disrupt the intuitive processes associated with insight problem solving while having no effect on the logical processes associated with analytical problem solving (Schooler, Ohlsson, & Brooks, 1993). Verbally reflecting on the basis of affective judgments can interfere with quality of affective decision making, as assessed both by the opinions of experts (Wilson & Schooler, 1991) and by postchoice satisfaction (Wilson et al., 1993). Verbally articulating the basis of the match between analogical stories can reduce people's sensitivity to meaningful deep-structure relationships while increasing their emphasis on superficial surface-structure relationships (Sieck, Quinn, & Schooler, 1999). Of course, in many cases verbal analysis can be helpful. This occurs when experiences are readily translated into words, due either to the nature of the task (e.g., logical problem solving, Schooler et al., 1993) or individuals' unique verbal expertise (e.g., wine experts, Melcher & Schooler, 1996). However, our point here is that sometimes the very process of articulating experiences can result in translation dissociations, where meta-awareness misrepresents conscious content.

Motivation In some situations individuals may want to misrepresent their experiences to themselves. For example, homophobic individuals may not want to recognize when they are aroused by depictions of homosexual acts (Adams, Wright, & Lohr, 1996). That is, individuals may consciously experience the arousal but, because of their motivation, fail to become meta-aware of it (see also Lambie & Marcel, 2002). Our perspective also suggests a different view of repression. Freud argued that repression prevented unwanted feelings from coming to consciousness, but we would say that it primarily prevents such feelings from reaching meta-awareness (Schooler, 2002).

Faulty Theories Finally, translation dissociation can occur if individuals have a faulty theory about what they should be feeling in a particular situation, which then colors their appraisal of their actual experience. A compelling example of this comes from people's reports of their experience of catching a ball (McLeod, Reed, & Dienes, 2003). Most people believe that as they watch a ball, their eyes first rise and then go down following the trajectory of the ball. Indeed, this is the case when one watches someone else catch a ball. However, when people catch a ball themselves, they actually maintain the ball at precisely the same visual angle.

Nevertheless, when people who just caught a ball are asked what they experienced, they rely on their theory of experience rather than on what they actually did.

UNCONSCIOUS OR NOT METACONSCIOUS?

So, how can we empirically distinguish between processes that are genuinely unconscious or conscious but not meta-aware? This is tricky as a failure of verbal report could result from both an absence of an experience and an absence of meta-awareness. Distinguishing between these alternatives is not easy as the very same findings can often be reasonably construed from either perspective. For example, Winkielman and Berridge (2004) interpreted findings of indirect measures revealing unreported affective states as evidence for unconscious emotion, whereas Schooler and Schreiber (2004) interpreted the same types of data as suggesting affective experience without meta-awareness. At present, it is very difficult to distinguish between these two accounts; however, future studies may help to adjudicate between them. For example, if unreported states are indeed represented in consciousness, then in principle they should be influenced by manipulations targeting consciousness, such as cognitive load or explicit monitoring.

Experiences in the absence of meta-awareness can also be revealed retrospectively. For example, it is possible to catch conscious but not meta-aware states with the external probe procedure, which, as described, was successfully used in research on zoning out and unnoticed unwanted thoughts. In principle, similar strategies could be used in other paradigms. For example, perhaps individuals who fail to spontaneously report a goal (e.g., competition) could be caught consciously experiencing such goal states if probed at the right time. It may also be possible to refine individual's ability to carefully scrutinize their prior state. For example, if individuals are experiencing something without meta-awareness at the time, then in principle it may be possible to have people later recall their old state when given some additional source of self-insight (e.g., mindfulness training) or by removing biases due to motivation. For example, individuals going through the breakup of a romantic relationship may retrospectively recognize past experiences of jealously or anger that had previously escaped meta-awareness. Of course, retrospective analyses have their own pitfalls as it is possible to infer states that may not have actually been experienced at the time (Joslyn & Schooler, 2006). However, if individuals are capable of retrospectively reporting states for which they lack a basis for inference (e.g., determining whether they were subject to subliminally presented mood manipulations), then the conclusion that the state was experienced seems reasonable. Ultimately, determination of whether unreported states are genuinely unconscious or experienced but not meta-aware will come down to an assessment of the preponderance of evidence in each case.

SUMMARY AND CONCLUSIONS

Our goal in this chapter was to offer a fresh perspective on consciousness in social cognition. We first highlighted that consciousness is currently seen as one of the key topics of contemporary science and contrasted this view to occasional dismissals

of consciousness in social cognition. We then discussed what makes mental events conscious and highlighted the role of consciousness in complex thought and action. Finally, we distinguished among unconscious, conscious, and meta-aware events and discussed dissociations between different levels of representations, highlighting that seemingly unconscious events may simply be lacking in meta-awareness. In conclusion, clearly, there is much (if not most) that science still does not understand about consciousness. In fact, some believe that some of its critical features, like subjectivity, will always escape scientific scrutiny (Searle, 1997). On the other hand, there has also been remarkable progress in psychology, cognitive science, and neuroscience. We do not see this research as showing that consciousness is unimportant but rather as providing a more comprehensive understanding of its role in how we think, feel, and act. It is encouraging that the field of social cognition research has much to contribute to this objective.

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Spell out SHRCC.

NOTES

1. Some psychologists serve as empirical and theoretical "police" on more dramatic abilities attributed to the unconscious (Kihlstrom, 2007; Merikle & Reingold, 1998; Shanks, 2005, 2006)
2. North American readers will remember Terri Schiavo, who died in 2005. As a result of failing several neurological assessments, including tests for purposive behavior, she was declared unconscious, and her feeding tube was removed (Caplan, McCartney, & Sisti, 2006).
3. Note that cross-modal integration can be automatized into unconscious, suggesting that access in the global workspace might be only needed to initially connect novel sensations and responses. The famous McGurk effect illustrates not only the automatic influence of vision on speech perception but also the value of cross-modal integration for unity of conscious experience (McGurk & MacDonald, 1976).
4. A believer in the smart unconscious should attempt to solve a novel mathematical problem, like multiplying 87*65, under cognitive load or expose themselves to this problem before going to sleep to see if the unconscious provides an answer in the morning.
5. As Bargh (1989) pointed out, it is sometimes possible to dissociate consciousness and control.

6. In some "unconscious goal" paradigms, participants could actually be conscious of the goal but just confused about its source. As we discuss, there are also multiple ways in which goals could be conscious but not verbally reported because of temporal and translation dissociations.
7. Imagine the following experiment: Participants are in a room with both food and drink. Participants are first told once, consciously, that their goal is to eat. Next, participants are given an unconscious priming procedure with multiple words related to the goal of drinking. We predict that very few, if any participants, would behave in accordance with the more recent, but unconscious "goal" to drink.
8. The idea of "unconscious emotion" does not imply that conscious feelings are an unnecessary "icing on the emotional cake" (LeDoux, 1996). Conscious happiness, anxiety, anger, guilt, and sadness are critical in people's life. Not only do they make life worth living (we would not pay much for a substance that makes us "unconsciously happy"), but also they are useful in judgments and decisions (Winkielman, Knutson, Paulus, & Trujillo, 2007). As with conscious and unconscious goals, future research may directly contrast the power of conscious and unconscious emotions.

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