CHAPTER 5

MINDING THE MIND: THE VALUE OF DISTINGUISHING AMONG UNCONSCIOUS, CONSCIOUS, AND METACONSCIOUS PROCESSES

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As you read this chapter, various unconscious, conscious, and even metaconscious processes will interact to derive conceptual meaning from patterns of light striking your retinas. Much of this occurs below the threshold of awareness because the shapes of letters and words are processed through hierarchical levels of unconscious visual processing until they are identified as perceptual representations that gain significance by linking to memories. You are also unlikely to be aware that your gaze automatically lingers on words for longer or shorter times depending on linguistic features such as word length, word frequency, or sentence placement—that your eyes and not just your stylistic preference respond differently to *clumsy* and *klutzy* (Rayner, 1998). Layered on top of these unconscious processes is also an experience of reading. Your awareness is filled with shapes and colors and perhaps an inner voice that quietly speaks the words you read. Every so often, you will feel some conceptual or visceral sentiment about the meaning of the text. Finally, you may intermittently take stock of your experience in a way that involves consciously reflecting on your conscious experience. You might engage in metacognitive regulation to monitor your understanding and to reread a confusing sentence, or you may suddenly become meta-aware that you have been skimming the text without realizing that your thoughts were fundamentally elsewhere. In this way, unconscious, conscious, and metaconscious processes interact when reading and also when carrying out any number of other tasks.

When researchers discuss consciousness, they typically distinguish between information that is processed above or below the threshold of awareness—conscious versus unconscious. Yet, as we argue, distinguishing between all three levels of consciousness can often provide a richer and more complete understanding. In this chapter, we first consider the respective roles of unconscious, conscious, and metaconscious processes. We then focus on two topic areas that have revealed the value of a tripartite distinction of consciousness: mind-wandering and awareness of emotions. Last, we consider some future directions in which consideration of the construct of meta-awareness may prove particularly fruitful, including (a) the cultivation of mindfulness, (b) unwanted thoughts (motivated processes may influence whether unwanted thoughts reach meta-awareness), and (c) stereotyping and stereotype threat (the disruption associated with this process may be underpinned by mind-wandering episodes occurring below the threshold of meta-awareness). Collectively, this chapter suggests that distinguishing among unconscious, conscious, and metaconscious processes may help to illuminate a host of topics.

DISTINGUISHING UNCONSCIOUS, CONSCIOUS, AND METACONSCIOUS PROCESSES

The biggest problem in understanding consciousness and its relation to behavior, cognition, and the brain is being able to accurately establish when a person is conscious of something. In daily life, and

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in scientific studies, a common measure of consciousness requires people to give a report of their mental states in response to questions such as "How do you feel right now?" "Do you find this person attractive?" "Did you enjoy this piece of music?" "Did you notice this object?" and "Do you understand this passage of text?" Although this process often does not require much effort, and thus might appear simple, it is actually tricky. After all, not all mental states are conscious, and even those that are conscious can be so in various forms and to different degrees. Subjective reports also require an individual to accurately access, evaluate, and express the contents of his or her own mind. As we will discuss, this raises the possibility of a variety of dissociations between what is reported and what may actually be represented in the contents of consciousness.

In this chapter, we outline a theoretical framework of consciousness that we believe can help clarify the relationship between consciousness and report, thereby guiding scientific research and thinking about consciousness (for related discussions, see Chin & Schooler, 2009; Schooler, 2001, 2002; Schooler & Schreiber, 2004; Winkielman & Schooler, 2008, 2011). As noted, the theoretical perspective presented here goes beyond the simple dichotomy of conscious–unconscious that is assumed in many social psychology articles. Instead, we propose that mental content can stand in one of three relations to consciousness: (a) genuinely unaware, (b) aware but lacking meta-awareness, and (c) meta-aware—internally articulated as states of the perceiver.

In this first section, we start by specifying our use of the term *conscious*. Next, we elaborate on the distinction between the levels of awareness and explain the possibility of dissociations between them. A critical conclusion is that the failure of a subjective report could result from either an absence of consciousness or an absence of meta-awareness. That is, according to the theory, some unreported states are genuinely unconscious and others are conscious but for various reasons escape the capacity for report. We outline several preliminary criteria for empirically distinguishing between genuinely unconscious processing and conscious processing in the absence of meta-awareness. This discussion will set the stage for the main body of the chapter, in which we describe two areas of research that have revealed the value of a tripartite distinction of consciousness: mind-wandering and awareness of emotions.

Meaning of *Conscious*

Although the adjective *conscious* has been used in different ways by different authors, in the context of the theory presented here it simply refers to the subjective status of a particular mental content (perception, thought, or feeling). In other words, being conscious of X means having X represented in subjective experience. This notion of consciousness is associated with two defining features. First, being conscious means that it is like something to be in a conscious state of, say, seeing red (as opposed to just unconsciously reacting to red; Nagel, 1974). Second, being conscious means that mental content is represented in a subjectively privileged way in internal experience. The person directly sees, knows, or feels a particular mental content (e.g., anger) rather than having to indirectly infer it, say, from behavioral cues ("I am flailing my arms, thus I must be angry").

Levels of Awareness

We suggest that mental contents can exist at one of three basic levels of awareness. Unconscious or nonconscious content eludes conscious detection. Experientially conscious content impinges on our subjective state but is not necessarily explicitly noted. Finally, metaconscious or meta-aware content is not only experienced but is also the target of explicit characterization or reflection. In the sections that follow, we consider each level in turn.

Unconscious. It is now almost universally accepted that many perceptual and cognitive operations can occur without individuals being conscious in the sense defined earlier (e.g., Kihlstrom, 2007). One classic example comes from research on so-called "blindsight" patients with a damaged primary visual cortex (area V1 of the striate cortex) but intact subcortical visual pathways. These patients can discriminate simple visual features (e.g., location or shape), as revealed in pointing and guessing

behavior, without awareness of the discriminated features (Weiskrantz, 1986).

More generally, evidence now exists that visual information is processed in two separate cortical "streams": a ventral occipital–temporal stream involved in the processing of information for perceptual awareness and object identity (i.e., the "what" stream) and a dorsal occipital–parietal stream that processes information for location, action control, and motor output (i.e., the "where and how" stream). The information processing in the dorsal (where and how) stream is assumed to be fundamentally inaccessible to consciousness (Milner & Goodale, 2008). Weiskrantz (1997) has referred to this dorsal stream "vision" as "blindsight without blindness" (p. 138).

In the cognitive domain, it is now widely accepted that subliminally presented pictures and words can activate related semantic and affective categories in the complete absence of conscious visual awareness (Greenwald, Draine, & Abrams, 1996; Marcel, 1983). Moreover, evidence has suggested that subliminally presented single digits can activate magnitude information (Dehaene, Changeux, Naccache, Sackur, & Sergent, 2006). A recent set of studies that used continuous flash suppression (an innovative form of dichoptic masking that makes stimuli invisible for as long as 2 seconds) provides a particularly striking demonstration of the extent of unconscious processing of numeric and semantic information. These studies demonstrated that (a) subliminally presented mathematical formulas (e.g., "9 − 3 − 4 =") can prime the correct solution and (b) the speed with which masked sentences become conscious is faster with semantically incoherent sentences (e.g., "I ironed coffee") than semantically coherent sentences (e.g., "I made coffee"). These findings suggest that given a sufficient presentation time, unconscious processes are rudimentarily capable of both arithmetical calculations and comprehending the semantic relationship between words. In the social domain, a large body of research has suggested that subliminal priming can activate goals and facilitate goal pursuit, all in the absence of conscious awareness (Bargh, Lee-Chai, Barndollar, Gollwitzer, & Trotschel, 2001; Dijksterhuis & Aarts, 2010; but see Bargh, 2012; Doyen, Klein, Pichon, & Cleeremans, 2012; and Pashler, Coburn, & Harris, 2012 for differing views on the robustness of some of these effects).

Conscious. According to the present framework, mental content can also be experientially conscious without necessarily being reflected upon. For example, preverbal infants are typically assumed to have conscious experiences (e.g., feel hunger and pleasure) but limited capacity to reflect and report on their conscious states. Dreams represent another class of experiences that involve rich conscious content (visual imagery, sounds, vivid visceral sensations) but seldom involve explicit reflection. Indeed, most of the time people have a remarkable inability to reflect on the bizarreness of dream imagery (i.e., people tend to readily accept that they all of a sudden have the capacity to fly or that they have lost all of their teeth), and they are unable to recognize the significance of such profoundly strange occurrences—namely, that they are dreaming.

The notion that experiential consciousness does not automatically entail explicit reflection applies not only to early development or unusual states of consciousness but also to the conscious experiences that make up people's daily lives. A commonly reported experience is of suddenly noticing a sound (i.e., the sound of a fan or a dog barking in the distance) while having the strong impression that one has been hearing the sound for some time before explicitly reflecting on it. Similarly, many people report that they fail to explicitly notice their own emotional state (e.g., sullenness, cheerfulness) until someone points it out to them. Later in the chapter, we discuss research on mind-wandering that suggests that individuals routinely fail to notice the contents of their own conscious thoughts.

Metaconscious. Finally, mental content can be metaconscious (or meta-aware) and be explicitly represented as content of one's own consciousness (Schooler, 2001, 2002). It is this type of consciousness that is typically assessed when an experimenter asks participants questions such as "How happy do you feel now?" or "Did you notice any briefly presented words?" To be clear, in introducing a distinction between conscious and metaconscious states we are not claiming that the distinction between

metaconscious and conscious states is the same as that between consciousness and unconsciousness. A profound qualitative difference exists between conscious and unconscious mental states; the former are associated with a defining aspect of one's existence (namely, experience), whereas the latter are lacking this fundamental quality. In contrast, the distinction between consciousness and metaconsciousness is simply one of content. Metaconsciousness can be said to correspond to conscious states in which the content of those states includes an explicit characterization of what is currently being experienced. In other words, metaconsciousness is simply a kind, albeit a very important kind, of conscious experience in which the focus of thought is turned on to itself. Thus, although conscious and unconscious mental processes are categorically distinct, conscious and metaconscious states only differ with respect to the type of content that they entail. Nevertheless, as we show shortly, this distinction has theoretical significance because it provides a conceptual pivot point for thinking about many psychological phenomena. It also has a practical significance because it carries behavioral consequences. For example, consider an employee who fails to become meta-aware of his or her anger or a student who fails to become meta-aware of mind-wandering during reading. In both cases, meta-awareness would likely trigger beneficial attempts at self-control. Alternatively, a person who becomes meta-aware during a pleasurable experience may actually enjoy it less than a person who is not explicitly monitoring his or her state (Schooler, Ariely, & Loewenstein, 2003).

Because metaconsciousness simply corresponds to a category of mental content, it can be expected to enter consciousness in a manner similar to that of other mental contents. In some cases, mental contents can gradually come to mind, as when one experiences the dawning recognition of an inchoate idea. In other cases, mental contents can spring to mind quite suddenly, as when insights pop up out of the blue. Metaconscious contents have this same range of properties. In some cases, one may gradually gain meta-awareness of a particular mental state, for example, as one slowly comes to realize that one is hungry or tired. In other cases, metaconsciousness of a particular state may arise quite abruptly, as when during a long drive one suddenly realizes that one mind-wandered right past the exit.

Dissociations between levels of awareness. The preceding discussion highlights that at any given moment individuals' behavior can reflect a variety of influences. A multitude of unconscious processes influence thought and behavior, and the stream of consciousness (experiential consciousness) also contains information. Periodically, however, one needs to explicitly attempt 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. This opportunity may be critical for many behaviors that require control (e.g., "I am not doing what I am supposed to be doing") as well as many innovative behaviors that individuals are capable of. However, it also raises the possibility that in the redescription process individuals might get it wrong.

More specifically, we propose that at least three kinds of dissociation exist between levels of mental representation. The first is experiential dissociation, in which a mental state occurs and has an influence on behavior but is never directly accessed by consciousness. Two additional dissociations follow from the claim that metaconsciousness involves the intermittent rerepresentation of the contents of consciousness (Schooler, 2002). Temporal dissociations of metaconsciousness 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 of metaconsciousness occur if the metarepresentation 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.

What is the relationship of the present distinction to other distinctions of consciousness? The distinction between unconsciousness, consciousness, and metaconsciousness is just one of many possible ways of differentiating states of consciousness, and we do not present it to the necessary exclusion of alternative distinctions. Although it is beyond the scope of this chapter to consider its relationship

to all other existing conscious distinctions, several remarks may help to situate this distinction in the larger context (see Schooler, 2002, for a more extensive consideration of this issue).

First, there is nothing magical about the number 3. The proposal to distinguish among unconscious, conscious, and metaconscious states is not exhaustive—additional distinctions are clearly possible.

Second, the distinction between consciousness and metaconsciousness is closely allied with a variety of other terms that have been introduced over the years. For example, it corresponds to some usages of the difference between first-order and second-order consciousness. A very close approximation to the distinction between consciousness and metaconsciousness was presented by Lambie and Marcel (2002), who argued that individuals with alexithymia have a first-order experience of emotions but lack a second-order awareness of the fact that they are experiencing an emotion.

However, others have used the term *second-order consciousness* in a manner that does not directly map onto the notion of metaconsciousness. In philosophy, Ned Block (1995) introduced a distinction between phenomenal consciousness (first order) and access consciousness (second order). The notion of phenomenal consciousness is intended to capture the intuition that some basic conscious states are precognitive, precategorical, and prerational. They consist of subjective feelings—sensory experiences such as seeing, hearing, smelling, touching, tasting, and having pleasures, pains, wants, and aversions. These experiences have an analog or fine-grained (high-bandwidth) nature, which makes them inherently ineffable. For example, even a basic feeling of pleasure of human touch has such fine-grained contents that it cannot be fully captured by even the most precise words. One can always distinguish (and poets do) many more shades of pleasure than people have concepts for. In contrast, access consciousness consists of cognitive (categorized, propositionalized, rational) information that is globally available in the cognitive system. As a result, it can be used for the purposes of reasoning, speech, and high-level action control. As such, access consciousness consists of articulated thoughts, beliefs, acts of inner speech, and so forth. In an argument similar to what we offer here, Block (1995) has proposed that access consciousness and phenomenal consciousness might not always coincide. As a result, one can have a very sharp phenomenal (perceptual) sense of something (e.g., an array of shapes in the sand) and, at the same time, a poor conceptual one (inability to name or remember any of the shapes). One can also always be alerted to some new shade of phenomenal experience (i.e., be made meta-aware). Although our distinction between consciousness and metaconsciousness clearly takes some inspiration from Block's ideas, it is also different because it does not ride on the perceptual–conceptual distinction. Thus, one can be conscious but not metaconscious of purely conceptual content.

Another popular distinction in philosophy is between first-order and second-order mental states. For example, Rosenthal (1986) suggested that to reach consciousness at all, all first-order mental states must be accompanied by a second-order state, though that second-order state need not itself be conscious. Although there may exist some form of unconscious higher order representation that is required to enable a first-order cognition to reach consciousness, such an idea is clearly very different from ours. The kind of second-order mental states to which we refer are explicitly conscious states, and a central premise of our view is that first-order mental states can be conscious, even when they are not accompanied by explicit knowledge of their occurrence.

In an important article, Baumeister and Masicampo (2010) built on a similar but distinct framework by distinguishing among nonconscious processing, phenomenal awareness (which includes raw feelings and perceptual experiences), and secondary consciousness, which includes "the ability to reason, reflect on one's experiences, and have a sense of self, especially one that extends beyond the current moment" (p. 945). Thus, similar to Block's (1995) distinction between phenomenal and access consciousness, this framework differs from the current model in that it places a primary emphasis on the distinction between raw perceptual feelings and the ability to form complex conceptual thoughts. This alternative framework may be useful in considering the kinds of representational machinery that

must be in place for an organism to have the capacity for metaconsciousness. Indeed, it is plausible that certain types of metaconscious representations depend in some important respects on conceptually mediated thought as well as the capacity to form linguistic representations that include a slot for an agent and an embedded proposition (e.g., Leslie, 2000). Certain classes of metaconscious representations may therefore be considered as part of a broader set of possibilities (e.g., theory of mind) opened up by the capacity to form second-order conceptual and linguistic representations that are unique to humans. Despite these differences of emphasis, however, it is clear that considerable overlap exists between the present approach and the framework adopted by Baumeister and Masicampo. For example, in the context of emotions, Baumeister and Masicampo explicitly acknowledged the importance of distinguishing among nonconscious affective responses, consciously experienced emotions, and higher-level conscious thoughts about experienced emotional states. In line with their hypothesis that conscious thought may serve an indirect functional role in behavior, Baumeister and Masicampo reviewed evidence that (rather than playing a direct role in influencing behavior) conscious emotional states may often trigger specific types of higher order secondary consciousness that could lead to distal functional outcomes, including learning new information or stimulating counterfactual thinking in the service of learning from past mistakes. Thus, an intriguing proposal is that conscious experiential states and reflective conscious states in which one explicitly evaluates one's own conscious experiences may interact in important ways, and this interaction could sometimes lead to novel behavioral responses that may even confer adaptive benefits.

Another distinction between levels of conscious processing that is different yet compatible with the model proposed here involves distinguishing between conscious and unconscious states that can be either attended or unattended. Although classically assimilated, increasing evidence has suggested that attention and consciousness are separate processes (Dehaene et al., 2006; Koch & Tsuchiya, 2007; Lamme, 2003, Wegner & Smart, 1997). In particular, evidence has shown that unconscious (i.e., subliminally masked) information can influence attention in the absence of awareness (e.g., by biasing attention to a particular spatial location; Jiang, Costello, Fang, Huang, & He, 2006). Likewise, research has suggested that attention can exert an influence on information processing that is unconscious. For example, attention to stimuli rendered unconscious by backward masking can enhance the N400 evoked response potential (Dehaene et al., 2006), and attentional cues can decrease response times to unconscious stimuli presented in the blind hemifield of blindsighted patients (Kentridge, Heywood, & Weiskrantz, 1999). In social cognition, this distinction between attention and consciousness has become important in interpreting an accumulating number of findings that suggest that high-level volitional processes such as goal pursuit can occur largely outside of an individual's conscious awareness. Although it is beyond the scope of this chapter to review these findings in detail (we refer the reader to Dijksterhuis & Aarts, 2010, for a review), an accumulating body of research has supported the notion that goals can influence and guide behavioral outcomes through the modulation of attentional and executive processes in the absence of conscious awareness. For example, unconscious goals can influence how attentional resources are deployed to objects in the environment (e.g., when one is thirsty, drinks attract greater attention than other objects; Aarts, Dijksterhuis, & De, 2001). These findings, as well as the proposed orthogonality of attention and consciousness in general, are entirely compatible with the current framework. According to the present view, both unconscious processes and experientially conscious states may involve the deployment of attentional resources to greater and lesser extents. However, although it may be tempting to map the current notion of experiential consciousness to consciousness without attention and metaconsciousness to consciousness with attention, it is important to note that top-down attention by itself is not sufficient for metaconsciousness. Instead, metaconscious states involve a very specific type of top-down process in which attention is directed toward the content of conscious experience itself. Distinguishing between consciousness and attention in this way

also raises the difficult but important issue of empirically disentangling states that are genuinely unconscious from those that are experientially conscious but unattended (which are discussed in detail in the next section).

In a taxonomy related to the attended–unattended versus conscious–unconscious distinction, Dehaene et al. (2006) distinguished between processes that are subliminal and those that are preconscious. In brief, subliminal processing corresponds to states that are inherently insufficient to ever reach consciousness. However, preconscious processing corresponds to mental activity that is sufficient to produce experiential states, had attention only been directed toward it. This distinction between alternative states of unconscious thought is potentially consistent with the present discussion because it delineates a different aspect of consciousness. Whereas in the present discussion we seek to differentiate alternative varieties of conscious states, Deheane et al. distinguished alternative kinds of unconscious mental processes. Our view is entirely agnostic regarding the number and type of distinct states or processes that may take place at the unconscious level.

Although in principle compatible with the distinction between subliminal and preconscious mental states, the present account does offer a potentially alternative way of construing at least some mental states that Dehaene et al. (2006) characterized as preconscious. Accordingly, one account of states that are in principle available to consciousness but not reported is to assume that they are, as Dehaene et al. suggested, not experienced. An alternative is that such states are in fact experienced but are simply not reported (i.e., they lack meta-awareness). Differences between experiential dissociations (in which mental states are not consciously experienced) and dissociations of meta-awareness (in which mental states are experienced but fail to be explicitly acknowledged) can be difficult to conclusively differentiate. Nevertheless, the difference between them is no less conceptually important. To take just one example, it may be difficult to distinguish between an anesthetized state in which consciousness is entirely eliminated and one that is experienced but not reported initially because of immobilization and subsequently because of amnesia. Nevertheless, the distinction remains a profound one for the individual who temporarily experiences the surgeon's knife.

Unconscious or not metaconscious? The preceding discussion implies that a failure of verbal report could result from either an absence of an experience (experiential dissociations) or an absence of meta-awareness (temporal or translation dissociations). But how can we empirically distinguish between processes that are genuinely unconscious or conscious but not meta-aware? Although at present it is difficult to distinguish between these two accounts, we believe that it is possible to adjudicate between them. As we review later in our discussion of unconscious emotion, there may be strategies for adjudicating between these accounts that are specific to a particular experimental paradigm. Here we review two preliminary ideas for more general strategies for distinguishing between unconscious processes and conscious processes lacking meta-awareness.

First, if unreported states are indeed represented in consciousness, then in principle they should be influenced by manipulations targeting consciousness. In theory, it might be possible to identify a manipulation that uniquely affects conscious processes without influencing the unconscious processes relevant to a particular experimental paradigm. By allowing for the selective interruption of conscious processes, one could demonstrate that unconscious priming influences behavior irrespective of consciousness, thereby ruling out the alternative explanation that unconscious priming has led to a conscious experience of which participants were not meta-aware.

However, this approach hinges on the identification of unconscious processes that would not themselves be affected by the manipulation, which may be challenging or impossible if unconscious processes use and compete for limited attentional and executive resources, as some would argue (Dijksterhuis & Aarts, 2010). For instance, unconsciously primed goals have less impact on behavior when participants complete a secondary working memory task (Aarts, Custers, & Veltkamp, 2008; Oikawa, 2004), which has been interpreted as evidence that

unconscious processes use working memory resources (Dijksterhuis & Aarts, 2010). Although it is unclear whether the interference from a secondary working memory task corresponds to competition for attention, working memory, consciousness, or perhaps some combination of these and other processes, it is for precisely this reason that this secondary task would have limited usefulness in distinguishing between explanations based on unconscious processing versus those based on conscious processing that lacks meta-awareness.

Nevertheless, some research paradigms may be found in which the relevant unconscious processes are not dependent on attention or executive resources, or perhaps even a manipulation that could target consciousness without affecting attention or executive resources. Fortunately, there is a more immediately pragmatic approach to distinguishing between explanations based on unconscious influences and those based on conscious influences lacking meta-awareness, which we turn to next.

Experiences in the absence of meta-awareness can also be revealed by carefully sampling the contents of consciousness. For example, it is possible to catch mental states that are conscious but not meta-aware with experience-sampling methodologies. As we will describe, experience sampling has been successfully used in research on mind-wandering 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 (Bargh, 1997). It may also be possible to refine individuals' ability to carefully scrutinize their prior state, perhaps through mindfulness training or by removing biases due to motivation (Thompson, Lutz, & Cosmelli, 2005).

In the next section, we illustrate the value of the proposed framework in understanding mind-wandering and emotion, and we demonstrate how the preceding criteria can be applied to assess whether unreported mental states are unconscious or conscious but lacking in meta-awareness. We argue that mind-wandering research has suggested that individuals can (and frequently do) experience conscious thoughts that elude explicit reportability and meta-awareness, and that qualitative differences exist between mind-wandering episodes that occur with versus without meta-awareness. In contrast, research on awareness of emotions has revealed that when individuals fail to report the experience of emotional states, the emotion has often failed to reach the threshold of consciousness, providing evidence for genuinely unconscious affective states.

Levels of Consciousness and Mind-Wandering

In recent years, a growing body of research has supported the contention that individuals are only intermittently meta-aware of the experience of mind-wandering (i.e., of the fact that their attention has drifted away from a task to unrelated concerns). Two strands of evidence have supported this claim, revealing both the frequency and the consequences of mind-wandering without meta-awareness: the self-caught–probe-caught paradigm and the zone-out–tune-out paradigm (Schooler et al., 2011). We review each in turn.

Self-caught–probe-caught mind-wandering. One approach for documenting mind-wandering in the absence of meta-awareness is combining self-catching and experience-sampling measures into a single paradigm. The self-catching measure asks participants to press a response key every time they notice that they have been mind-wandering. This measure provides a straightforward assessment of the mind-wandering episodes that have reached meta-awareness. By contrast, the experience-sampling measure probes participants at unpredictable intervals to ask whether they were mind-wandering. When used in conjunction with the self-caught measure, experience sampling can catch people mind-wandering before they notice it themselves.

Several studies have effectively used the self-caught–probe-caught methodology to illuminate the relationship between mind-wandering and meta-awareness. This approach was initially used to examine mind-wandering while reading (Schooler, Reichle, & Halpern, 2005). Whereas participants regularly self-caught themselves mind-wandering (approximately four times in a 45-minute period),

they nevertheless were regularly caught mind-wandering (about 15% of experience-sampling probes). Strikingly, and in support of the fundamental difference between mind-wandering episodes that are versus are not accompanied by meta-awareness, a strong correlation was found between probe-caught mind-wandering and comprehension performance, but no such relationship was found with self-caught mind-wandering. It may be that when individuals self-catch mind-wandering episodes, they are able to engage in the self-regulation process necessary to avoid comprehension failures.

Further evidence that meta-awareness of mind-wandering episodes allows self-regulation comes from comparison of gaze behavior before self-caught and probe-caught mind-wandering. In an eye-tracking experiment, the eye movements of readers became especially erratic, with fewer words being fixated and more off-text fixations, in the 2.5 seconds immediately before the readers self-caught mind-wandering (Reichle, Reineberg, & Schooler, 2010). This finding either suggests that an increasing meta-awareness of mind-wandering leads readers to more completely disengage from the text or that the especially erratic movement of the eyes causes readers to become meta-aware of their own mind-wandering. Future research will be necessary to disentangle these two accounts and to better understand the relationship among mind-wandering, meta-awareness of such lapses, and eye movements during reading.

Additional studies have examined the impact of two mind-altering experiences hypothesized to undermine individuals' meta-awareness: alcohol intoxication and cigarette craving. In one study, 54 male social drinkers consumed a moderate dose of alcohol (0.82 g/kg) or a placebo beverage and then performed a task assessing mind-wandering during reading (Sayette, Reichle, & Schooler, 2009). Compared with those who drank the placebo, participants who drank alcohol were more likely to report that they were mind-wandering when probed. After this increase in mind-wandering was accounted for, alcohol also lowered the probability of catching oneself mind-wandering. These data suggest that alcohol increases mind-wandering while simultaneously reducing the likelihood of noticing one's mind-wandering.

In another study, 44 smokers who were either nicotine-deprived (crave condition) or nondeprived (low-crave condition) performed the same mind-wandering task used in the alcohol study just described (Sayette, Schooler, & Reichle, 2010). Smokers in the cigarette-crave condition were significantly more likely than the low-craving smokers to acknowledge that their mind was wandering when they were probed. When this more-than-threefold increase in zoning out was accounted for, craving also lowered the probability of self-catching mind-wandering. As with the alcohol findings, it appears that cigarette craving simultaneously increases mind-wandering while reducing the metacognitive capacity to notice it. The findings derived from the self-caught–probe-caught paradigm therefore suggest that the failures of self-regulation associated with both alcohol consumption and cigarette craving may result from a compromised ability to notice one's distracted state and therefore regulate it accordingly.

In contrast to alcohol and nicotine's effect of reducing meta-awareness, one context that may enhance meta-awareness is deliberate self-reflection. A recent study examined this possibility by fostering a self-reflective state of mind in participants and subsequently measuring meta-awareness of mind-wandering (Mrazek, Smallwood, & Schooler, 2013). One group of participants rated whether adjectives were descriptive of themselves, whereas control participants rated whether the adjectives described the current president of the United States. After this manipulation, the self-caught–probe-caught methodology was used to assess meta-awareness of mind-wandering while participants completed a short global–local detection task. Relative to the control condition, the self-reflective condition reported comparable amounts of mind-wandering at the experience-sampling probes but self-caught their mind-wandering significantly more often. This result suggests that reflection on one's personality, which occurred during the adjective-rating task, led to an increased likelihood of becoming meta-aware of one's mind-wandering even though the overall amount of mind-wandering did not change.

Experience sampling of aware versus unaware mind-wandering. A second methodology that has been used to examine fluctuations in meta-awareness of mind-wandering entails combining the experience-sampling methodology with a judgment of participants' immediately prior state of meta-awareness. In this procedure, participants are intermittently queried regarding whether they are mind-wandering and, if they are mind-wandering, they are asked to indicate whether they had been aware of this fact. In response to such queries, participants routinely indicate that they had been unaware of their mind-wandering until the time of the probe. Moreover, when participants classify mind-wandering episodes as unaware, their performance and neurocognitive activity systematically differ from when they report having been aware that they were mind-wandering.

Consistent with findings using the self-caught–probe-caught methodology, retrospective classifications of unaware mind-wandering episodes (termed *zoning out*) and aware episodes (termed *tuning out*) have indicated that zoning out is more strongly associated with comprehension failures than tuning out (Smallwood, McSpadden, & Schooler, 2008). Similarly, reports of zoning out seem to be most closely linked to failures in response inhibition (Smallwood, McSpadden, Luus, & Schooler, 2008) and in understanding the narrative structure of a novel (Smallwood, McSpadden, & Schooler, 2008). Together, these results suggest that mind-wandering in the absence of awareness is especially damaging to task performance.

Neurocognitive measures also reveal differences in the degree of activation between mind-wandering episodes that have been classified as aware versus unaware. In a combined experience-sampling–functional MRI study, mind-wandering with awareness activated similar brain regions to those observed during mind-wandering without awareness (Christoff, Gordon, Smallwood, Smith, & Schooler, 2009). These brain regions, however, were more strongly activated when mind-wandering occurred without awareness. This greater activation is consistent with the results of behavioral studies indicating a more severe performance detriment associated with zoning out. The anterior prefrontal cortex (BA10) was one of the brain regions that was significantly more strongly recruited during unaware episodes of mind-wandering. Notably, anterior prefrontal cortex recruitment has been directly linked to engagement of cognitive meta-awareness (Gallagher & Frith, 2003). The observation that this same brain region became specifically more recruited during unaware episodes of mind-wandering may seem surprising at first. However, the anterior prefrontal cortex may be involved in mind-wandering through its role in the maintenance of thought. Its recruitment during mind-wandering in the absence of awareness may make it more difficult for meta-awareness to be implemented.

Levels of Consciousness and Emotion

Just as individuals can mind-wander without realizing it, they often fail to notice explicitly their own emotional states (e.g., sullenness, cheerfulness) until someone points them out. In the sections that follow, we consider both situations in which emotions may evade detection by meta-awareness and cases in which emotions may not be experienced at all. Although the distinction between having versus not having an emotional experience might seem straightforward, it can prove quite challenging to distinguish empirically between emotions that are experienced but not explicitly noticed and those that are not experienced at all.

Conscious emotions lacking meta-awareness. Just as people can mind-wander without realizing it, they often fail to explicitly notice their own emotional states (e.g., sullenness, cheerfulness) until someone points those states out to them. If people commonly lack metaconsciousness of affective states, the induction of continuous metaconsciousness may alter the quality of affective experience. Schooler et al. (2003) explored this issue by asking participants to report online happiness while listening to hedonically ambiguous music (Stravinsky's "Rite of Spring"). 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.

A failure of meta-awareness also provides a way of conceptualizing the effects of analyzing reasons on people's affective judgments. A number of studies have suggested that inducing decision makers to verbally reflect on their decision processes can increase their weighting of considerations that can be verbalized and decrease their access to gut-level feelings. For example, in one study Wilson and Schooler (1991) found that requiring participants to analyze why they felt the way they did about the taste of various strawberry jams reduced the correspondence between their ratings and those of experts. Other studies have found similar effects of self-reflection on people's ability to judge the utility of courses (Wilson & Schooler, 1991), peanut butter (Wilson & Schooler, 1991), puzzles (Wilson, Dunn, Bybee, Hyman, & Rotondo, 1984), and even relationships (Wilson et al., 1984). In the current context, these findings can be interpreted as suggesting that reflection caused participants to emphasize the inferences that they made about their experience and lose touch with their actual hedonic feelings.

If encouraging verbal reflection diminishes individuals' access to their own visceral reactions, then one should expect that introspective techniques that decrease verbal reflection would lead to appraisals that are more in line with individuals' actual underlying visceral experience. Indeed, several studies have found that when self-reflection is minimized by forcing individuals to make very quick hedonic judgments, hedonic assessments become realigned with actual experience. For example, Wilson and Lindsey (as reported in Wilson, Lindsey, & Schooler, 2000) had participants evaluate the quality of their relationship with a significant other. Some participants engaged in self-reflection, analyzing their reasons for their evaluations. Others simply gave an overall rating. As in prior studies, Wilson and Lindsey found that self-reflection reduced people's ability to adequately gauge the quality of their relationship, as revealed by the fact that those who analyzed their reasons were less able to predict the quality of their relationship at a later date relative to control participants who did not engage in self-reflection.

However, Wilson and Lindsey included an additional condition in which, after self-reflection, participants made very quick (3-second) evaluations. In this condition, the correlation between participants' ratings of their relationship and their later reported ratings was as high as it was for participants who did not engage in self-reflection at all. Apparently, discouraging self-reflection by having people make rapid judgments restores their ability to access their own gut-level reactions.

In addition to quick judgments, other techniques may also encourage individuals to draw more on their hedonic experience by enabling them to be more keen observers of their own visceral responses. For example, a number of studies have found that when individuals engage in tasks with a mirror present, their hedonic appraisals tend to more closely correspond to their subsequent behaviors (e.g., Scheier & Carver, 1977). One possible interpretation of such findings is that the mirror gives individuals greater opportunity to observe and experience their own visceral hedonic response and thus enables them to draw more on this source of information. Of course, greater reporting and reliance on introspective states does not guarantee that participants are more accurate in reporting how these states feature in their judgments and decision. In one illustration, people are inaccurate in reporting how much a factor, such as an external noise, influences their evaluations of a target. For example, in the classic study by Nisbett and Wilson (1977), 55% of participants reported that external noise lowered at least one of their movie ratings, even though the noise had no real negative effect on the ratings. Winkielman (2002) replicated this finding and also showed that adding a mirror during the target-rating or noise-reporting procedure did not increase accuracy in judgments of the noise influence. The mirror only increased the correspondence between participants' ratings and their reports of the noise influence, such that participants who rated the target as low reported more negative influence of the (actually irrelevant) noise.

Another source of evidence of failures of meta-awareness of emotions comes from investigations of discrepancies between hedonic reports and physiological measures. Certain distinct populations of individuals consistently show dissociations between

physiological responses and affective introspections. For example, when shown stressful videos individuals identified as "repressors" report less stress than control participants, whereas their physiological responses (e.g., galvanic skin response) suggest higher levels of stress (Asendorpf & Scherer, 1983). Similarly, Adams, Wright, and Lohr (1996) found that homophobic individuals who were shown explicit movies of individuals engaging in homosexual acts reported an absence of sexual arousal while physically evidencing considerable arousal as measured by penile tumescence. As Baumeister, Dale, and Sommer (1998) observed, this latter finding raises the paradoxical question of how someone manages to feel sexually turned off when his or her body is exhibiting a strong positive arousal. Again, the distinction between experiential consciousness and metaconsciousness may offer a potential answer. Accordingly, individuals may experience the arousal but, because of their strong motivation, fail to become meta-aware of that experience.

Unconscious affect. Are there any cases in which a mental state has a demonstrable influence on behavior but genuinely cannot be accessed by consciousness? Some hints come from research on affect. Much evidence now exists that briefly presented affective stimuli can work as unconscious triggers of conscious affective states (Kihlstrom, 2007; Öhman, Flykt, & Lundqvist, 2000; Zajonc, 1994). Interestingly, there is also some evidence that people can be in a demonstrable affective state (as evidenced by its impact on behavior, physiology, and cognition) without having conscious access to that state (Winkielman & Berridge, 2004). The idea of unconscious affect may seem initially strange—it sounds like "unfelt feelings." Note, though, that evolutionarily speaking, conscious representations of affect in the form of a feeling is a late achievement compared with the ability to respond affectively to relevant stimuli, which is present in animals that extend deep into humans' evolutionary ancestry, such as fish and reptiles. Accordingly, the basic affective neurocircuitry is contained in the subcortical brain and can operate even in the absence of cortex (Berridge, 2003; Winkielman, Berridge, & Sher, 2011). However, evolutionary and neuroscientific considerations can only be suggestive of unconscious affect in typical humans. Fortunately, research using standard experimental paradigms with normal college participants has provided some suggestions for the possibility of unconscious affect.

Impact of subliminal affective stimuli on behavior but not on subjective experience. One way of testing unconscious emotion involves separating the impact of affective stimuli on behavior from their impact on conscious feelings, which Winkielman, Berridge, and Wilbarger (2005) did in a series of studies. In Study 1, participants were flashed with a series of subliminal emotional facial expressions—happy, neutral, or angry. Immediately after this affect induction, participants were given two counterbalanced tasks. One task required participants to self-report on conscious feelings of valence and arousal—a measure of introspective access to the current affective state. The other task was a measure of behavioral impact of the current affective state and asked participants to take a pitcher of lemonade-like beverage and to pour into their cup as much as they wanted and to drink as much as they wanted.

The results of this study illustrated that subliminal emotional expressions can influence people's actual consumption behavior. Subliminal happy facial expressions caused participants to pour more into their own cup and to drink more than angry facial expressions. An important finding was that participants reported no conscious awareness of any intervening change in their subjective state, as measured by their reports of valence and arousal. That is, they did not report feeling more pleasant (or aroused) after happy facial expressions than after angry expressions.

The just-described study suggested that consciously inaccessible affective states can drive behavior. However, how does unconscious affect cause this outcome? After all, many steps of the consumption behavior are consciously mediated in the sense that they require the ability to understand verbal instructions, form an intention, and execute complex movements. One possibility is that unconscious affect automatically modifies the perceived value of presented options. To test this, Berridge and Winkielman (2003) in their Study 2 flashed people

with the same series of subliminal happy or angry faces. Then some participants were given just a single sip of the fruit beverage and were asked to rate its perceived value. Other participants rated various shades of their current feelings on a 20-item scale. The results showed that the subliminal expressions influenced the perceived value of the drink, with happy faces leading to higher ratings of willingness to pay and the desire to drink. Again, Berridge and Winkielman found no changes in feelings. In sum, their study supported the idea that unconscious affect works via change in the perception of the desirability and value of presented options, without manifesting itself as a change in subjective experience.

It is also worth highlighting that in both of these studies, the effect of priming was amplified by thirst (Winkielman et al., 2005), which is consistent with other work from social psychology suggesting that unconscious cues interact with affective and motivational states in determining goal-oriented behavior (Custers & Aarts, 2010; Ferguson, 2007). More important, thirst does not necessarily need to represent an unconscious goal but can simply be a low-level motivational amplifier of relevant affective cues (Winkielman et al., 2011). We return to the relation between unconscious emotion and unconscious motivation later.

Lack of awareness or meta-awareness? In the context of this chapter, one needs to ask whether participants in the studies just described had no experience of their affective reaction (true unconscious affect) or whether they simply lacked meta-awareness of conscious affective states (experienced but unrealized affect). After all, it is possible that participants were not attending online to their feelings or that they did not consider their subliminally biased feelings as a potential impairment to their judgments and thus ignored them. This possibility was examined in a series of studies in which participants were subliminally flashed facial expressions of happiness and anger that were masked by to-be-rated Chinese ideographs (Winkielman, Zajonc, & Schwarz, 1997). In addition, the studies used various attributional manipulations in which some participants were informed about the possibility of change in their affective experience and offered possible causes of such change (irrelevant "other" pictures, irrelevant background music). If participants' feelings are indeed consciously accessible and form the basis of their judgments, such attributional manipulations should trigger corrective processes, such as discounting and augmenting (Schwarz & Clore, 1983). However, the results of these studies showed no evidence of any discounting or augmenting effects, as predicted by the attributional account (Winkielman et al., 1997). Moreover, they also found no evidence for feelings in participants' self-reports of experience, again consistent with the idea that the facially triggered affect was unconscious.

Results of a recent study reaffirmed this conclusion with another paradigm (Bornemann, Winkielman, & Van der Meer, 2012). The study investigated whether people can somehow "feel" their reactions to briefly presented emotional stimuli by deliberately focusing on their internal subjective state. Specifically, participants were briefly flashed happy, neutral, or angry faces and asked to identify their valence. One group of participants was instructed to do this task while focusing on their feelings. One control group was instructed to use a visual focus strategy, and another group received no strategy instructions. The results showed no beneficial effect of feeling-focus instruction on detection rates, suggesting that the affective responses to faces were unconsciously unavailable, despite participants trying to use them.

Physiological manifestations of unfelt affect. What is the nature of the unconscious affective states? Are the unconscious states elicited by subtle and brief stimuli (such as faces) simply evaluative, in the sense of changes in activation of value-related but cold concepts such as goodness or badness? Or are they genuinely hot, in the sense of being represented across multiple physiological and psychological systems? This is a difficult question, especially because unconscious affective states are likely to be weaker and less differentiated (Clore, 1994). Still, some evidence has suggested that unconscious affect involves genuine physiological changes and is distinguishable from pure evaluative states.

For example, in the just-described study by Bornemann et al. (2012), we monitored participants'

physiological activity using facial electromyography. The results revealed distinct physiological responses for different stimulus valences. Angry faces produced the strongest reactions on the frown-generating corrugator supercilii, and happy faces produced the lowest reactions, thus suggesting that briefly presented and unfelt faces generate at least some muscular reactions.

However, one could argue that the facial electromyography responses to faces could simply represent motor mimicry. Thus, in other studies we assessed the reactions to unconsciously presented facial pictures using physiological measures that serve as an index of activation of a low-level positive affective system, such as postauricular startle reflex (Starr, Lin, & Winkielman, 2007). Participants showed more postauricular startle reflex to unconscious happy faces than to angry faces, suggesting genuine, albeit weak, activation of the low-level affect system.

In sum, a range of findings from behavioral and physiological experiments suggest that one can obtain genuine dissociation between an underlying affective process and its conscious, experiential awareness. As such, they give credence to the notion of unconscious affect. More important, though, 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 lives. They may well be what makes life worth living. As an example, most people would probably not spend money on substances that make them only unconsciously happy but result in happy behavior. In contrast, they are clearly willing to spend on substances, such as alcohol or drugs, that influence conscious states without doing much good to behavior. Besides recreational reasons, conscious emotions are actually useful in judgments and decisions. Conscious emotions give decision makers valuable feedback that they might, but are not forced to, explicitly consider in making choices (Winkielman, Knutson, Paulus, & Trujillo, 2007).

It is worth noting the relation of these ideas to two key notions in psychology. The first idea is the classic Freudian pleasure principle, whereby seeking of pleasure (and avoidance of pain) is the central motivating force (Freud, 1922). Freud located this motivational principle in the unconscious id and did not worry too much about subjective experience. It may be, though, that conscious, phenomenally experienced pleasure matters much more for organisms' ultimate decisions. The second idea is the argument that conscious components of emotions evolved exactly because they exert greater, more compelling, and longer lasting motivational force than unconscious emotion. They help one's genes to survive and reproduce by torturing one's awareness with morbid fears or delighting it with bliss (Nesse & Ellsworth, 2009).

Finally, given the intimate relation between emotion and motivation, it is worth saying a few words about the relation between research on unconscious emotion and unconscious motivation as examined in studies on unconscious goal pursuit. Obviously, many similarities exist, because both states are inferred by behavioral and physiological outputs produced in the absence of phenomenal awareness of having an emotion or pursuing a goal. However, one difference is that the concept of emotion makes fewer assumptions about sophistication of the underlying process. Critically, the concept of unconscious motivation necessarily implies the presence of a distinct goal representation that promotes behavioral flexibility, persistence, and equifinality in its goal pursuit. As such, it seems more likely that some aspects of the motivation in goal pursuit studies are riding on the powers enabled by conscious, though not necessarily metaconscious, thought.

Although it is in principle possible that some aspects of goals that are currently characterized as nonconscious might actually be conscious but lacking meta-awareness, we should acknowledge that such a claim would need to be reconciled with various findings suggesting that conscious versus nonconscious pursuit of the same goal can produce different outcomes. For example, Bargh et al. (2001) found that whereas participants who had been consciously induced to endorse a cooperation goal were able to accurately report on how cooperative they had just been, those whose cooperation was increased by nonconscious goal priming were not. Similarly, Chartrand, Cheng, Dalton, and Tesser (2010) observed differential consequences of failure

at conscious versus nonconscious goals, with nonconscious goal failures increasing self-enhancement tendencies to a greater degree than conscious goal failures. Most recently, Bijleveld, Custers, and Aarts (2011) found that subliminally presented reward incentives helped performance on an attentional blink task, whereas conscious presentation of the same incentives did not. One possible account of these differences is that they are the product of the jump from consciousness to metaconsciousness rather than from nonconsciousness to consciousness; however, until evidence can be brought to bear on this possibility, parsimony would argue that, as with unconscious emotions, nonconscious goals reside outside of conscious experience.

Future Directions

In this section, we highlight some interesting future directions for research inspired by the idea of three levels of consciousness. We also show how some standard phenomena of social and cognitive psychology can be rethought using our proposed framework.

Mindfulness and meta-awareness. The observation that mind-wandering and emotional processes take place in the absence of awareness (and in the case of emotion, even experiential consciousness) raises the intriguing question of whether strategies may exist that might enhance people's awareness of their experiences. One promising direction for exploring this question entails the cultivation of mindfulness through meditative practices. Mindfulness is operationalized in a variety of ways, with ongoing disagreement as to the most privileged definition of this construct (Grossman & Van Dam, 2011). One perspective defines mindfulness as sustained nondistraction (Brown & Ryan, 2003; Dreyfus, 2011; Wallace & Shapiro, 2006), whereas multifactor construals of mindfulness emphasize not only awareness of present experience but also an orientation toward one's experiences characterized by curiosity, openness, and acceptance (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Bishop et al., 2004). Amid this disagreement, there is nonetheless consensus that sustained attentiveness represents a fundamental characteristic of the construct. Accordingly, the most widely used dispositional measure of mindfulness addresses the extent to which an individual attends without distraction to present experience (Mindful Awareness Attention Scale; Brown & Ryan, 2003). When defined as nondistraction, the opposing relationship between mindfulness and mind-wandering is apparent. Indeed, the self-reported tendency to be mindful during daily life is negatively correlated with a variety of behavioral and self-report measures of mind-wandering (Mrazek, Smallwood, & Schooler, 2012). Furthermore, brief mindfulness exercises reduce behavioral markers of mind-wandering during a vigilance task (Mrazek et al., 2012). It seems that where mindfulness ends, mind-wandering begins.

When mindfulness is defined as nondistraction, it is also clearly distinct from meta-awareness. It is possible to be fully aware of the sensations of breathing without metaconscious reflection about these sensations. One could even argue that in any given moment, mindfulness and meta-awareness are mutually exclusive: Being fully attentive to a given sensation may preclude the possibility of simultaneously reflecting on it. Yet although nondistraction is distinct from conscious reflection about that nondistraction, meta-awareness may nonetheless be a crucial element in the cultivation of mindfulness. For instance, meditative practices designed to cultivate nondistraction typically require focused attention to a single aspect of sensory experience (e.g., the sensations of breathing) despite the frequent interruption of focus by unrelated distractions or personal concerns. Meta-awareness of each distraction promotes meditative focus by providing opportunity to redirect attention after a lapse. For example, Hasenkamp, Wilson-Mendenhall, Duncan, and Barsalou (2012) outlined a temporal sequence of mental events that occur during the practice of meditation: Sustained attention is periodically interrupted by mind-wandering until awareness of mind-wandering initiates the shifting of attention back to the perceptual target of meditation. In a functional MRI investigation of mind-wandering during meditation among experienced meditators, Hasenkamp et al. (2012) found that awareness of mind-wandering was associated with greater activation of bilateral anterior insula and dorsal anterior cingulate cortex. This association was interpreted as greater activation of a

salience network that is involved in detecting relevant or salient events. Although the poor temporal resolution of functional MRI makes it difficult to discern the brain regions involved in mental events that occur quickly in succession, these results tentatively suggest that bilateral anterior insula and dorsal anterior cingulate cortex may contribute to meta-awareness of mind-wandering in a manner that allows attention to be redirected back to a given task.

The suggestion of a possible relationship between mindfulness and meta-awareness raises the intriguing possibility that cultivating mindfulness might enhance meta-awareness. Several studies have examined this issue in the context of both meta-awareness of mind-wandering and emotion. We review both domains in turn.

Mindfulness and meta-awareness of emotions. One way of assessing individuals' meta-awareness of their emotional state is to examine the concordance between individuals' self-reported emotional experience and their physiological measures (for a recent review, see Schooler & Mauss, 2010). Although historically it has proven somewhat challenging to document a close calibration between emotional self-reports and physiological measures, a recent examination of individuals by Sze, Gyurak, Yuan, and Levenson (2010) has suggested that training in mindfulness through contemplative practice can increase the coherence between self-report and indirect measures. Specifically, these researchers found that Vipassana (body-awareness) meditators as compared with advanced dancers and demographically matched controls exhibited greater coherence between self-reported hedonic states and heart rate during emotionally evocative film clips. In Vipassana meditation, practitioners are trained to increase awareness of physical sensations in the body. These results suggest that teaching individuals to attend to their internal state increases the accuracy of their meta-awareness and thus the coherence between indirect measures and self-reports. One easy paradigm to extend this work would be the one used by Bornemann et al. (2012), in which participants listen to their body to detect the valence of the subliminal facial expression.

Mindfulness and meta-awareness of mind-wandering. Although meta-awareness is pivotal to the cultivation of nondistraction, conscious reflection on one's focus is not always necessary or desirable. Before attention has lapsed, meta-awareness is not needed—and in some cases could itself serve as a distraction. It follows that in the course of cultivating mindfulness, the frequency of meta-awareness may resemble an inverted u-shaped function: initially increasing to allow for redirection from distractions but eventually diminishing when attentional stability makes frequent meta-awareness unnecessary. Although this would suggest that brief mindfulness training programs should result in increased meta-awareness, Mrazek, Franklin, Phillips, Baird, and Schooler (2013) recently found that 2 weeks of mindfulness training led to both reduced probe-caught and self-caught mind-wandering during a Graduate Record Examination test relative to a nutrition control group. This result points to a challenge in establishing whether mindfulness training increases meta-awareness: Fluctuations in meta-awareness may be masked by more salient changes in the phenomenon of which one is meta-aware. In this instance, the marked decline in mind-wandering among those who received mindfulness training may have obscured any variation in meta-awareness of mind-wandering. A related challenge is that extensive practice detecting mind-wandering in the context of meditation might lower an individual's threshold for what subjectively constitutes an instance of mind-wandering. These difficulties indicate that promising directions for future research would be to (a) identify objective measures of meta-awareness and (b) measure changes in meta-awareness of mental processes that are themselves unaffected by mindfulness training.

Unwanted thoughts. Wegner (1994) suggested that individuals possess an implicit monitoring system that tracks unwanted thoughts (e.g., of a white bear) to veer away from them. But what exactly is this system monitoring? Wegner suggested that it is monitoring the contents of preconsciousness (i.e., thoughts that are near, but below, the threshold of consciousness). In a further elaboration of this view, Wegner and Smart (1997) distinguished three different levels of consciousness that are related to, but distinct from, the view presented here. From their

perspective, mental states can be either present or absent in consciousness (the standard conscious–unconscious distinction) and also associated with deep versus surface activation (i.e., the thought either does or does not have an impact on other mental states). According to Wegner and Smart, when one tries not to think about a concept, it gets relegated to a state of unconscious yet deep activation, such that the thought is not experienced but is nevertheless influential. Although such a view is certainly plausible, from the present perspective there is another status that unwanted thoughts might take—namely, they could be consciously experienced but lacking in meta-awareness. That is, perhaps individuals can consciously think about a white bear without explicitly realizing that they are doing so. Such a view would differ from Wegner and Smart's proposal in that the unwanted thought would be in at least some cases actually experienced but simply not acknowledged as such.

Some 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 (Baird, Smallwood, Fishman, Mrazek, & Schooler, 2013). As in standard unwanted thought paradigms, participants were asked to self-report every time they noticed an unwanted thought coming to mind. In addition, 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, which they experienced but failed to notice until they were probed. Moreover, 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. Furthermore, unnoticed unwanted thoughts (but not unwanted thoughts associated with meta-awareness) were most common for individuals who engaged in chronic thought suppression in their daily lives. These findings suggest that chronic thought suppression may be associated with an impaired capacity to notice that one is having the thought one is trying to suppress, or a breakdown in meta-cognitive monitoring. Such an impaired capacity to notice the content of one's thoughts could lead to extended perseveration on the issues individuals wants to avoid and an increase in the frequency with which individuals engage in attempts at suppression when they finally do notice their thoughts. If correct, this helps to explain why chronic suppressors are generally bad at suppressing thoughts (Wegner & Zanakos, 1994), as well as the effectiveness of therapy techniques that encourage individuals to engage in mental practices that encourage recognition of thought content (e.g., Beck, 1976; Teasdale et al., 2000). From a theoretical perspective, these findings suggest that cognitive defenses may not always banish disturbing thoughts to the unconscious but rather prevent one from reflecting on them (Schooler, 2001).

Stereotyping and stereotype threat. The distinction between conscious and metaconscious states also provides a way of potentially reconceptualizing existing findings in the domain of stereotyping. For example, several researchers have worked with the notion of aversive racists, defined as individuals who reveal evidence of implicit racism but are not conscious of their racist tendencies (e.g., Gaertner & Dovidio, 1986; Son Hing, Chung-Yan, Hamilton, & Zanna, 2008). This idea speaks directly to the disparities that can emerge when discrepant motivations exist at different levels of consciousness. Aversive racists are identified empirically as being those individuals who score high on racism when gauged with implicit measures (i.e., the Implicit Association Test; Son Hing et al., 2008) but low when gauged with explicit measures. Evidence for the importance of this distinction comes from the examination of aversive racists' evaluations of stories depicting other-race target individuals, who vary with respect to the degree to which low liking ratings can be attributed to something else besides race. When aversive racists have no excuse for holding negative attitudes toward other-race individuals

(e.g., when the target person is characterized as acting politely), then they behave very much like individuals with no racist tendencies. However, when an opportunity exists to justify their discriminatory behavior in a manner that does not necessarily invoke the label of *racist* (e.g., when the target individual behaves in a slightly unfriendly manner), these individuals do act like racists. Son Hing et al. (2008) suggested that aversive racists behave in this fashion because they hold nonconscious racist views that are inconsistent with their conscious views and can only rely on their racist tendencies when they can avoid construing them as such. However, the distinction between consciousness and meta-consciousness raises another possibility: namely, that when individuals experience racist tendencies, they simply do not recognize this experience because of a motivation not to take stock of racist reactions. Accordingly, when confronted with the behaviors of an individual toward whom they have racist attitudes, aversive racists experience negative affect. If a justification for this affect exists that is consistent with their views of themselves (i.e., that the individual behaved somewhat rudely), then they embrace this affect. However, when no such outlet is available, they ignore it. Critical to this account, however, is the notion that aversive racists are actually experiencing the affect; it is simply a matter of whether they are prepared to allow themselves to take stock of it. Thus, a reasonable alternative way to characterize aversive racists is to suggest that they experience racism but lack explicit awareness of this experience.

Meta-awareness may be relevant not only to those who hold stereotypes but also to those who are stereotyped. Stereotype threat, defined as the risk of behaving in a way that substantiates a negative stereotype against one's group (Steele & Aronson, 1995), has emerged as a phenomenon of great theoretical and practical interest. An integrated set of mechanisms responsible for these impairments has been observed (Schmader, Johns, & Forbes, 2008), with recent investigations indicating that performance deficits resulting from stereotype threat are mediated by an increase in negative task-related thoughts and worries (Beilock, Rydell, & McConnell, 2007; Cadinu, Maass, Rosabianca, & Kiesner, 2005). Although on-task thoughts and worries increase when people are the targets of negative stereotypes, prior research had until recently not found an equivalent increase in task-unrelated thoughts (e.g., Beilock et al., 2007). However, methodological limitations related to meta-awareness may have prevented previous studies from uncovering the role of mind-wandering in disrupting task performance under stereotype threat. For instance, Beilock et al. (2007) relied on participants reporting their thoughts and feelings after a testing session. Although retrospective measures allow for a rich assessment of the content of thought, they may systematically overlook many mind-wandering episodes. One reason for this discrepancy is that thoughts frequently drift away from a task without one's awareness that one's mind has gone AWOL (Schooler, 2002; Schooler et al., 2005; Smallwood, McSpadden, & Schooler, 2008). This important fact may underlie the difficulty prior work has encountered in demonstrating the role of task-unrelated thought in stereotype threat or in documenting evidence of increased anxiety using self-report measures (Bosson, Haymovitz, & Pinel, 2004; Johns, Inzlicht, & Schmader, 2008).

With this methodological limitation in mind, Mrazek et al. (2011) recently investigated whether mind-wandering underlies the performance detriments associated with stereotype threat by measuring mind-wandering using methodologies that could capture the occurrence of task-unrelated thoughts that an individual would not otherwise have the meta-awareness to report. In one study, female participants who were anticipating a stereotype threat–laden math test underperformed on a classic vigilance task (sustained attention to response task), demonstrating a robust increase in several widely accepted performance markers of mind-wandering. A second study built on this finding using thought sampling to more directly measure mind-wandering during a demanding math task. Once again, female participants experiencing stereotype threat demonstrated increased mind-wandering, which mediated threat-induced performance impairment. These studies represent the first empirical evidence that stereotype threat can increase mind-wandering and, in doing so, impair performance on tasks requiring

focused attention. The fact that prior studies using retrospective measures of mind-wandering had not identified this relationship may indicate that the mind-wandering episodes that underpin the effects of stereotype threat occur below the threshold of meta-awareness. Further research could confirm this conclusion using a self-caught–probe-caught methodology to examine whether stereotype threat selectively increases probe-caught but not self-caught mind-wandering.

SUMMARY AND CONCLUSION

Traditionally, consciousness has been defined in terms of the reportability of cognition, with reportable processes characterized as conscious and those that evade report defined as unconscious. However, the notion of metaconsciousness points to the possibility that some nonreported cognition may be truly unconscious, whereas other cognition may be experienced but fail to reach meta-awareness. Recent research in the domains of mind-wandering and emotional awareness suggests that both of these possibilities sometimes occur. In the case of mind-wandering, it seems that individuals regularly fail to notice and hence report their lapses. However, the failure to self-catch mind-wandering lapses does not mean they are not experienced, because intermittently probing participants about the current contents of their thought routinely reveals that they were experiencing mind-wandering episodes that they failed to notice.

Although failures to report mind-wandering generally reflect oversights of meta-awareness, an inability to report emotional states has proven more complex. In some cases, individuals may genuinely fail to adequately appraise their ongoing emotional experience, as for example when analyzing reasons leads individuals to generate affective appraisals that are out of line with normative measures. In other cases, however, as for example when subliminally presented affective cues subtly influence behavior but not self-reports, it seems a lack of report may truly reflect a lack of experience.

Although the distinction among unconscious, conscious, and metaconscious cognition has been most extensively explored in the domains of mind-wandering and emotion, its relevance to other domains seems ripe for further investigation. One of the most venerable approaches for understanding the unfolding of conscious experience—the cultivation of mindfulness through vigilant attention to the present—has recently been related to the newer construct of meta-awareness. This research has suggested that although mindfulness may be an important antidote to excessive mind-wandering, little evidence has been found that this gain is due to enhanced meta-awareness of mind-wandering. Rather, it seems that mindfulness prevents the mind's tendency to wander off in the first place. Greater success in documenting a relationship between mindfulness and meta-awareness has arisen in the context of emotion research, in which individuals with a history of cultivating mindfulness through meditation have revealed a unique concordance between their self-reported affect and physiological measures that track such states.

The construct of meta-awareness has also shown promise for conceptualizing two constructs of particular relevance to social cognition: unwanted thoughts and stereotyping. As with episodes of mind-wandering, unwanted thoughts routinely occur in the absence of meta-awareness—that is, individuals regularly have unwanted thoughts without realizing it. The existence of such unnoticed unwanted thoughts offers a fresh perspective on the function of Wegner's (1994) ironic monitoring process. Rather than, or perhaps in addition to, monitoring the realms of preconsciousness, the ironic monitor may monitor the contents of consciousness itself, alerting people when they are thinking about the very topic they were trying to avoid.

Meta-awareness may also inform our understanding of stereotyping from the perspective of both those who engage in stereotyping and those who are the victims of it. Aversive racists have traditionally been thought to possess unconscious racist tendencies but consciously lack such traits. The introduction of meta-awareness offers a further possibility, namely, that aversive racists experience racist tendencies but fail to admit these tendencies to themselves. By keeping their racist perspectives out of meta-awareness, aversive racists may avoid confronting their distasteful proclivities.

Finally, the construct of meta-awareness may also serve to elucidate why a recent investigation using experience-sampling methodology revealed a robust relationship between stereotype threat and mind-wandering, whereas previous studies that used retrospective measures failed to find such a relationship. Accordingly, if stereotype threat produces mind-wandering episodes that fail to reach the threshold of meta-awareness, then retrospective measures (which necessarily rely on individuals having noticed their mind-wandering) could readily miss such episodes. In contrast, experience sampling (which forces participants to take stock of the current contents of thought) could bring to meta-awareness mind-wandering episodes that might have otherwise eluded report. This possibility highlights the importance of recognizing that the outcome of self-report measures may critically depend on whether they tap experience that occurs with meta-awareness (as in the case of self-catching and retrospective measures) or can reveal experiences that previously eluded meta-awareness (as in the case of experience-sampling measures).

Although we have primarily focused in this chapter on the value of a tripartite distinction to consciousness as it pertains to mind-wandering, emotion, mindfulness, unwanted thoughts, and stereotyping, many other domains pertinent to social cognition exist in which this distinction might in principle prove relevant. One general area in which this distinction may be helpful involves the various contexts in which unconscious processes have been hypothesized to be comparable to, and in some cases superior to, conscious processes. For example, Dijksterhuis and Nordgren (2006) have argued that unconscious thought is often more effective than conscious thought for complex decision making. Evidence for this claim comes from a variety of studies in which engaging in a 2-minute unrelated task leads to superior performance relative to either being tested immediately or explicitly thinking about the problem for a comparable amount of time. Dijksterhuis and Nordgren assumed that the benefit of engaging in the unrelated task stems from the unconscious thought that takes place during it. Although this account is certainly plausible, the present approach suggests an alternative interpretation, namely, that during the unrelated task individuals mind-wander without meta-awareness of the problem, and it is these conscious but not meta-conscious thought intervals that are uniquely useful for solving the problem.

Like a kid with hammer, once one gets the hang of the tripartite distinction of consciousness it becomes tempting to try it out all over the place. Is it possible that attitudes are not simply explicit or implicit but may also exist in the intermediate range of experience without meta-awareness? Could dual-process theories sometimes be collapsing three levels of processing into two? Might subliminal primes sometimes be truly unconscious, but other times be experienced but lacking meta-awareness? Anywhere that the standard conscious–nonconscious distinction has been applied seems in principle reinterpretable within the context of a tripartite view. Although the standard division of consciousness may often suffice, in many cases it seems worthwhile to at least consider the potential insights and alternative interpretations that might be gleaned from considering how meta-awareness could apply.

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