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Implications for the real-world scope of unconscious higher mental
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Abstract: Unconscious priming effects involve passive activation of internal mental representations that influence judgments and behavior without the person's intention or awareness. An important distinction is between unawareness of the priming stimuli or events per se (as in subliminal priming) and unawareness of the influence of those primes: the latter is the more important and practically relevant of the two forms. Meta-analytic reviews as well as a new wave of subliminal persuasion studies reveal stronger behavior priming effects when the primes correspond to an important or currently active goal of the individual. Recent field studies using incidental priming methods have produced changes in dishonest behavior of investment bankers, as well as reduction of snack purchases by obese grocery store shoppers.

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John A. Bargh December 7, 2015

Highlights

- Awareness of the prime's influence matters more than awareness of the prime *per se*
- Unconscious priming influences are not restricted to effects of subliminal primes
- Motivationally important primes produce stronger priming effects
- We are more sensitive to need-related primes, even when subliminally presented

Awareness of the prime versus awareness of its influence:

Implications for the real-world scope of unconscious higher mental processes

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Abstract

Unconscious priming effects involve passive activation of internal mental representations that influence judgments and behavior without the person's intention or awareness. An important distinction is between unawareness of the priming stimuli or events *per se* (as in subliminal priming) and unawareness of the influence of those primes: the latter is the more important and practically relevant of the two forms. Meta-analytic reviews as well as a new wave of subliminal persuasion studies reveal stronger behavior priming effects when the primes correspond to an important or currently active goal of the individual. Recent field studies using incidental priming methods have produced changes in dishonest behavior of investment bankers, as well as reduction of snack purchases by obese grocery store shoppers.

The issue of an individual's awareness of primes, and of the effects of those primes, is often misunderstood. Even among those who understand the underlying issues well, there are differences of opinion, mainly in terms of conceptual and operational definitions of "awareness" and its related concepts "conscious" and "unconscious", which cause further misunderstandings and confusions. These issues and confusions have been with us for some time [1, 2], so we need to be clear about these terms from the outset.

Priming effects of recent experience on presently made responses to that environment (judgments, verbal and nonverbal behavior, actions) are passive effects that the individual did not intend to occur, and of which influence the individual is not aware and cannot accurately verbally report upon. This separates priming effects from just *any* effect of recent experience. Task instructions to think or feel or behave in a certain way – logically, mindfully, compassionately, thoughtfully -- are cases of explicit instruction (so the person is aware of and intends to think that way – not priming), or of presenting new information to the participant (which is learning and not passive activation of what is already in the person's head – not priming). Whenever the connection between the experimental manipulation and the dependent measure is clear, whenever the participant can accurately report afterwards on the experimental hypothesis, this is not "priming" as the term has been used in psychology over the past 40 years.

The second issue has to do with what 'lack of awareness' in priming refers to. Some continue to define 'unconscious' influences such as priming as those that

occur with subliminal stimulus presentation – the person must be unaware even of the presence of the priming stimuli [3]. This definition is highly problematic for several reasons: it is not the historical definition of ‘unconscious’ as used by Darwin, Freud, and others, to whom it meant *effects* of (supraliminal) stimuli of which the person was not aware [4]; it is overly restrictive and implies (alas, to many younger students and researchers in our field) that as long as a person is consciously aware of the primes they are also aware of and intend any influence of the primes (because these are other qualities traditionally associated with ‘conscious’ processing [1]), and worst of all, it conflates ‘unconscious’ with ‘processing very weak and brief stimuli’ and of ‘conscious’ with ‘processing strong and long lasting stimuli’. Consequently, this definition had led panels of cognitive science experts to conclude that the unconscious is rather ‘dumb’, because it can’t do very much with subliminal strength stimuli [3]. Yet we have known since the dawn of experimental psychology in the 19th century that weak stimuli will perforce produce weak effects.

Aware of the primes, but not aware of their influence

There are excellent reasons to prefer the ‘unaware of influence’ definition of (unconscious) priming effects over the subliminal definition. Historically, ‘unconscious’ was never defined in terms of subliminal-strength stimuli (for one thing, the technology to deliver such stimuli did not exist until relatively recently. Darwin, in *The Origin of Species*, used the fact that the farmers and shepherds of 19th century England (and for centuries before that) had used the principles of natural selection when putting two woolly sheep together to breed even woollier sheep, or

grafting (?!?) two strains of corn to produce even bigger ears of corn. But they did not know and were not aware of the reason why this worked. He said that they were *unconsciously using* the same principle of natural selection he was describing. Freud credited the early hypnotists of the 1830s with the discovery of the unconscious [4], because the hypnotized subject was not aware of the real reason for his or her post-hypnotic behavior (see also [5]). According to Freud, unconscious effects were those that the person did not consciously intend and was unaware of the actual causes.

Moreover, the same qualities of priming effects are obtained for both supraliminal and subliminal priming methods, as long as the person is not aware of the influence of the primes [6]. Awareness of the priming stimuli does not matter, but awareness of their influence or potential influence does. The original priming studies in cognitive psychology over 50 years ago were of this type: carry-over effects of one task to the next, with the participant explicitly unaware of the influence (and often, unable to explicitly remember the primes themselves), but showing implicit effects of the primes on later tasks [7, 8]. This ‘carry over’ priming effect has typified most social priming studies, with the participant aware of the primes but processing them under some guise (e.g., a ‘language task’) that masks their subsequent influence on the next task of interest (e.g., an impression formation task, or their behavior in a social situation). Moreover, when primes are attention grabbing and salient so that the participant does catch on that they might have an influence (e.g., *Hitler* as a prime, followed by a social judgment task [9]), the usual assimilative effects of passive priming are eliminated and sometimes even reversed – priming effects require the participant to be unaware of the influence of the primes. (And in post-experimental

questioning, data from the few participants who do show some awareness of how they might have been influenced by the primes are routinely not included in the analyses [7]).

Operationally this means that primes need not be delivered subliminally to 'count' as passive, unintended influences operating outside of awareness. Priming effects are *unconscious* influences in the same sense that Darwin, Freud, and others used the term, and there are many natural sources of priming effects in everyday life [10], from carryover effects of emotion and mindset from one situation to the next, to behavioral cues (such as aggressive cues in media, and consumption related cues in food and beverage advertising), and the triggers of evolutionary relevant motivations such as for safety and reproduction [11].

On this point it should be noted that recently, eminent behavioral economists and their colleagues have sided with Darwin and Freud (and contemporary social psychology) by reporting, in one of the top international science journals, behavioral priming effects involving the same (supraliminal) carryover priming methods [12] as used in social psychology over the past four decades. These researchers first primed the **workplace identity** of investment bankers while they were at home on a weekend, by asking them first to describe their work environment; thereafter, those with their work-identity primed were more likely to cheat for monetary gain in a self-reported coin toss task. A random sample from the same set of investment bankers at home, who were not first primed with their workplace identity, did not cheat. Similar findings of unconscious priming of workplace identities on unethical behavior in the

financial services industry, and unfair treatment of employees by supervisors have also been recently reported [13, 14]. Together these field studies reveal how unconscious priming can matter to people's everyday behavior, and procedural outcomes, in real world settings.

Motivation matters: The importance of importance

And again, the motivational relevance or importance of the primes to the person's goals matters to behavioral priming effects in general – with supraliminal as well as with subliminal priming. Albarracin and colleagues [15] have concluded from their meta-analysis of hundreds of behavioral priming studies that the importance of the goal being primed markedly increases the size of the priming effect. The more important it is, the stronger the behavioral priming effect. Custers and Aarts [16] showed that subliminal reward cues significantly amplified the effect of subliminal achievement primes on **motor task performance**, and brain imaging studies have demonstrated that subliminal reward cues (a penny versus a pound coin) increase motor task performance just the same as when presented supraliminally, and also activate the same reward-specific brain regions [17].

The importance of goal-importance holds in the real world as well. Recent field studies of behavioral priming bear out this point: for example, recipe flyers with healthy eating and diet primes subtly included, handed out in a Dutch grocery store before the person went shopping, significantly reduced how much unhealthy snack food they purchased, as evidenced by their cash register receipt after leaving the

store – but only for obese individuals for whom the dieting goal was more important compared to non-obese shoppers [18].

And even subliminal-strength priming has more of an influence on subsequent behavior when the primes are relevant to the person's current goal or need state, consistent with Hassin's recent arguments concerning the role of motivational relevance in producing unconscious processing effects [19]. Repeatedly over the past 15 years studies have shown no effect of subliminal stimuli on choices and behavior in unmotivated participants, but do show an effect when the participant is currently in a need state related to the primes, such as being thirsty when different brands of beverage are subliminally presented [20, 21, 22]. Moreover, in line with Bruner's prescient 1950s theory [23] that a person's motivations and goals make them more perceptually ready to notice goal-relevant stimuli in their environment, other recent studies show that being in a need state relevant to the subliminal primes makes the person more sensitive to those primes and able to notice them [24, 25, 26]. In one recent study, for example [24], food and hunger related words presented for only 50 milliseconds were accurately recognized by currently hungry participants, whereas non-hungry participants could not recognize the words.

The immediate, directive (approach versus avoidance) influence of primes on behavior are also affected by the individual's current goal or need state – indeed, Sherman and colleagues [27] showed in a study of smokers trying to quit that the participant's need state could reverse implicit preferences for smoking-related stimuli: positive implicit attitudes (on the Implicit Associations Test) if the participant

was in the need state (had not smoked for 4 hours prior to the study) and negative implicit attitudes if the need state had just been satisfied by smoking. Fitzsimons and Shah [28] had participants rank their friends from “BFF” on down after first priming either the goal of achievement or of relaxation; without participants’ awareness of this influence, the primed goal changed who the person considered their best friends (i.e., those who typically helped them pursue the primed goal were now ‘better’ friends than the others). In another study [29], college women reported themselves more likely to use health-dangerous tanning salons and diet pills after priming of the attraction/mating goal (through a first task in which they judged attractiveness of a set of faces), and considered those behaviors as less health-risky, compared to when the mating goal had not been primed. And Tamir and colleagues [30] have shown that primed motivations change the person’s preference for types of music; they prefer to listen to music that helps facilitate the primed goal (e.g., soothing cello music if the goal of cooperation is unconsciously active).

From these studies it is clear that primes do not have ‘main effects’ in a vacuum, because the current context matters: the current motivational state of the participant can not only alter the power of the prime’s influence, but even the direction of that influence (positive versus negative) on the participant’s behavioral, attentional, and judgmental responses. Our current goals and motives change what we are sensitive to in the environment, what we pay attention to, what influences those stimuli have on us, and how we evaluate them – liking them if they help us attain our current goal and not liking them if they interfere with that goal [31].

Conclusions

Conscious awareness is an important consideration in social priming theory and research, but it is awareness of the influence (or potential influence) of the primes that matters, not awareness of the priming stimuli. And the motivational state of the participant matters as well, both to sensitivity to the primes (whether supraliminally or subliminally delivered) and to their influence on behavior. When primes are relevant to the person's current goal or need state, priming effects on behavior are stronger, and the direction of this priming effect depends on whether the primes facilitate or hinder pursuit of that goal. Finally, priming effects are increasingly being demonstrated in real-life settings, the workplace and the grocery store, where all that matters is that the person be unaware of the influence of the priming manipulation on their behavior. Darwin and Freud would not have been surprised by this.

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