

The cognitive unconscious in everyday life

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Abstract

The type of unconscious influences that matter in the everyday lives of everyday people are those of which they are unaware, whether or not they are aware of the events, people, and situations that trigger them. Research across multiple domains of psychology shows that our ‘free’ choices, preferences, motives and social behavior are all shaped by these unconscious operations. They arise from various sources, including (1) evolved primary motives for survival and safety, (2) early childhood experiences for which there is later no explicit memory; (3) carryover (priming) effects of experiences from one situation into the next; and (4) the transformational impact of our active goals on attention, preferences, and behavior. These effects have now been demonstrated in many real-life settings, including eating and health behavior, consumer purchasing, and teamwork and individual performance in the workplace, with unconscious effects in the field significantly stronger than those in the lab.

Consciousness drops out of every process where it is no longer needed.

-- William James (1890)

In considering ‘the cognitive unconscious’, especially as it relates to the complexity and richness of everyday life, each of these three words (even the *the*) is problematic, and needs to be addressed at the start. Let’s begin with ‘unconscious.’ In common use, ‘unconscious’ refers to a lack of awareness of some important fact, which, were it known, would likely change one’s choices or behavior. For example, Arthur Conan Doyle referred to Mr. Baskerville’s “unconscious guest”, who was not sleeping or senseless, he was just unaware that his host was about to murder him. Darwin pointed out repeatedly in *Origin of Species* that the English shepherds of his day unconsciously used the principles of natural selection to breed ever woolier sheep. They were unaware – “unconscious” -- of the implications of this fact for their belief in divine creation. And today, when NBA announcers exclaim that Stephan Curry is currently ‘unconscious’, they mean he is in a groove and not consciously thinking about his shooting motion.

Contrast this prosaic use with the way that experimental psychology has defined ‘conscious’ and ‘unconscious’ for the past 80 years. The operational definition of an unconscious process has been what the human mind can do with subliminal stimuli. For a mental process to be considered ‘unconscious’ the person must be unaware even of the stimulus event itself, not just its influence and effects. Clearly this is not the traditional meaning – Conan Doyle was hardly suggesting that Baskerville’s guest did not see his host sitting next to him by the fire, Darwin never believed that county farmers were unaware of the sheep milling around them, and the basketball announcers are not telling us that Curry has passed out at midcourt.

Dumb and dumber. In everyday life, not much is actually ‘subliminal’, and thus a chapter on unconscious influences in everyday life would be quite short if it followed the operational definition of cognitive psychology. After all, as subliminal stimuli are a creation of 20th century technology, the human mind could not possibly have evolved to process them. Because unconscious processes evolved through natural selection to guide action adaptively based on incoming, normal (duration, intensity) strength stimuli, the use of subliminal presentation techniques creates an artificial situation to which evolved mental processes largely do not apply. Unfortunately, the insistence on the subliminal definition has led some in our field to conclude that the unconscious is rather dumb (e.g., Greenwald, 1992; Loftus & Klinger, 1992). This is rather unfair. What subliminal studies actually show is that the mind cannot do much with stimuli so weak that even their presence cannot be detected. And by the way, if the unconscious is dumb, then conscious processes are even dumber, because they do not even know anything has happened!

In other words, the subliminal definition has a fatal logical problem. It cannot tell us anything about possible *qualitative* differences between conscious and unconscious processing, because it conflates the *quantity* of the stimulus energy – its intensity and duration – with the supposedly different unconscious versus conscious quality of its mental processing. Any differences found between subliminal and supraliminal stimuli may just be due to the differences in strength. Heinz Werner (1956) pointed this out in his pioneering studies of *perceptual microgenesis* – the stages of development of a perceptual experience. Just as the new ‘stop action photography’ of that era could reveal the lightning-fast acrobatics of a cat landing on its feet (Canales, 2009), Werner used the tachistoscope to show that as the intensity or duration of a

stimulus increased, the levels of analysis and the sophistication of stimulus processing also increased, in a relatively continuous function.

In relating the cognitive unconscious to everyday life, the kind of ‘unawareness’ that really matters is not unawareness of a stimulus event, but unawareness of the influence of that event on a person’s choices, judgments, behavior, and motivations (Bargh, 1992). Take the case of ‘unconscious bias’ in American race relations (Kurdi & Banaji, this volume). In unconscious bias, the race or gender or age, etc. of the other person is hardly subliminal. ‘Unconscious’ in this context refers to the fact that the biased person (let’s say, a barista in a Philadelphia Starbucks) is unaware of how that stimulus feature influences their treatment of a customer, the assumptions they make about his or her motives, their mental and physical abilities, and so on. And there are many other mundane cases in which a person might well have done differently, and made different choices, had they been aware of the effects and influence of a (consciously perceived) stimulus (person, situational setting, advertisement, political speech or appeal, the current behavior of others around them). This is the kind of unconscious process that matters to people in their daily lives.

There is no ‘the’ there. William James’ most famous graduate student, Gertrude Stein, once said of Oakland that there was no ‘there’ there. In the case of unconscious processes, we can say there is no ‘the’ there. Although we continue to refer to ‘the’ cognitive unconscious or ‘the’ unconscious mind, doing so is actually an anachronistic throwback to psychoanalytic theory, and a legacy of Freud. Psychoanalysis dominated psychology’s understanding of the higher mental processes in humans during the first half of the 20th century, and it was heavily influenced by Freud’s model of a separate unconscious mind that filtered and censored all experience before that information entered consciousness. The oversized influence of

psychoanalysis in that era was due in part to the vacuum created by scientific psychology, which abdicated the study of higher mental processes because of dominant behaviorism's focus on lower level processes in nonhuman animals.

And so, Freud's notion of a separate unconscious mind that filtered experience as a kind of emotional 'censor' was the starting point of the 'New Look' research of Bruner, Postman, and their colleagues (see Allport, 1955; Bruner, 1957; McGinnies, 1949), in which stimuli were presented subliminally so that there no contaminating conscious processing of it. Defining unconscious processes in terms of what the mind can do with subliminal strength stimuli is thus an implicit adherence to the outdated, and incorrect Freudian 'separate mind' hypothesis. Cognitive psychology and neuroscience have long since shown, beyond any doubt, that there is no separate unconscious mind up there, playing by its own rules. Instead, the evidence consistently shows that the same brain regions are activated and the same underlying processes occur with the same outcomes with subliminal and supraliminal stimuli (e.g., Pessiglione et al., 2007; Takareda & Nozaki, 2018; see Bargh & Hassin, this volume).

An inconvenient truth. The final term we must scrutinize is 'cognitive'. When Rozin (1976) and then Kihlstrom (1987) referred to 'the' *cognitive* unconscious they were making the much-needed point that the notion of unconscious processes could exist separately from the Freudian model, and be a part of scientific psychology moving forward. Yet at the same time, cognitive psychology was deliberately restricting itself to the 'pure' study of mental structures and processes without recourse to affective or motivational processes and variables (e.g., Nisbett & Ross, 1980). Gardner (1985), for example, in his influential foundational book on cognitive science, explicitly stated affect and motivation were confounds that needed to be controlled and eliminated from the study of cognitive science.

However inconvenient it might be to include affect, motivation, and behavior in a cognitive psychology analysis, there is no meaningful cognition in complex real life settings that operates in isolation from these factors. Shiffrin (1988) and Reber (1992) made this exact point, Rozin (1976) clearly had (evolved) motivational influences in mind when he coined the term ‘cognitive unconscious’, and Kihlstrom (1990) quickly followed up his seminal 1987 paper with a more inclusive chapter on the ‘psychological unconscious.’ Following their lead, the present chapter is about human unconscious processes in everyday life contexts, as messy and complex as those contexts might be.

Varieties of Unconscious Influence in Everyday Life

Preconscious inputs to choices and judgments

The early stages of perceptual activity, involving figural synthesis and pattern detection, occur prior to the individual’s conscious awareness of the products of those analyses (Neisser, 1967; Treisman, 1960). Because the preconscious influence comes into conscious awareness immediately and effortlessly it is trusted and experienced in the same way sensory information is; in other words, it is experienced as ‘out there’ in reality, and not a product of internal thought or inference (Jones & Nisbett, 1971). Because of our implicit trust in their reality, preconscious influences are quite powerful on subsequent conscious thought, decisions, and behavior. For example, racial profiling produces immediate preconscious effects on time-pressured, often life or death law-enforcement decisions – and differentially, based on the suspect’s race (Correll et al., 2002).

Subliminally presented stimuli influence freely-made motor responses to targets on the focal experimental task (Ocampo, 2015; Damian, 2001; Hughes et al., 2009; Klotz & Neumann,

1999). In the Damian (2001) study, participants freely chose which of two buttons to press on any given trial, and they were more likely to choose the button that was congruent with a masked, subliminal prime. Both Wenke et al. (2010) and Teuchies et al. (2016) found that free choices (left or right arrow keys) were significantly more likely to follow the suggestions of the subliminal stimuli (left or right arrows) than otherwise. Moreover, in the Hughes et al. (2009) and also Parkinson and Haggard (2014) experiments, decisions to *inhibit* a response were made more likely by subliminal ‘no-go’ primes (see also Albarracin et al., 2008). As Parkinson and Haggard (2014) noted, these demonstrations are important because the standard assumption in the field is that such “inhibitory control is necessarily conscious, aware, and intentional” (e.g., Dehaene et al., 2003).

In a high-powered demonstration of this preconscious influence effect on choices, Payne, Brown-Iannuzzi, and Loersch (2016) conducted 6 experiments with a total of over 1000 participants with primes, subliminally presented in some studies, related to gambling. In an online blackjack game, primes related to betting (*bet, gamble, wager*) or ‘standing pat’ (*pass, fold, stay*) on a given hand were presented before the participant made the decision to bet or not. Only hands in the moderate indecision range (8-17) were included because most everyone bets with hands of 18-21 and hardly anyone bets with hands of 4-7. In every one of the six experiments, participants were significantly more likely to bet, or not, in line with the behavioral prime on that trial.

Sensory inputs to higher order cognition. One important source of preconscious influence comes from basic sensory experiences. Concepts activated by physical experiences such as warmth, distance, softness, and verticality are associated, early in life (Clark, 1973; Mandler, 1991) with their more abstract psychological and social meanings. For instance, in

everyday language we refer easily to a ‘warm’ friend or a ‘distant’ father, a ‘close’ relationship, ‘high’ status, a ‘smooth’ interaction, a ‘hard’ test, not realizing how naturally we are appropriating terms from the physical world to describe social and psychological states (Lakoff & Johnson, 1980; Fiske et al., 2007; Schubert, 2005; Williams & Bargh, 2008). The warm-cold dimension is particularly important because neuroscience research has shown that the same brain region – insula – becomes active both when holding something warm and when doing socially warm activities such as texting to family and friends (Inagaki & Eisenberger, 2013), and a nearby region of insula becomes active when something cold is held as when another person betrays you in an economics game (Kang et al., 2011). Controlled hospital studies show that one’s actual body temperature covaries with warmer or colder feelings towards family and friends (Inagaki et al., 2016). Different forms of physical and social distance also seem to swap for each other (Liberman & Trope, 2014). Overall, basic sensory experiences are an important category of preconscious influence because they are a continuous feature of everyday life and have spreading effects on social judgments and behavior through their associations with higher-order mental concepts (see also “Postconscious influences” below).

Faces. Another powerful preconscious input into our impressions of others is their facial appearance (see Todorov, 2017). We tend to quickly assess an individual’s personality based merely on their facial characteristics, along several trait dimensions including trustworthiness, competence, and attractiveness. Moreover, because this is a preconscious effect with no accompanying feeling of effort or inference, we tend to have high confidence, even certainty, in the veracity of these impressions. Research has shown that we make these personality judgments involuntarily, as they are generated even when the task has nothing to do with social judgment (see Slepian et al., 2012). Of course, a person’s face also preconsciously conveys social group

information such as race, gender, and age – accordingly, faces of members of different social groups are routinely used as stimuli in standard tests of unconscious bias such as the Implicit Associations Test (IAT; see Kurdi & Banaji, this volume). Black faces presented subliminally as briefly as 13 milliseconds (pattern masked) can activate racial stereotypes and then unconsciously influence behavior, producing greater hostility in a staged experimental situation by White participants compared to the White face-prime condition (Bargh et al., 1996, Study 3; Chen & Bargh, 1997).

For these reasons, faces exert important influences on important real life choices and judgments. We vote for people in part based on their faces: trustworthiness and competence judgments of candidates for political office, after just a 250 millisecond exposure to their photograph, and by participants unaware they are candidates for office, predict the outcomes of those elections (Todorov et al., 2005). And Zebrowitz and Montepare (2014) summarized decades of research on how facial characteristics, including racial prototypicality, influence the outcome of actual courtroom cases, when the other relevant case information is held constant.

Mimicry and contagion. Another pervasive preconscious influence is the mere perception of others' behavior, which directly increases the likelihood that we will do the same thing. This is especially true of physical actions, such as facial expressions and bodily movements and posture (Chartrand & Bargh, 1999); even human infants and other primates (as well as other social animals) show this tendency (Dijksterhuis & Bargh, 2001; Meltzoff & Moore, 1977; Rizzolatti & Sinigaglia, 2006). The function of this contagion effect appears to be the facilitation of cooperation through coordinating behavioral and emotional responses within a group, and also increasing bonding and trust between individuals (Chartrand & Bargh, 1999, Study 2; see Chartrand & Lakin, 2013). Two field studies demonstrated this facilitation: Dutch

waitresses received larger tips (Holland et al. 2004) and French salespeople significantly increased both sales and customer satisfaction (Jacob et al., 2011) after subtly mimicking the customer's questions and requests, compared to no-mimicry control conditions.

Imitation and contagion are not limited to physical behaviors, but extend to types of social behavior such as rudeness and helpfulness. Business school instructors' rudeness towards a student late for class caused the other students to be ruder when responding to customer emails, and rudeness of a negotiation partner in one class session produced greater rudeness in the partner's behavior across the next several class sessions (Fouk et al., 2016). One does not even have to directly perceive others' behavior for contagion to occur (e.g., it is caused by people you do not know over social networks such as Facebook; see Kramer et al., 2014). For example, in several Dutch cities pamphlets were attached to parked bicycles in alleyways with graffiti covered walls, versus alleys where the graffiti had been removed. There was more littering of the pamphlets when the graffiti (a sign of past antisocial behavior) was present than when it was not (Keizer et al., 2008).

Situational and contextual features. Another preconscious influence on behavior comes from the external situational context. The mere perception of commonly experienced situations activates their internal representations which include the types of behavior (e.g., norms) and personal goals the person has repeatedly associated with it. This creates an internal, unconscious *psychological situation* that guides the person's behavior and goals even though they may not be in that physical location at the time. For example, Aarts and Dijksterhuis (2003) instructed participants to take an envelope to one of several destinations in the university; when the destination was the library, they spoke more quietly to each other on the way there. The psychological situation can include moral values and motivations as well. In one study of Swiss

investment bankers, Cohn et al. (2014) contacted participants by email at home on a weekend morning. Some were asked to type in a physical description of their weekday office; this was intended to prime their internal representation of their workplace. Then all participants engaged in a coin toss game for actual money, in which they self-reported the number of heads tossed. Those who had just been asked about their workplace self-reported significantly more successful tosses, many more than would be expected by chance; in contrast, the unprimed control group of bankers was quite honest in their self-reports.

The constant directive power of external situations on human behavior was dramatically demonstrated by Francois Lhermitte (1986), in his neuropsychological research on two stroke patients. Their behavior was remarkable in that it was entirely at the mercy of situational suggestions. For example, the patients would repeatedly drink a glass of water that Lhermitte kept filling, despite complaining that they were painfully full; taken into a stranger's bedroom around noon they would undress, get into bed and fall asleep. Posthumous autopsies revealed damage to the same internal motivational-control brain region in both patients. All of us have these same preconscious behavioral impulses coming from the external environment, but in normal functioning they are controllable by acts of will and subjugated to the demands of the current goal pursuits (see "Unconscious goal pursuit" and "Moderators" below).

The unconscious effects of the external situational context extend to attitudes towards critical public health and policy issues. In Zaval et al. (2014) the current local weather conditions significantly influenced respondents' beliefs about the severity of the long-term climate change problem – they considered it as more of a problem when the temperature that particular day was hot, and less of a problem when the temperature that day was cooler. In a similar demonstration with public health policy implications, Lee et al. (2010) showed that if respondents happened to

witness another person sneezing before answering the survey questions, they then rated a variety of health risks, including heart attacks and contracting a serious disease, as more serious.

Automatic evaluation. In social psychology, Fazio and colleagues (1986) adapted the sequential priming task to test whether the names of attitude objects could prime their corresponding evaluations (as good or bad) immediately and preconsciously. Participants on each trial were to respond as quickly as possible as to whether the target word (a common adjective) was good or bad in meaning, and their speed in doing so was affected by the prior brief (250 millisecond) presentation of a prime attitude object. When prime and target matched in valence (e.g., *beer-beautiful*) responses to the target were faster, compared to when they mismatched (e.g., *money-ugly*). Thus, the attitude object prime automatically activated its evaluation as good or bad, which then either facilitated or interfered with the correct response to the target word on that trial. This preconscious evaluation effect turned out to be quite general, occurring for all attitude object stimuli and without a task goal to evaluate anything (Bargh et al., 1992, 1996; see meta-analysis of 25 further years of research by Herring et al., 2013).

Childhood amnesia and early experiences. An interesting class of preconscious influences is produced by implicit memory effects of early childhood experiences, for which we as adults have no explicit memory. Simpson and colleagues (2014) found that measures of attachment to one's parents taken at age 1 are predictive of many relationship outcomes throughout the rest of that person's life – how many friends the child has in grade school, their popularity in high school, and how long their close relationships lasted when in their twenties. Most of us, of course, have very little if any explicit memory for that first year of life. The very early feelings of trust (or lack of it) in one's parents appears to establish a preconscious filter that affects the subsequent interpretation of friends' and partners' behavior over the rest of one's life.

Postconscious influences

Postconscious influences (Bargh, 1989) are the temporary version of long-term, chronic preconscious inputs. They are the consequence of recent conscious experiences and the deliberate use of mental representations in thought. The activation of those representations lingers on to influence subsequent cognition and behavior. This temporary activation state produces the same effects as in long-term use of the same construct; indeed the two sources of accessibility combine additively (Bargh et al., 1986). This is a boon to the experimental study of cultural and of personality, as it provides a workaround to the self-selection and correlated variable problem (Bargh & Chartrand, 2000). Participants can be randomly assigned to condition and the hypothesized underlying mental construct can be made temporarily active (or not) through priming manipulations, to test whether the same effects occur as between the groups sorted by culture or personality measure (Cohen, 2014; Higgins & Bargh, 1987; Kitayama, Varnum, & Salvador, 2017).

In everyday life, postconscious processes are an important unconscious influence because changes in one's physical environment are often sudden and complete – leaving the office after work and walking out into a busy sidewalk, moving from an argument in the car to a group of friends in the restaurant – but the activation state of the relevant mental representations does not change as quickly. Activations in one situation take some time to dissipate and are often still active when one has already entered the next situation, unaware of the continuing influence. The unconscious carryover effects of arousal from one situation to the next were the focus of 'excitation transfer theory' (e.g., Cantor et al., 1975), in which physiological arousal from one cause (e.g., exercise) was then misattributed to a feature of the new situation (e.g., an erotic movie). Dutton and Aron (1974) showed this in a clever field study in which males crossing the

famous Capilano suspension bridge, an unnerving experience as it hangs over a deep gorge, were found to be more attracted to a female experimenter taking a survey halfway across the bridge than were males crossing a safer-appearing bridge.

Priming effects on judgments and behavior. In the original verbal priming studies of the 1960s by Segal and associates, memory words were presented in one experiment, and were then more likely to be used as free associates in a second, purportedly unrelated experiment (see Bargh & Chartrand, 2000; Bargh, 2021). These were the original implicit memory studies, as the effect on the free association task occurred even for words the participant had not been able to recall at the end of the first experiment. Higgins et al. (1977) used this same ‘ostensibly unrelated studies’ paradigm to show that trait adjectives presented in the first study influenced the interpretation of ambiguous social behaviors in the second, impression formation study. For example, the primes ‘reckless’ versus ‘adventurous’ influenced the later degree of liking for a person who had sailed alone across the Atlantic. These social judgment priming effects were also implicit memory phenomena, because if anything, the effects were stronger for participants who could not recall the primes than for those who could (Higgins et al., 1985; Lombardi et al., 1987).

Postconscious carryover influences have been studied in a wide variety of research domains – religious values, goals and motives, advertising influences, social judgment, stereotyping, social identity, and organizational, cultural, political, and personality psychology (see Bargh, 2017, this volume). Hundreds of studies, and meta-analyses, found verbal and pictorial priming of not only attitudes and social judgments, but also social behaviors (e.g., Ambady, Shih, & Pittinsky, 2001; Bargh et al., 1996; Bargh et al., 2012; Dijksterhuis & van Knippenberg, 1998; Foulk et al., 2016; Hull et al., 2001; Loersch & Payne, 2011; Payne et al.,

2016; Wheeler et al., 2007). The proliferation of this relatively easy experimental method provoked some push-back and calls for theoretical analyses stipulating the conditions under which these priming effects are more versus less likely to occur (Bargh, 2006; Sherman & Rivers, 2021; see “Moderators” section below). Meta-analyses have been helpful in identifying these moderating conditions, while at the same time establishing the robustness and replicability of the priming effects (Chen et al., 2020; Shariff et al., 2016; Weingarten et al., 2016). Also informative have been fMRI studies of the brain regions involved in the priming effects; for example, Bengtsson, Dolan, and Passingham (2011), Cresswell et al. (2013), Inagaki and Eisenberger (2013), and Schaefer et al. (2014, 2015).

Laboratory priming manipulations simulate, and thus generalize to, everyday life experiences because they activate the same proximal cause as those experiences, the relevant internal mental representation. This principle works in both directions. For example, Foulk et al. (2015) showed that witnessing the rudeness of other people caused an increase in rude-related responses on a laboratory word fragment completion task, and Bargh et al. (1996, Study 1) exposed participants to rude-related (or control) words in a laboratory ‘language test’ which caused an increase in their actual rude behavior on the way to the unrelated second experiment. And Zaval et al. (2012) showed the same effects on participants’ estimates of the severity of the climate change problem by the current day’s weather conditions (warmer or colder) and by first priming them with words related to warm and cold.

Unconscious goal pursuit (‘executive processes’)

Neisser’s (1967) seminal book on cognitive psychology replaced the external stimulus environment of the behaviorists with top-down executive processes as the proximal cause of the higher mental processes in humans. At the time, little was known about how these executive, or

goal-directed processes operated and Neisser acknowledged this was somewhat of a leap of faith. The fifty years of research since then has validated Neisser's faith in the pervasive role of motives and goal pursuits in the higher mental processes: the currently active goal directs selective attention; changes evaluations and preferences, and even implicit attitudes (see Melnikoff & Bailey, 2018) depending on whether the external attitude object helps or hinders pursuit of that goal. The active goal pursuit also changes choices and decisions in the same manner, and directs overt behavior (Bargh et al., 2010; Ferguson, 2008; Ferguson & Bargh, 2004; Hill & Durante, 2011; Huang & Bargh, 2014; Kruglanski et al., 2002; Locke & Latham, 1990). Active goals increase attentional sensitivity to stimuli, making normally subliminal stimuli now visible if they are relevant to the current need state (Bruner, 1957; Xu et al., 2015; Ferguson, 2008).

Given the power of goals over cognitive processes, what is the evidence that they can become active and then operate unconsciously? The most conservative experiments on this question used subliminal stimuli so that the participant was not aware even of the goal-relevant information. Pessiglione et al. (2007) had participants engage in a hand grip task during brain imaging and presented reward cues (pound or a penny coin) either supra- or subliminally (17 milliseconds and pattern masked); regardless of whether the coin was visible or not, it differentially activated brain regions associated with reward and increased task effort based on its value. Custers and Aarts (2010) and Takareda and Nozaki (2018) took this paradigm a step further to present both effort and incentive (reward) cues supraliminally (150 milliseconds masked) or subliminally (33 milliseconds masked), and showed the same effects on task performance as well as underlying physiology (pupil dilation) in both cases – conscious awareness (or not) of the reward did not matter (see also Payne et al., 2016).

Acquired unconscious goal pursuits. From the premise that goals are mental representations (Bargh, 1990; Kruglanski, 1996), they can become strongly associated with other representations that are active at the same time (Hebb, 1949). This leads to the prediction that goals can become strongly associated with representations of situations in which that goal is frequently and consistently chosen, to the point where entering (perceiving) that situation automatically activates that goal (see Schneider & Fisk, 1984). In this case, following James' maxim that consciousness drops out of any sequence where it is not needed (see also Abelson, 1981; Jastrow, 1906; Wood, 2019), the conscious choice component drops out as redundant. Much like Jeeves always having the same drink ready for Bertie Wooster without having to be asked, the situational features don't bother 'asking' any more, and merely entering that situation (physically or psychologically) is sufficient to activate that goal.

As described above, features of common situations can unconsciously set a goal pursuit in motion, such as in the Aarts and Dijksterhuis (2002) 'library' study and the Cohn et al. (2014) greedy banker study. Being with one's close relationship partners is a commonly experienced situation as well, as we tend to have chronic goals we pursue when with them. For many students (not all), making their parents proud of them is such a goal, and Fitzsimons and Bargh (2003) showed that incidental thought about one's mother, as when asked to draw a map of her neighborhood, significantly increased participants' performance on a subsequent verbal task.

There are now hundreds of studies involving the use of verbal goal primes – for a variety of goals such as achievement, cooperation, rudeness, helpfulness, and nosiness – and meta-analyses reveal a robust and reliable influence on behavior (Chen et al., 2020; Weingarten et al., 2016). Field studies have shown the impact of these verbal primes in everyday life. In health psychology, Papies and colleagues (e.g., 2014) found that primes related to healthy eating and

dieting, delivered in ecologically natural ways (e.g., recipe handouts) in grocery stores, cafeterias, and delicatessens decreased subsequent purchases of snack foods or consumption of tempting but fatty samples by obese shoppers. Latham and colleagues in over a decade of research in real-life organizations (see Chen et al., 2020) have shown that team goals such as cooperation and creativity (brainstorming) as well as individual performance goals can be successfully primed using both verbal and pictorial priming methods. For example, the CEO of a US customer service firm included high performance primes in the context of his weekly Monday morning email to a random half of the employees but not the others, producing higher productivity and customer satisfaction ratings for the primed group over the rest of the week.

Evolved primary motives. There are also innate sources of unconscious motivations. Evolved primary motives operate in nearly all animals: paramount motivations towards survival and safety, reproduction (mating), disease avoidance, resource acquisition (related to hunger, shelter, warmth), and, in humans, cooperation. These primary motives guided human behavior for eons in a largely unconscious manner and are the unseen foundation for many higher order mental processes in contemporary life today. Haidt (e.g., 2001), for example, showed how basic survival-related motives such as disgust reactions (as a disease avoidance mechanism) infiltrate and influence moral reasoning. That we do not realize these effects are operating is shown by Schnall et al. (2008), in which physical disgust reactions to a filthy room caused mock jurors to impose more severe sentences for the same crime, compared to participants who deliberated in a clean room (see also Zhong & Liljenquist, 2006; Lee & Schwarz, in press). The disgust emotion and disease avoidance motive also plays a role in political attitudes towards immigration; following the analogy that immigrants into a country are like viruses entering one's physical body. In a study by Huang et al. (2011) conducted during the 2010 H1N1 flu pandemic,

reminders of the dangerous flu at the start of the study ('remember to get your flu shot') produced more negative attitudes towards immigration on a subsequent survey -- except for participants who had already received their flu shot and so felt safe from the threat. Their attitudes towards immigration became more positive instead.

As the flu example shows, feelings of safety versus threat can be important influences on political attitudes, yet we are unconscious of the role that the primary safety-and-survival motive plays in these attitudes. We tend to believe our political and social attitudes are the result of higher order reasoning and values. Yet children who show greater fear responses to a startle stimulus at 4 years of age are found to have more conservative social attitudes 20 years later (Block & Block, 2006), and the amygdala, associated with fear and emotional responses, is larger in conservatives than liberals (see Napier et al., 2018). Not only do conservatives become more liberal after imagining themselves to be completely physically safe, liberals become more conservative when under threat in experimental settings. Apparently, liberals have nothing to fear but fear itself.

The other primary motives have unconscious influences as well. *Reproduction* (sex, attraction) was the most widely studied primary motive in evolutionary psychology for many years. Hill and Durante (2011) primed the reproduction or mating goal in female participants by having them first browse through an online dating site (or not), causing their usually negative attitudes towards risky but attractiveness-increasing health behaviors (i.e., diet pills and tanning salons) to become more positive, and these activities to be viewed as less risky. The *resource acquisition* motive, triggered by feelings of hunger, influences the purchase of all types of items, not just food – shoppers at a big-box department store spent more money on non-food related items when they were currently hungry than when they were not (Xu et al., 2015). Finally,

cooperation with others is another primary human motivation. Over and Carpenter (2009) primed 18 month old toddlers with a series of photographs of two dolls in a friendly facing-each-other orientation; subsequently, compared to the control conditions, these children were three times more likely to spontaneously help the experimenter pick up a bunch of dropped toys. That the cooperation goal can be primed and then operate unconsciously in 18 month olds reveals unconscious goal pursuit as an innate mechanism present very early in life.

Moderators

What are the important moderating variables that increase or decrease the probability of a given unconscious influence? First, postconscious influences will be less likely in general than preconscious ones if only because a recent conscious experience produces them, making it possible for the individual to become aware of that influence. Once the person is aware of the carryover influence, such as taking her bad day at the office home with her, causing her to snap at her children, they can counteract it. Note that these carryover influences can be used to one's advantage as well (once you know how they work), such as getting hyped by certain kinds of music before the game or big event (e.g., Tamir & Ford, 2009). This awareness is not possible in the case of immediate preconscious influences for which there is no related recent conscious experience.

The participant must possess the relevant internal representation. What makes the unconscious effects of the environment different from behaviorism's S-R model is the critical role played by internal mental representations (Bargh & Ferguson, 2000). Unconscious influences triggered by the current environment will not occur unless the participant actually possesses the corresponding representation (Dijksterhuis, 2014). In several of the studies described thus far, the priming effect did not occur for participants unlikely to possess that

representation – Papies et al.’s (2014) recipe priming of dieting only affected obese customers who were the most likely to have that goal; the ‘mom’ priming manipulation in Fitzsimons and Bargh (2003) only improved task performance for those who had the goal of making their moms proud of them; S. Chen et al. (2001) showed diametrically opposite effects of the same situational power manipulation for participants depending on their chronic interpersonal goals (selfish versus other-oriented). Best practices in priming research call for additional control experiments to make sure participants do possess the key internal representations (e.g., Chen et al., 2020; Dijksterhuis, 2013; Zaval et al., 2012; Foulk et al., 2016).

Applicability. Even if the participants do possess the relevant internal representation, the experimental or field situation must provide an opportunity for the unconscious influence to operate. That is, the potential unconscious influence must be relevant or ‘applicable’ to the participant’s current environment, else there will be no effect (see Higgins, 1996). Behavior priming studies are specifically designed to ‘catch’ the priming effect by providing bottom-up matches for the top-down influences. If rudeness or politeness is primed then the staged situation that follows affords opportunities to act in these ways (Bargh et al., 1996, Study 1). If there is no relevant opportunity, then the primed construct is like seeds cast on fallow ground. In the case of preconscious influences, because these are generated by the current environment they will usually be applicable within it, and thus be a more reliable influence than postconscious or unconscious motivational influences. Postconscious and motivational influences can certainly carry over into subsequent situations in which they are not applicable – for example, it is hard to make your mother proud of you when you go right back to Netflix after her phone call. Sometimes you are all revved up with no place to go.

The currently active goal. Behavioral priming influences are constantly generated by the current external environment – this is shown by Lhermitte’s stroke patients, who were at the mercy of these influences. But in normal functioning, the person’s goals and need states dominate them if they are in conflict. This was first shown by experiments by Macrae and Johnston (1998), in which participants primed to be helpful were more likely to help a confederate who dropped some pens – unless, that is, the pens were leaky and messy. In that condition, the behavior priming effect was countermanded by the primary motive of disease avoidance, which directs us to not pick up messy or dirty (or smelly) things off the ground. Our currently active goals, and especially the primary motives, take precedence over external behavior prompts, inhibiting them when there is a conflict (see Morsella, 2005). If this were not the case, we would all have Lhermitte’s syndrome.

The passive, receptive state. Relatedly, unconscious influences are more likely when the person is in a passive, experiential state of mind as opposed to an active, goal-oriented one (Epstein, 1994, Weinberger & Stoycheva, 2019, ch. 22). Behavior priming effects are less likely when the person is in an implemental (goal-driven) mindset than a more open-minded state (Gollwitzer et al., 2011). In research on terror management theory, mortality salience effects are more likely when the participants are in a relaxed and experiential mode than when they are in a more focused and rational mode of thinking (Simon et al., 1997). Indeed, in impression formation studies when the trait primes are salient and receive increased conscious attention (e.g., Hitler or Dracula as primes for hostility), the opposite (contrast) of the usual assimilative priming effects are obtained (Herr, Sherman, & Fazio, 1984). In everyday life, ads delivered during entertainment-based programming, with the person in a relaxed and passive mode,

directly increase actual consumption of snack foods and alcoholic beverages, in both laboratory studies and large national surveys (see Harris et al., 2009; Naimi et al., 2016).

Conclusions

You must find wisdom from many sources, not just one, otherwise your knowledge becomes stale.

-- General Iroh, in *Avatar: The Last Airbender*¹

Cognitive psychology has been a unifying force across psychology as a whole. The importance of the cognitive revolution was not only in restoring the human mind as a legitimate topic of study, it was in providing a kind of Rosetta Stone, a common language to translate the different areas of psychology with their different variables and processes into a standard set of concepts and principles. These principles quickly enabled a reconceptualization of many classic areas of social psychology (Fiske & Taylor, 1984), and then, a bit later, motivational psychology as well. Goals and motives were recast as mental representations (Bargh, 1990; Kruglanski, 1996), and research examined whether these goal representations behaved in the same ways as known for other forms of representation (Bargh et al., 2001; Kruglanski et al., 2002).

The scientific study of unconscious processes can be a similar unifying force. In the quote above, General Iroh, an exiled leader of the Fire Nation, was explaining to his nephew the Prince why he studied not only Fire, but the other elements (Air, Water, Earth) as well -- a blatant act of heresy in their world. For many cognitive scientists, the study of unconscious influences (shades of Freud) or of externally-driven higher mental processes (shades of Skinner) may feel similarly heretical. But while none of the three grand theories of 20th century

¹ Season 2, Episode 9. *Avatar: The Last Airbender* was a popular animated program on the Nickelodeon network from 2005 to 2008.

psychology were completely right, none were completely wrong either. The scientific unconscious with its (1) grounding in the activation and operation of internal mental processes (cognitive science), (2) sensitivity to and activation by external events and stimuli (behaviorism), and (3) operating autonomously outside the person's awareness (Freud) brings together the best insights of these three meta-theories.

Here I have focused on three main types of unconscious influence in everyday life: preconscious and postconscious processes triggered by relevant external stimuli and recent conscious experience, respectively, and unconscious motivational influences activated by situational features or by evolved motivational imperatives. 'The' cognitive unconscious is not merely a laboratory phenomenon; applied researchers have shown how it permeates all aspects of life. Increasing our knowledge of these influences can only increase our personal freedom and control. Once we know the hidden ways our minds work, a knowledge only science – not 'common sense' – can give us, we can do something about them: we can counteract the unwanted ones and take advantage of the useful ones. But we can do neither if we insist unconscious influences do not exist, and seek to define them away.

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