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The motivational unconscious

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Abstract

Motives may be said to be unconscious in a variety of ways. They may be automatically and unconsciously elicited by consciously perceptible situational cues; they may be instigated by cues that are themselves excluded from conscious awareness, as expressions of implicit perception or memory; or the person may be consciously unaware of his or her actual motivational state. The paper reviews the evidence pertaining to all three aspects of unconscious motivation, with emphasis on conceptual and methodological questions that arise in the study of motives which are not accessible to phenomenal awareness or voluntary control but nonetheless influence the individual's experience, thought, and action.

1 | THE MOTIVATIONAL UNCONSCIOUS

Motives may be defined as internal states which drive, direct, and select behavior which approaches rewards and incentives and avoids threats and punishments (McClelland, 1985; for more complete coverage of motivation, see Ryan, 2012; Shah & Gardner, 2013). Usually we think of motives as conscious mental states, and motivated behavior as consciously directed toward some goal which will satisfy some desire. But beginning in 1989, McClelland and his associates introduced a distinction between explicit and implicit motives (McClelland, Koestner, & Weinberger, 1989). McClelland doubted that self-ratings and self-report questionnaires produced particularly valid assessments of motivation. People might be unwilling to report their true motives to an investigator, or more critically, they might not be consciously aware of their true motives at all. In that case, their motives were "implicit," or unconscious, albeit reflected in goal-directed behavior.

The label "implicit," meaning "unconscious," was certainly in the air. Reber (1967) had already distinguished between explicit and implicit learning, and Schacter (1987) had drawn a similar distinction between implicit and explicit memory. These papers were hallmarks of the revival, within cognitive psychology and cognitive science, of an interest in unconscious cognition (Kihlstrom, 1984, 1987, 2012). Later, the explicit–implicit distinction was extended to perception (Kihlstrom, Barnhardt, & Tataryn, 1992), thinking (Dorfman, Shames, & Kihlstrom, 1996; Kihlstrom, Shames, & Dorfman, 1996), and even emotion (Kihlstrom, Mulvaney, Tobias, & Tobis, 2000).

We are not verging into Freudian territory here. In modern usage, "unconscious motivation" is not about primitive sexual and aggressive impulses arising from the id, and defenses against them constructed by the ego in order to manage conflicts with the internalized standards of the superego. Rather, we are talking about ordinary needs, desires, and goals (for alternative views of unconscious motivation, see Aarts & Custers, 2014; Custers & Aarts, 2010; Dijksterhuis & Aarts, 2010; Kehr, Thrash, & Wright, 2011; Schultheiss, 2008; Schultheiss & Brunstein, 2010).

2 | MOTIVATION AND AUTOMATICITY

In one sense, motivation operates unconsciously when conscious motives are elicited automatically by the mere appearance in the environment of motive-relevant cues. This is the essence of Bargh's "auto-motive" model of social behavior, which contradicts the traditional model by which we deliberately execute intentions according to conscious beliefs and desires (Bargh, 1990; Bargh & Barndollar, 1996; Huang & Bargh, 2013). Instead, Bargh argues that goal-directed behavior is largely a product of automatic processes operating unconsciously—especially if these goals and motives are habitual or "chronically activated." Once activated, these motives influence experience, thought, and action outside conscious awareness and control.

Traditionally, automatic processes have been characterized by the four canonical features listed in Table 1 (for critical analyses, see Moors, 2013, 2016). Collectively, these features constitute a sort of prototype of an automatic process. None of them is absolutely necessary to define a process as automatic; but the more of them that are present, the more confident we can be that a process has truly been performed automatically. The definition of automaticity is further complicated by the fact that these features are continuous rather than discrete. Thus, an automatic process may consume some attentional resources—reducing, but not entirely eliminating, interference with controlled processes. For these reasons, automaticity can vary in degree. Automatic processes are unconscious in the sense that their execution is not accessible to phenomenal awareness or amenable to voluntary control.

In one illustrative series of "goal priming" (Chartrand & Bargh, 1996) experiments, Bargh and his colleagues asked subjects to unscramble sentences containing words related to achievement (Bargh, Gollwitzer, Lee-Chai, Barndollar, & Trotschel, 2001, Experiment 1). Subjects who worked with achievement-related words subsequently performed better on verbal puzzles than controls who processed neutral words. In another experiment, subjects unscrambled sentences relating to cooperation or competition. Those who processed the "cooperative" words behaved more cooperatively in a resource-management game than those who processed the "competitive" words (Experiment 2). A later experiment found that this goal-priming effect was strengthened after a delay of 5 min (Experiment 3). Apparently, merely reading motive-relevant words in the puzzles automatically activated an internal representation of achievement, cooperative, or competitive goals, which then automatically activated corresponding behaviors. Harris and colleagues have reported failures to replicate some of these experiments (Harris, Coburn, Rohrer, & Pashler, 2013). However, a meta-analysis of 133 conceptually similar goal priming studies by Weingarten and colleagues revealed a modest overall effect of priming on goal-related behavior (Weingarten et al., 2016). For present purposes, these pioneering experiments serve only to illustrate the general approach to the study of the role of automatic, unconscious processing in motivation.

TABLE 1 Canonical properties of automatic processes

Inevitable Evocation by the relevant cues in the stimulus environment, in an almost reflex-like fashion.
Incorrigible Completion: Once activated, automatic processes cannot be checked, and run to completion in a ballistic fashion.
Efficient Execution, meaning that they consume little or nothing by way of attentional resources – or, put another way, their execution requires little or no cognitive effort.
Parallel Processing, meaning that they do not interfere with other ongoing processes.

2.1 | Automatic and controlled motivation

The idea that psychological processes can be activated and executed unconsciously, outside of conscious awareness and control, lies at the heart of a large class of "dual-process" or "dual-system" theories which have become enormously popular in personality and social psychology (Chaiken & Trope, 1999; Sherman, Gawronski, & Trope, 2014; for an overview of dual-process theories in general, see Evans & Stanovich, 2013; Sloman, 1996; Smith & DeCoster, 2000; for a critique of dual-process theories, see Keren & Schul, 2009). Although details differ from theory to theory, in general these theories postulate that experience, thought, and action can be influenced by processes that operate either automatically and unconsciously or under deliberate, conscious control. Some theorists argue that *both* automatic and conscious processes contribute to performance on every task, with the balance between them shifting depending on the task and other considerations. In either case, most theories assume that unconscious, automatic processes dominate consciously controlled ones—either because the former operate more rapidly than the latter or because circumstances (e.g., lack of time or effort) generally favor automatic processing.

While many dual-process theories have been developed in the context of attitudes and social cognition, a number of theories are concerned with habits, goal pursuit, and other aspects of motivation (e.g., Aarts & Custers, 2014; Bargh et al., 2001; Bargh & Barndollar, 1996; Bargh & Gollwitzer, 1994; Custers & Aarts, 2014; Ferguson & Cone, 2014; Ferguson, Hassin, & Bargh, 2008; Fishbach & Shen, 2014; Glaser & Knowles, 2008; Gollwitzer, 1999; Gollwitzer, Parks-Stamm, & Oettingen, 2009; Hassin, Bargh, & Zimerman, 2009; Kleiman & Hassin, 2011; Kruglanski et al., 2012; Kruglanski et al., 2015; Moskowitz, 2014; Wood, Labrecque, Lin, & Runger, 2014). Space does not permit a comprehensive survey of all these different approaches.

Within the context of dual-process theory, one major issue has to do with the similarities and differences between motives which are activated in a consciously controlled fashion and those which have been activated automatically and unconsciously. For example, Gollwitzer and his colleagues have suggested that conflicts between automatically elicited goals are resolved sequentially, one by one, while conscious conflicts are resolved in an integrated manner shaped by the priorities associated with each goal (Gollwitzer, 1999; Gollwitzer et al., 2009). Even when goals are pursued automatically, however, individuals can shift from automatic, unconscious to deliberate, conscious motivation: when obstacles are encountered, for example, or when the automatic behavior in question violates social norms. They have also suggested that, because automatic processes do not consume attentional resources, unconsciously activated motives may be less subject to ego depletion or a loss of "will power" (Baumeister, Bratslavsky, Muraven, & Tice, 1998), compared to motives that are consciously activated.

While conceding that automatic and controlled processes have distinct characteristic features, Ferguson and her colleagues (Ferguson et al., 2008; Ferguson & Cone, 2014) have argued that unconsciously activated motives have many properties in common with consciously activated ones, including persistence in overcoming obstacles, stability over time, flexibility, and accessibility of goal-relevant knowledge. This is in line with the *similarity principle* proposed by Huang and Bargh (Huang & Bargh, 2013): Regardless of whether they are activated consciously or unconsciously, goals have the same outcomes; automatically activated goals make use of the same underlying neural circuits and information-processing mechanisms as consciously controlled ones. This is because conscious motivational mechanisms evolved out of earlier ones that operated unconsciously. Goal pursuit can occur mindfully or mindlessly, and automatic and controlled goal pursuit may differ in some details, but their functions and consequences are very much the same. Whether consciously and deliberately instigated or automatically and unconsciously evoked, goals operate autonomously, pursuing their own agendas regardless of the interests of the individual.

Some proponents of automaticity go so far as to assert that conscious motivational processes play little if any role in behavior at all (e.g., Bargh, 2007; Wegner, 2002). Much the same argument has been made by Aarts and his colleagues (Aarts & Custers, 2014; Custers & Aarts, 2010; Dijksterhuis & Aarts, 2010). They reject, or at least question, the common assumption that the individual's behavior is accompanied by conscious awareness of his or her goals and the conscious intent to pursue them. Rather, they argue that goal pursuit occurs in the absence of either conscious intent or conscious awareness, triggered by environmental stimuli and mediated by motivational structures and

processes that, themselves, operate unconsciously and automatically. In making this argument, Aarts et al. extend the principle of ideomotor action (Arnold, 1946; James, 1890; Prinz, 1987; Shin, Proctor, & Capaldi, 2010), in which the idea of an action leads automatically to the action itself. In this application, the "idea" is the cognitive representation of a goal, automatically and unconsciously activated, and the "action" can include not just simple motor responses like lifting a finger but also complex interpersonal behaviors.

Dual-process models typically suggest that, in the ordinary course of events, an automatically evoked process can only be counteracted after it has been executed—after the damage has been done, as it were: this is the meaning of "incorrigible completion." So, for example, a competitive motive might be automatically activated by a situational cue; but only after people become consciously aware of their competitive behavior can they consciously decide to behave in a cooperative manner instead. But there are other possibilities. If cognitive, emotional, and motivational processes are typically automatized through extensive practice (Anderson, 1982; Ericsson, Krampe, & Tesch-Römer, 1993), then a countervailing controlled process can also become automatized with practice. To continue the example, cooperation could become a stronger habit than competition. Along these lines, Glaser and his colleagues have proposed a model of *implicit motivation to control prejudice* (IMCP; Glaser & Kihlstrom, 2005; Glaser & Knowles, 2008; Park, Glaser & Knowles, 2008). Although, conscious control of an unconscious process would seem to be a logical impossibility, Glaser argues that an initially conscious countervailing process can be automatized so that it, too, is evoked unconsciously by situational cues.

Another perspective on the interplay of automatically and consciously elicited motives is offered by research on resistance to temptation by Fishbach and her colleagues (Fishbach, Friedman, & Kruglanski, 2003; Fishbach & Shen, 2014). They point out that conscious resistance to temptation may well fail, because it requires conscious awareness of what is happening and also conscious effort, which may be difficult to maintain due to factors such as ego depletion. Like Glaser, Fishbach suggests that, with practice, conscious self-control may itself be automatized: The presence of a temptation may automatically activate the very long-term goals with which it would ordinarily compete. Because automatic processes require neither conscious awareness nor conscious effort, they may be more likely to succeed than consciously deployed ones.

2.2 | Is motive evocation truly automatic?

The distinction between automatic and controlled processes has deep roots in cognitive psychology (Moors, 2013), and the notion that some aspects of social behavior occur automatically is both intuitively appealing and supported by empirical evidence. Still, there are problems with the popular idea that social behavior, including its motivational underpinnings, is *largely* automatic in nature (Kihlstrom, 2008).

In the first place, automaticity is not always rigorously defined in this literature. Early studies of automaticity in social cognition took pains to assure that the processing in question was truly automatic by assessing one or more canonical features, such as those listed in Table 1. More recently, however, as in the experiments by Bargh et al. (2001) described earlier, automaticity is inferred merely from the fact that some behavior occurs incidentally, in the absence of specific instructions. In what might be called, with apologies to Daniel Patrick Moynihan (1993), *defining automaticity down*, investigators do not always attempt to confirm that the ostensibly automatic process actually occurs outside focal attention, for example, or consumes little or nothing by way of attentional resources, or minimizes interference with other ongoing processes.

The reliance on "incidental" processing is particularly problematic. The fact that subjects are not specifically instructed to perform some task or operation does not necessarily mean that it has been performed automatically. The subject's manifest task, such as solving anagrams, may leave plenty of cognitive capacity available to engage in other processing activities, such as mind wandering (Singer, 1966; Smallwood & Schooler, 2006), if subjects choose to do so.

Moreover, researchers have rarely compared the relative contributions of automatic and controlled processes with task performance. Jacoby and his colleagues, for example, argue that every task contains automatic and controlled elements and have developed the "process dissociation procedure" (PDP) to compare their relative contributions (Jacoby, 1991; Yonelinas & Jacoby, 2012). They do this by means of the *method of opposition* (MoO), which essentially pits automatic and controlled processes against each other. By the logic of subtraction, the differential strengths of the two kinds of processing can be estimated. The MoO and PDP have been occasionally used in studies of attitudes, stereotyping, and moral judgment (Payne & Cameron, 2014; Sherman, 2006; Sherman, Krieglmeyer, & Calanchini, 2014), but they have not been employed in the study of automatic motives. For example, an investigator might use a variant of the MoO to pit automatic and controlled motives against each other, to determine just how much of a role automaticity plays in goal-directed behavior. While it is plausible to suggest that some aspects of social motivation operate automatically and unconsciously, it remains to be seen just how potent auto-motives are.

That challenge would seem to be made more difficult by recent trends in the social priming literature, which tend to undermine not only the entire class of dual-process theories but the operational definition of automaticity itself. Following earlier critiques (e.g., Moors, 2016), Melnikoff and Bargh (2018) have noted that there is imperfect alignment among the canonical features of automatic processing and that even the individual features contain some inconsistencies. With respect to efficiency, for example, Stroop interference—perhaps the cardinal example of automatic processing—is increased by loading spatial working memory but eliminated by loading verbal working memory.

Melnikoff and Bargh (2018) argue that, at the very least, dual-process theories need firmer empirical grounding, including investigations of the extent to which the four canonical features are misaligned. But they also suggest that the dual-process framework itself may be fundamentally flawed and that the number of qualitatively distinct modes of processing may be much larger than two—maybe the 16 types implied by the combination of the four canonical features taken two at a time; maybe more, taking into consideration the inconsistencies within the individual features. The paradox is that the same arguments against dual-process theories tend to undermine the operational definition of automaticity. Without at least some principled operational definition of automatic processing, some set of features converging on the prototype of automaticity (Garner, Hake, & Eriksen, 1956), how can we be sure that a motive has been automatically activated?

3 | MOTIVES AS EXPRESSIONS OF IMPLICIT PERCEPTION AND MEMORY

One way to virtually guarantee that a process is performed automatically is to present the evoking cue outside of awareness: Almost by definition, conscious control requires conscious awareness of the process being controlled. Visual cues can be presented parafoveally, outside the focus of attention; auditory cues can be presented over the unattended channel in dichotic listening. Cues can be presented subliminally, or a clearly perceptible cue can be lost to subsequent conscious recollection. In such cases, cue-related changes in motivation can serve as expressions of implicit perception and memory (Kihlstrom, 2012; Kihlstrom et al., 1992). We know that an item has been perceived or encoded in memory, even in the absence of conscious perception or recollection, precisely because it exerts some effect on the subject's motivational state.

Many studies of auto-motives have employed variants on subliminal stimulation to evoke motives. In one of the earliest examples of this type, Silverman and his colleagues presented subjects with visual messages intended to arouse sexual, aggressive, or symbiotic motives of the sort specified by psychoanalytic theory, such as *Beating Dad is OK* for Oedipal aggression and *Mommy and I are one* for symbiotic desire (e.g., Silverman, 1976; Silverman & Weinberger, 1985). In order to avoid conscious defense mechanisms, these messages were presented tachistoscopically, for only 4 ms, at very low levels of illumination, so that they were invisible to the subject. Nevertheless, Silverman claimed that these subliminal stimuli had effects on subjects' behavior that were consistent with the predictions of psychoanalytic theory (for a critique, see Balay & Shevrin, 1988; for a reply, see Weinberger et al., 1989).

3.1 | Effects of masked stimulus presentation

A related technique for presenting primes outside conscious awareness accompanies stimulus presentation with a pattern mask, such as a row of hashmarks, which effectively precludes conscious perception (e.g., Chartrand & Bargh, 1996; Shah & Kruglanski, 2002). It is known that masked presentation of emotional faces can trigger corresponding affective reactions on the part of subjects (Niedenthal, 1990). Following masked presentation of happy or angry faces, Winkielman et al engaged subjects in consumer preference task in which they were asked to sample and evaluate a beverage (Winkielman, Berridge, & Wilbarger, 2005). Subjects who were already somewhat thirsty poured and consumed more of the drink after priming by a happy face and less after priming by an angry face. Although the subjects reported no significant change in conscious affect after this manipulation, the change in consummatory behavior suggests that unconscious positive or negative affect was induced by the happy or angry faces, modulating an unconscious consummatory motive in turn, which then affected the subjects' drinking behavior. Even in the absence of an alteration in subjective emotional state, then the change in consummatory behavior shows that the masked faces were processed outside of awareness.

In another example, Pessiglione et al. employed a reward-priming paradigm in which subjects received a reward based on the force of their grip on a hand dynamometer (Pessiglione et al., 2007). Coins representing the maximum payoff for each round (a penny or a pound, in the English system) were presented subliminally via masking. The subjects applied more force in the high-payoff condition, suggesting that the subliminal stimuli affected the incentive attached to each trial. Interestingly, fMRI showed a similar incentive effect on activation in the basal forebrain, part of the reward circuit in the brain. A later study employed lateralized presentation and found the force effect only in the hand controlled by the hemisphere that processed the subliminal stimulus (Schmidt, Palminteri, Lafargue, & Pessiglione, 2010).

In surveying evidence for their similarity principle, Huang and Bargh (Huang & Bargh, 2013) cite a number of studies which found that subliminal presentation of goal-relevant stimuli had the same effects on motive-relevant behavior as did supraliminal presentation. But conscious and unconscious reward information may not always have the same effects on performance. Zedelius et al. (2014) have argued that conscious reward processing is necessary to integrate reward information with information about task demands and reward attainability. Moreover, conscious rewards permit subjects to strategically adjust their performance—for example, by modulating speed–accuracy tradeoffs. Conscious processing also allows subjects to deliberately adjust their effort on a task in response to changes in reward or performance. At the same time, however, conscious awareness of these matters can also be a distraction and actually impair performance (Wegner, Ansfield, & Pilloff, 1998). Conscious awareness does have its advantages—not least because it is a logical prerequisite for conscious control. Still, it is clear that motivation can be modulated by cues and incentives presented unconsciously.

3.2 | The scope of masked priming

Because masking virtually guarantees that, if a motive is evoked, it will be evoked automatically, without conscious awareness or intent, masked priming has been a popular method in studies of automatic processing. However, masked stimulus presentation does present a number of procedural and interpretative difficulties.

With masking, the term "subliminal" is something of a misnomer, because the prime itself is presented at an intensity, and for a duration, that would normally make it perfectly visible, were it not for the masking stimulus (Dehaene, Changeux, Naccache, Sackur, & Sergent, 2006; Kihlstrom et al., 1992). "Subliminal" means "below threshold," and many studies of subliminal perception have been criticized for inadequate procedures for determining the threshold for conscious perception (Draine & Greenwald, 1998; Greenwald, Draine, & Abrams, 1996). In fact, Cheesman and Merikle (1985) have distinguished between *two* thresholds: The *subjective threshold* is the level at which subjects claim not to be able to detect the stimulus, while the *objective threshold* is the level at which the stimulus has no

effect on behavior. Subliminal priming occurs in the region between the subjective and objective thresholds (see Figure 1). The relations between prime and mask are critical (Cheesman & Merikle, 1984). If the interval between the prime and the mask (known as the stimulus-onset asynchrony, or SOA) is too long, the prime will be clearly visible, because it falls above the subjective threshold. If the prime-mask SOA is too short, the prime will not be processed at all, because it falls below the objective threshold. The optimal prime-mask SOA appears to be about 17–34 ms: any prime-mask SOA longer than that risks allowing the prime itself to be consciously perceived.

Equally critical is the prime-target SOA—that is, the interval between onset of the prime and the onset of the task the prime is intended to influence. Studies of masked semantic and affective priming suggest that masked priming dissipates quite quickly, over intervals of less than 1 second. This last point is crucial, because in studies using masked priming to activate motives, the interval between presentation of the prime and onset of the target task (in which the motive is displayed) is, almost necessarily, much longer than that—which would seem to militate against getting any priming at all.

The potential relevance of prime-target SOA is illustrated by recent study of semantic priming by Muscarella and her colleagues (Muscarella, Brintazzoli, Gordts, Soetens, & van den Bussche, 2013). Their first study employed familiar product logos (e.g., McDonald's arches and the Nike swoosh) as primes in a lexical decision task where the targets were related and unrelated brand names (e.g., *McDonald's* and *Nike*) and words (e.g., *hamburger* and *sport*). Their first study employed a 17 or 34 ms of exposure for the prime, which was preceded and followed by a masking stimulus. The former duration is typical in studies of masked priming; the latter is sufficient to enable the prime to be consciously perceived. The study also employed prime-target SOAs of 334, 1,000, and 5,000 ms. Significant "brand priming" was observed under all three conditions—but, as might be expected, progressively diminished as the prime-target SOAs lengthened. However, a second experiment, employing an even shorter exposure to the prime, yielded the opposite pattern: Brand priming actually *increased* from the shortest to longest prime-target SOAs. To complicate things further, an earlier experiment by the same research team, employing a 17 ms of stimulus exposure and 334 ms of prime-target SOA yielded no evidence of priming (Brintazzoli, Soetens, Deroost, & van den Bussche, 2012).

Further research will be necessary to clarify this issue. It is possible, as Bargh et al. (2001) have argued, that goal-priming effects strengthen with time, somewhat along the lines of hypermnesia effects occasionally found in memory

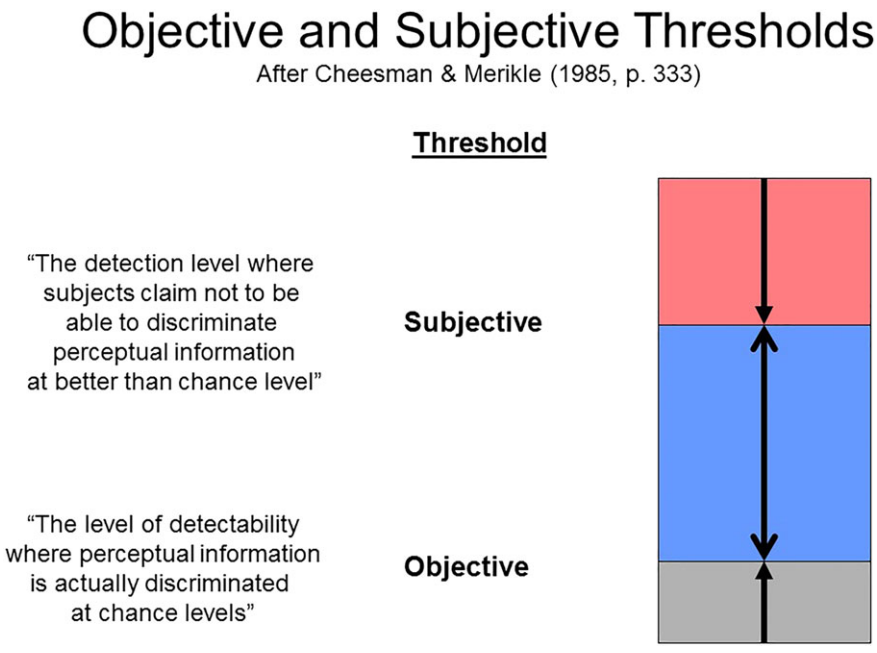

FIGURE 1 Depiction of objective and subjective thresholds, after Cheesman and Merikle (1985)

(Erdelyi, 2004; Kihlstrom, 2004). More likely, however, subliminal goal priming follows the same trajectory as other forms of meaning-based masked priming, which is to dissipate rapidly. On the other hand, it is possible that priming interacts with currently active motivational states (Kruglanski, Chernikova, Rosenzweig, & Kopetz, 2014). As in the Winkielman et al. (2005) study, a subject who is already thirsty when primed with *drink* may be more prone to sample a proffered beverage, even after a considerable prime-target SOA.

Masked priming is not just limited in temporal terms, by the prime-mask and prime-target SOAs. All forms of priming depend on the encoding of some representation of the prime. Perceptual priming depends on the availability of a perception-based representation of the physical features of the stimulus and its spatiotemporal relations with other stimuli—for example, the letters in a word and their relations to each other. Semantic priming depends on the encoding of a meaning-based representation of the denotative or connotative meaning of the prime and its associative and categorical relations with the target and other words. Presumably, masked priming of a motive depends on semantic analysis of the prime, and that in turn may depend on the prime-mask SOA. For example, semantic priming may be stronger when the prime is presented close to the subjective threshold; when the prime is presented close to the objective threshold, semantic priming may be relatively weak.

Even under optimal circumstances, though, masked semantic priming appears to be analytically limited. Studies of affective priming by Greenwald (1992, fn. 8) indicate that the connotative meaning (positive or negative) of a single-word prime such as *enemy* can facilitate evaluative judgments of an affectively congruent target such as *loses*. But Greenwald was unable to obtain masked affective priming with even a two-word phrase such as *enemy loses*—a phrase consisting of two affectively negative words which, when combined, have an affectively positive connotation. Apparently, the temporal boundaries of masked priming are sufficient to permit analysis of the meaning of a single word, but not that of a two-word phrase—much less a long, ambiguous phrase like *Mommy and I are one*. All of which is not to say that motivational states cannot be influenced by subliminal or masked primes; only that it may be very difficult to show convincingly that this is so.

4 | IMPLICIT MOTIVES

In most of the studies previously described, automatic processes or preattentive stimuli have effects on conscious motivation. Now, it is time to return to the question originally raised by McClelland et al. (1989): whether motivational states, themselves, can operate outside of phenomenal awareness. Traditional assessments of motivation, such as those collected by the Adjective Check List (ACL; Gough & Heilbrun, 1965), the Edwards Personal Preference Schedule (EPPS; Edwards, 1959), or the Personality Research Form (PRF; Jackson, 1967), are obviously unsuitable for assessing unconscious motives: They are self-report instruments, and subjects cannot report on something they do not know. For that reason, McClelland preferred "indirect" motive measures such as Murray's Thematic Apperception Test (TAT; Murray, 1943) to "direct" measures like questionnaires (deCharms, Morrison, Reitman, & McClelland, 1955).

Inspired by the TAT, McClelland introduced the "Picture-Story Exercise" (PSE) as the preferred method for assessing implicit motives (Figure 2). Subjects are asked to generate a story in response to a picture selected to tap internal motives, such as the needs for achievement (*n*Aff or *n*Ach; McClelland, Atkinson, Clark, & Lowell, 1953), power (*n*Pow; Winter, 1973), and affiliation or intimacy (*n*Int; McAdams, 1989). The stories are then coded with an empirically derived content-analysis scheme to yield an assessment of the individual's standing on the motive in question (Pang, 2010; Schultheiss & Pang, 2007; Schultheiss & Schultheiss, 2014). But nowhere are subjects asked to introspect, or report, on their motives as such.

4.1 | Dissociating explicit and implicit motivation

Following Schacter's definition of implicit memory, we can define implicit motivation as "any effect on an individual's experience, thought, and action, which can be attributed to a motive, in the absence of, or independent of, conscious

FIGURE 2 A prodigy being called to the stage, or a boy wishing he were outside playing baseball? Actually, a photograph of the 20th-century violin virtuoso Yehudi Menuhin, aged 12 (in the public domain; image scanned from an original photograph by Samuel Lumiere in the National Library of France). Another portrait from this series, redrawn by Christiana Morgan, served as the basis for Card 1 of the TAT (Jahnke & Morgan, 1997)

awareness of that motive." McClelland et al. (1989) reported very low correlations betwen PSE and questionnaire measures of *n*Ach, *n*Pow, and *n*Aff (unweighted, unsigned aggregate r = .11). Spangler (1992), reviewing 36 studies employing both TAT/PSE and questionnaire measures of *n*Ach, reported an average correlation of .00. A more recent meta-analysis by Kollner and Schultheiss (2014) obtained average correlations of .14 for *n*Ach, .12 for *n*Aff, and .04 for *n*Pow. Although all these aggregate correlations are statistically significant, by virtue of the large *N*s involved, they are low even by the standards of personality research (Mischel, 1968). As such, they provide *prima facie* evidence of a dissociation between explicit, conscious and implicit, unconscious motives.

4.2 | Are implicit motives truly *unconscious*?

A cynic might reply that the PSE is simply a poor measure of motivation, which explains why it does not correlate with established self-report methods. And, indeed, the TAT and related measures have been criticized on psychometric grounds almost since their inception—particularly for their ostensibly low test–retest reliability (e.g., Entwisle, 1972). On the other hand, as noted even as early as Lindzey (1952), there is a great deal of evidence for the external validity of TAT-like measures, in that they actually predict subjects' performance on various motive-related tasks (for comprehensive coverage, see Schultheiss, 2008; Schultheiss & Brunstein, 2010). As McClelland himself often pointed out, if a test is valid, it must perforce be reliable (because a test cannot correlate higher with an external criterion than it does with itself). McClelland also argued that test–retest reliability, at least, was problematic for measures of motivation, because a motive discharged at the time of an initial test might not have recharged at the time of the retest: Once we have eaten, we are not hungry again for a while. Problems with interrater reliability, created by the lack of an explicit scoring manual for the TAT comparable to those developed for the Rorschach (e.g., Beck, 1944), have been

solved by the availability of clear manuals for scoring various motives on the PSE (e.g., Schultheiss & Pang, 2007; Smith, 1992; Winter, 1991).

Still, a low correlation between explicit and implicit measures of motivation is only the first step in establishing a dissociation between explicit and implicit motives. There are many reasons why such correlations could be low, besides the fact that the variables in question reflect different levels of consciousness. It might be that implicit tests are simply unobtrusive measures which tap motives of which the person is perfectly well aware—but which, for whatever reason, he or she declines to disclose to the experimenter (Webb, Campbell, Schwartz, & Sechrest, 1966).

Thrash and his colleagues have proposed a general framework within which to explore the apparent incongruence between explicit and implicit motives (Thrash, Cassidy, Maruskin, & Elliot, 2010). For example, they suggest that if explicit and implicit motives have different antecedents, they will show little overlap; if they have the same antecedents, the overlap will be greater. The congruence between the two classes of motive measures can also be influenced by overlap in unidentified "random error" variables (e.g., a fire alarm that goes off during one of the tests), systematic "confounding error" variables (e.g., a third variable that is correlated with both the explicit and implicit measures), or, simply, observed indicators (e.g., response to the PSE, but not to a questionnaire, may be influenced by whether the subject likes to write stories). Although Thrash et al. begin their discussion with the assumption that explicit motives are consciously accessible while implicit motives are unconscious, consciousness is not necessarily an element in their framework. In fact, their framework is so general that it could be used to explore the relations between any two constructs, regardless of whether one is conscious and the other is not. They do suggest that social desirability might be correlated with conscious motive expressions, but not unconscious ones; but this could also differentiate between obtrusive and unobtrusive measures of conscious motives.

Thrash et al. also point out that an aggregate correlation near zero can obscure the existence of subgroups for whom the variables in question are quite highly correlated. Accordingly, some studies have attempted to identify dispositional variables which might moderate the correlation between explicit and implicit measures of *n*Ach (for full reviews, see Thrash et al., 2010; Thrash, Maruskin, & Martin, 2012). In a study by Thrash and Elliot (2002), for example, the correlation was −.07 for subjects low in self-determination and .40 for subjects high in self-determination. In establishing unconscious motivation, though, it is important that the variables moderating the explicit–implicit dissociation clearly relate to consciousness. Self-determination does not, intuitively, bear on consciousness, and the moderating effect of such variables is also consistent with an interpretation of PSE as an unobtrusive measure of conscious motivation.

A similar point applies to differential validity. McClelland et al. (1989) argued that the dissociation between explicit and implicit motivation was supported by the fact that the two sorts of measures predicted performance on very different kinds of tasks. In brief, implicit *n*Ach predicts performance on "operant" tasks where the subject has some freedom of response, but not "respondent" tasks that constrain behavior, especially under conditions of incentive, while the reverse is true for explicit motives (Schultheiss & Brunstein, 2010; Spangler, 1992). On the surface, this dissociation is very compelling—although the correlations in question are not strong even by the standards of personality research. On the other hand, for the most part, the validation tasks employed in these studies have little to do with consciousness per se. While the PSE and questionnaires may predict different kinds of motivated activity, that does not necessarily mean that the PSE taps motives which are inaccessible to conscious awareness.

It could also be the case that the implicit and explicit measures tap two quite different constructs, or at the very least nonoverlapping aspects of the same construct. For example, the PSE could assess aspects of *n*Ach which are missed by questionnaires, or vice-versa. Schultheiss and his colleagues addressed this possibility by writing new questionnaire items for *n*Ach which precisely parallel the coding categories of the PSE. The correlation between PSE and a standard questionnaire measure of *n*Ach was .00; substituting the matched-content PSE-based questionnaire raised the correlation, but only to .17 (Thrash, Elliot, & Schultheiss, 2007)—strengthening the case that the low correlations observed between explicit and implicit measures of motivation are not an artifact of differences in construct definition.

Perhaps the greatest impediment to accepting the dissociation between explicit and implicit motives is that the tests that measure them are so *different*. The PRF and similar instruments are self-report questionnaires, while the

PSE involves the coding of storytelling behavior. The lack of correlation between them, then, may be as much a matter of method variance as anything having to do with consciousness. In the study by Schultheiss, Yankova, Diritkov, and Schad (2009), for example, the within-method correlations among PSE measures of *n*Ach, *n*Pow, and *n*AFF were higher than the heteromethod correlations involving the explicit and implicit measures of the same motives. None of the correlations in this study were very high, but the fact that, in aggregate, the correlations among PSE measures of different motives were the highest obtained is cause to worry about the degree to which the entire pattern of results is contaminated by method variance.

In the cognitive domain, the most convincing explicit–implicit dissociations are found in the areas of memory and perception, where investigators take great care to be sure that the cues presented to the subjects remain constant between the explicit and implicit tests, which vary only in their demands for conscious processing (Graf, Squire, & Mandler, 1984). In an experiment on implicit memory, for example, subjects might study a word such as *ashcan*. After a retention interval, they might be presented with a word stem such as *ash*___ and asked to complete the stem with a word from the studied list—a task requiring conscious recollection—or they might be asked simply to complete the stem with the first word that comes to mind—a task that does not require episodic memory at all. In Jacoby's (1991) PDP procedure, conscious recollection and unconscious priming are separated by asking subjects to complete the stem with a word that *did not* appear on the study list; if the studied word appears anyway, Jacoby infers that this is due to unconscious, automatic priming. In any case, the cues remain constant, and the tasks vary in terms of whether they require conscious awareness or not.

Cue matching is not a problem unique to the PSE, but it undercuts the conclusion that the motives assessed by the PSE are really unconscious in the sense that implicit percepts and memories are. Some progress in this direction was achieved by Schultheiss et al. (2009). They asked subjects to imagine themselves to be one of the characters in each of the PSE stimuli and then respond to a series of questions bearing directly on the PSE coding categories (Schultheiss et al., 2009). Scores for *n*Ach, *n*Aff, and *n*Pow derived from this "PSE Questionnaire" (PSE-Q) showed little overlap with those derived from the standard PSE (see also Neumann & Schultheiss, 2015). Then again, PSE-Q scores also showed little overlap with explicit questionnaire measures of these motives (Schultheiss et al., 2009). On these grounds, it is hard to identify PSE-Q with explicit motivation—which leaves us with not two but *three* quite different motive assessments, none of which correlate very highly with each other.

4.3 | Alternative assessments of implicit motivation

Research on implicit motivation has now matured to the point that there are several alternative assessments of implicit motivation available for researchers to use (Runge et al., 2016; Sokolowski, Schmalt, Langens, & Puca, 2000). Most of these variants retain the essential features of the PSE: Subjects are presented with pictures but are not asked about their own motives. A comparative study of *n*Ach, *n*Pow, and *n*Aff found that three implicit motivation measures showed very low correlations with three explicit measures, but the intercorrelations among the three implicit measures were hardly better; by contrast, the three explicit measures showed consistently significant (if still low) intercorrelations (Schüler, Brandstätter, Wegner, & Baumann, 2015; see also Krumm, Schäpers, & Göbel, 2016).

As an alternative to TAT-like assessments of implicit motivation, Brunstein and Schmitt (2004) developed a version of the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998), a popular technique for the assessment of implicit attitudes and prejudice, to measure *n*Ach. Its scores were uncorrelated with scores on an explicit self-rating measure. Subsequent studies have confirmed essentially zero correlations between IAT motive scores and self-ratings; on the down side, however, they found only modest correlations between IAT and PSE (Brunstein & Schmitt, 2010). One factor that might account for this lack of convergence between implicit motive measures is, again, a difference in format: The PSE employs pictorial stimuli, whereas the stimuli in the IAT are verbal. Accordingly, Slabbinck and his colleagues introduced "pictorial-attitude" versions of the IAT (PA-IAT), in which subjects make judgments concerning motive-relevant situations (Slabbinck, de Houwer, & van Kenhove, 2011). They

found that the PA-IAT measure of *n*Pow correlated significantly with the PSE measure but was essentially uncorrelated with questionnaire measures of dominance and aggression.

Following up on a factor-analytic study by King (1995), Bilsky and Schwartz (2008) employed multidimensional scaling to explore the relationships among TAT-like implicit and questionnaire-like explicit measures of *n*Ach, *n*Pow, and *n*Aff. Explicit and implicit assessments of the same motive did line up together, providing evidence of significant shared trait variance between explicit and implicit methods despite near-zero correlations between implicit and explicit measures. Like King, Blisky and Schwartz argued that the various methods of motive assessment could be arrayed along a continuum from more vs. less explicit (e.g., self-ratings vs. questionnaires) to less vs. more implicit (e.g., autobiographical memories vs. TAT/PSE).

5 | CAN MOTIVATION BE UNCONSCIOUS?

Within the domain of cognition, there is now widespread agreement that episodic memories can be unconscious; so can percepts, and so can thoughts. All are revealed by priming effects observed in carefully controlled experiments. Given this evidence for the cognitive unconscious, it seems reasonable to ask whether the explicit–implicit distinction can be extended beyond cognition to emotion and motivation as well. It appears that motives can be activated automatically, and unconsciously, by relevant environmental cues, even when these cues themselves are processed outside conscious awareness. However, this claim needs to be supported by research which employs more rigorous criteria for automaticity and which assesses the differential contributions of automatic and controlled processes to task performance. Similarly, initial results support the idea that implicit motives, as assessed by techniques such as the PSE, are uncorrelated with explicit motives, as assessed by self-report questionnaires.

Currently, however, evidence is lacking that the implicit motives assessed by the PSE are really inaccessible to conscious awareness, in the same sense that implicit percepts and memories are. There is no reason to think that motives and goals *cannot* be unconscious and nevertheless influence experience, thought, and action; but further research is needed to make the case convincing. In particular, it is important to show that implicit motive assessments are uncorrelated with explicit measures of the same motives, employing assessments which are as closely matched in their cue value as possible, differing only in their demands for conscious awareness of the motive in question. At this point, however, the status of unconscious motivation remains: plausible on conceptual grounds—but, as in the Scottish verdict, not yet proven.

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