

UNDERSTANDING PRIMING EFFECTS IN SOCIAL PSYCHOLOGY: AN OVERVIEW AND INTEGRATION

Daniel C. Molden
Northwestern University

Although much debate has recently focused on the robustness of certain types of priming effects in social psychology, few attempts have been made to examine the full breadth of this literature and consider what is known about priming and what is still left to learn. The goal of this special issue of *Social Cognition* was to provide such consideration. This final article of the special issue provides a brief overview and integration of the insights provided in each of the other articles included, focusing primarily on revelations about (a) the greater need for clarity and precision in conceptualizing and communicating about priming effects, (b) the issues concerning expectations of replication and when priming effects should occur, and (c) the new insights about the psychological processes by which primes activate stored representations and by which these activated representations are applied to judgment and behavior.

Although much discussion has recently focused on the robustness and replicability of certain types of priming effects in social psychology (e.g., Cesario, 2014; Simons, 2014), this discussion has not truly examined the full breadth of such effects and more carefully considered what is known about priming and what is still left to learn. In bringing together contributions from pioneers in research on priming social impressions and behaviors, as well as recent innovators and critics in this area, this special issue of *Social Cognition* aims to provide such consideration.

In this final article of the issue, I provide a brief overview and integration of the insights presented in each of the other contributions. My comments focus on three primary themes that emerged as challenges priming researchers in social psychology must meet to continue to advance this field: (1) greater precision in conceptualizing and communicating about priming effects, (2) greater attention to when these effects should occur (and when they should not), and (3) better understand-

Address correspondence to Daniel C. Molden, Northwestern University, 2029 Sheridan Rd., Evanston, IL 60208. E-mail: molden@northwestern.edu.

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ing of the mechanisms for both the activation of social representations and the subsequent application of these representations during judgment and behavior.

CONCEPTUALIZING AND COMMUNICATING ABOUT PRIMING EFFECTS

Social psychologists have long known that the *automaticity* of a process is not a unitary concept and instead constitutes the presence of several separate qualities, such as lack of awareness that the process is occurring, lack of intention to initiate it, or an inability to control it once initiated (e.g., Bargh, 1989). Despite this knowledge, researchers still often carelessly discuss “automatic” priming effects without specifying which of these qualities such effects are assumed to possess. As Doyen, Klein, Simons, and Cleeremans (2014, this issue) and Newell and Shanks (2014, this issue) both illustrate in their contributions to this issue, such carelessness can breed confusion and even skepticism, particularly among researchers in other areas of psychology.

For example, among researchers who study implicit memory, the question of whether people are completely unaware of perceiving the primes that influence their later responses is of critical importance. Social psychologists also frequently describe priming as occurring “outside of awareness,” but here the term almost always refers to the awareness of the *influence* of the prime on subsequent responses rather than of the prime itself (Molden, 2014, this issue). Indeed, many, if not most, priming effects involve conscious processing of the relevant stimuli (see in this issue Bargh, 2014; Ferguson & Mann, 2014; Fujita & Trope, 2014; Higgins & Eitam, 2014; Wentura & Rothermund, 2014). Thus, failing to specify the priming mechanisms under investigation can create misunderstandings that lead researchers more familiar with the implicit memory literature (in which conclusive demonstrations of the complete absence of awareness have proven difficult, see in this issue Doyen et al., 2014; Newell & Shanks, 2014) to doubt any claims that are made. Similarly, when social psychologists describe priming as occurring “without intention,” this typically does not further imply the absence of control if one becomes aware of the potential influence of the primes (Molden, 2014, this issue). This too can create miscommunication and skepticism when evidence for control over particular priming effects is observed (see Newell & Shanks, 2014, this issue).

The articles in this issue by Doyen and colleagues (2014) and Newell and Shanks (2014) also illustrate that beyond better specifying the basic assumptions about the particular priming effects they are studying, researchers need to gather better evidence supporting these assumptions. For example, both articles describe several limitations in the typical methods used to check for awareness of the prime or its influence and the more stringent tests necessary support claims for the absence of awareness. Newell and Shanks further describe how evidence for a lack of control can be misleading if the methods used to encourage people to exert control are not carefully designed (e.g., broadly manipulating people’s motivation to avoid a particular outcome rather than more precisely targeting their motivation to be influenced by the priming process itself).

Finally, as Wentura and Rothermund (2014, this issue) discuss in their contribution to this issue, beyond greater care in communicating and evaluating assumptions about the priming effects they are studying, social psychologists should be

more precise in how they discuss the mechanisms responsible for such effects. Too frequently, researchers simply explain the priming effects they observe with brief references to some mechanism of “spreading activation” or “increased accessibility” of prime-relevant representations. However, as Wentura and Rothermund detail, such mechanisms on their own can only explain short-term priming effects on the order of seconds rather than the longer-term priming effects social psychologists typically investigate, and more delayed effects must involve some additional encoding processes (see also Molden, 2014, this issue). This is yet another way in which miscommunications that breed skepticism can arise between researchers studying more short-term effects of accessibility and social psychologists studying long-term forms of priming.

THE QUESTION OF REPLICATION AND PREDICTING WHEN PRIMING SHOULD OCCUR

Issues concerning the replicability of priming effects in social psychology are not the primary focus of this special issue and have been thoroughly addressed elsewhere, but there are a few additional points worth noting here. First, as Ferguson and Mann (2014) discuss in their contribution to the issue, given the broad range of effects that can be labeled as “social priming” (see also Molden, 2014, this issue), claims about the lack of evidence for these types of priming effects as a whole are largely nonsensical. Furthermore, although studies that fail to replicate more specific effects of particular primes raise legitimate questions about the robustness of those effects, as Dijksterhuis, van Knippenberg, and Holland (2014) and Wheeler, DeMarree, and Petty (2014) both note in their contributions to this issue, it is important not to over-interpret such findings. Even the most robust psychological effects have many variables that qualify their size or occurrence, and research has long shown that priming effects are no exception. If known qualifiers of priming effects are not adequately assessed, direct replication should not be expected (even if these qualifiers were not yet appreciated in the original demonstration of the effect). Indeed, as Wheeler and colleagues further note, because variations in the samples of participants studied or environments in which these studies occur can alter the social representations activated by primes or shift the targets to which the prime is applied, evaluating successful replication also requires verification of the expected activation and application.

However, as Cesario and Jonas (2014) and Higgins & Eitam (2014) emphasize in their contributions to this issue, perhaps the most important factor in not only ensuring replication but also predicting and understanding when priming effects should occur is determining the mechanisms responsible for such effects. That is, not fully knowing why a priming effect occurs can create mistaken expectations about when the effect should be observed. Moreover, when the goal is determining the mechanisms of priming effects, failures to replicate the effect can actually provide opportunities to consider what changes in procedures or circumstances might explain this failure. Therefore, priming research will progress more by examining not just variables that might alter when these effects occur but also variables that determine why.

At the same time, the presence of qualifying variables or an incomplete understanding of priming effects should not simply excuse failures to replicate these ef-

fects. As both Cesario and Jonas (2014, this issue) and Doyen and colleagues (2014, this issue) discuss, in searching for the boundary conditions and mechanisms of priming effects, social psychologists have favored conceptual replications that extend the original findings over direct replications that simply reproduce them. Despite the value of the former approach for explaining priming effects, it also has costs. The failure of a conceptual replication could reveal new qualifying variables or provide clues to the psychological mechanisms at work, but it also cannot provide unambiguous information about the overall reliability of the phenomenon itself (i.e., does the failure mean the phenomenon is not robust or just does not extend to the new conditions examined?). Therefore, some greater emphasis on direct replication in addition to conceptual replication is likely necessary to maximize what can be learned from further research on priming (but see Stroebe and Strack, 2014, for costs of overemphasizing direct replication as well).

EXPLAINING THE ACTIVATION AND APPLICATION OF PRIMED REPRESENTATIONS

Although new controversy has recently arisen in research on priming effects in social psychology, so too have new developments in theories of how these effects occur. Again, because of the diversity in the priming effects studied, many different accounts for these effects have been offered (Molden, 2014, this issue). However, a consensus is forming that, with the possible exception of phenomena that involve short-term evaluative priming (Ferguson & Mann, 2014, this issue; Wentura & Rothermund, 2014, this issue), priming effects in social psychology must depend on more than the increased accessibility of prime-relevant representations through some form of spreading activation, which, as noted earlier, is often the simple explanation researchers currently invoke.

Indeed, as discussed in this issue by Doyen and colleagues (2014) and Newell and Shanks (2014), one source of the recent controversy over priming effects on behavior is skepticism about the adequacy of spreading activation, or *direct expression*, mechanisms to explain these effects. Moreover, although one can dispute whether Newell and Shanks' critique of direct expression accounts of anchoring effects is truly relevant to the priming effects on behavior typically examined by social psychologists, it is hard to question the broader points their critique raises about gaps between claims of automatic direct expression and the evidence for this mechanism. Nevertheless, this type of skepticism also does not sufficiently credit recent developments in formulating alternative mechanisms, which was the focus of several articles in this special issue.

Higgins and Eitam (2014, this issue) describe an account of priming effects that challenges direct expression perspectives of how primes activate social representations in memory. In their account, the accessibility of primed representations depends on the motivational *relevance* of the primes. That is, although primes may stimulate particular representations whenever they are encountered, these representations only become activated for potential use in impressions and behaviors when they are congruent with one's current motivations. Cesario and Jonas (2014, this issue) present a related account that focuses more narrowly on priming effects on behavior. They discuss how shifts in people's perceived resources for enacting particular behaviors, which can vary with their current states or environments, can

determine what representations of behavior primes activate. Thus, Cesario and Jonas outline some specific factors that could contribute to perceived relevance of a prime in Higgins and Eitam's model. The primary implications of both these models, then, is that the primes people encounter in their environments should not be expected to always result in the same direct expression in thought and behavior because they should not always activate the same set of social representations.

Complementing these perspectives on priming effects, Loersch and Payne (2014, this issue) describe an account of priming that challenges direct expression perspectives of how social representations already activated in memory are applied to social impressions and behaviors. That is, they propose that primed representations affect responses only when the heightened accessibility of these representations is further misattributed to a particular source. Different types of sources produce different types of responses (e.g., attributing the accessibility to another person alters social impressions, to one's own desires alters goal pursuit, and to one's choice of actions alters behavior). Similarly, Wheeler, DeMarree, and Petty (2014, this issue) describe an account of priming effects on behavior that involves how accessible social representations temporarily alter what is salient in people's *active self-concept*, which then influences their chosen behavior. Therefore, the primary implication of both these models is that even when primes do activate a shared social representation across different individuals and circumstances, the differential attributions for the source of the prime or differential assimilation of the prime to the self should alter the expression of the activated representation.

In addition to variations in the specific processes of activating and applying primed social representations, Fujita and Trope (2014, this issue) identify other factors that could alter the effects of these primed representations. They first describe mindsets involving what they label *unstructured* regulation, in which the activation and application of primed representations are determined more by the relevance of and attributions from the narrow and concrete goals afforded by people's present environment. They then contrast this with mindsets involving *structured* regulation, in which the activation and application of primed representations are determined more by the relevance of and attributions from the broad and abstract goals people impose on their present environment. That these unstructured versus structured mindsets themselves may be primed adds yet another layer to the challenge of predicting and understanding when primed social representations should influence thought and behavior.

Even though all of these different accounts of priming effects in social psychology complement each other and are not in conflict, Doyen and colleagues (2014, this issue) are correct in noting that integrating these models to anticipate when such effects should arise is complex and daunting. Although only further research will ultimately determine whether this challenge can be met, Schröder and Thagard's (2014) contribution to this special issue suggests that such a challenge is not insurmountable. Adopting the promising approach of mathematically modeling the simultaneous influence of various factors on the activation and application of primed knowledge (see Sherman, Klauer, & Allen, 2010), they outline a parallel-constraint satisfaction model that describes how variables such as the perceived relevance of a prime, attributions of accessibility to a particular target, and active self-representations can be conceptualized as changes in affective meanings within a connectionist neural network. They then illustrate how the integrated influence of these meanings can be calculated as stable patterns of activation and inhibition

into which the network settles and discuss evidence that this model can conceptually reproduce observed priming effects. Thus, while it may be complicated, the possibility of integrating all of the various processes that could influence priming into a single clear prediction does not appear to be entirely out of reach.

Finally, although he too acknowledges that additional processes, such as assimilation to one's self-concept, can influence priming effects, Bargh (2014, this issue) describes a specific set of circumstances in which the direct expression of links between people's perceptions and their primed behaviors is at least more plausible. Rather than focusing on the temporary activation of behavior representations by semantic associates from a previous context (e.g., while reading trait- and stereotype-relevant words), he discusses more naturalistic examples of priming in which these representations are continually activated within one's present environment (e.g., when perceiving an interaction partner's behaviors or the state of one's current environment). These latter cases should still, in theory, be susceptible to influences such as the relevance of the prime or to what the accessibility it creates is attributed, which is inconsistent with the strongest form of direct expression mechanisms for priming effects. However, primes that remain present in one's environment may not require additional encoding and interpretive processes to have their influence in the way that primes encountered in previous, unrelated circumstances do (see Molden, 2014, this issue). Thus, whether such ecological priming effects involve the exact same mechanisms as the more symbolic effects considered in most research and theorizing is an important question for future research. Regardless of the outcome of such research, in reviewing examples of ecological priming effects that arise in real-world contexts, Bargh argues that it is by these effects that the importance and reliability of social priming should be judged.

SUMMARY AND CONCLUSIONS

In conclusion, although questions surrounding various aspects of how robust the priming effects studied by social psychologists are and the mechanisms by which they occur are likely to persist, this special issue provides the beginning of a blueprint through which such questions can be addressed. First, priming researchers must strive to conceptualize and communicate with greater precision about the specific phenomena they are studying and to provide evidence for the assumptions embedded in their conceptualizations. Second, priming researchers must recognize and assess a variety of factors that are known to qualify the effects they are studying, regardless of whether such qualifiers were present in the original research on a particular effect. Finally, both of these goals can only fully be reached through further research focused solely on how and why different types of priming effects occur (which, as discussed, is well under way).

If this blueprint is followed, then, as illustrated by the contributions to this special issue by Lakens (2014) and Smith and Mackie (2014) that outline new ways in which priming effects may arise through people's enactment of behavior or their mere simulation of the behavior of others, research on priming in social psychology can continue to expand. That is, by rededicating themselves to determining how, when, and why various priming effects occur, social psychologists will be able to demonstrate that, rather than facing an end-of-life crisis, research on prim-

ing is experiencing more of an adolescence in which, after a period of awkwardness following a rapid growth spurt, it is ready to begin developing the maturity necessary for the challenges that await.

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