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THE NOMINEES

Why We Thought We Could Prime Social Behavior

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Susan Fiske (this issue) is right on about the "discomfort" some articles cause—but not just in readers! Sometimes (as in our case), they discomfit the authors themselves. Our initial study (Bargh, Chen, & Burrows, 1996, Experiment 1) revealed differences that were quite large in the behavior of those participants primed to be rude versus those primed to be polite: 63% of the former group but only 17% of the latter group interrupted an ongoing conversation when given an opportunity (and reason) to do so. At the time, the size of the effect surprised us, because the size of these effects on behavior were much larger than those of previous priming effects on social-perceptual variables such as impressions. Even after replicating the effect three times (at the stereotype rather than single-trait level), we were in no rush to publish, wanting to be very sure of it first. And so it came as a great and happy relief when Ap Dijksterhuis and Ad van Knippenberg (1998; and then others) began doing related research that conceptually replicated ours.

We need not have worried, as it turned out—the effect has since proven to be very robust: It has been obtained with more than 20 different stereotypes and 25 different dependent measures (Dijksterhuis & Bargh, 2001). And although we might have performed the initial studies, it was Dijksterhuis and his colleagues who so painstakingly mapped out the mediators and moderators of the behavior-priming effect and Tanya Chartrand who took it into the domain of naturalistic social interaction and also showed how the effect was related to the long-standing literature on mimicry and behavioral contagion (Chartrand & Bargh, 1999). Chen, Burrows, and I (Bargh et al., 1996) just happened to be first.

Which brings up two questions that the journal editors asked us to address: What caused us to do those first studies, and why were there so many subsequent ones? As Fiske suspected, the zeitgeist was in our case a big part of the answer to both of these questions. There were several converging reasons for why we designed and conducted experiments attempting to prime social behavior. First, I had just finished a review of the extant social psychological priming and automaticity literature (Bargh, 1989) and, in the course of that review, had focused on the extent of direct automatic influences of the environment on thought, judgment, and behavior. The evidence clearly showed the importance of one's currently operating goal or purpose as a mediator of one's responses (i.e., judgments and behavior) back to that environment. Automatic, environmentally triggered effects on social cognition, then, seemed to be restricted to input processes, not output processes; at least that is what I had to conclude based on the available evidence.

However, soon after I finished that chapter there occurred two unrelated and apparently chance influences on my thinking on this topic—which today, with the benefit of hindsight, I see not as chance occurrences but as the operation of that zeitgeist again. First, Tory Higgins asked me to contribute a chapter to the second volume of his and Dick Sorrentino's (1990) *Handbook of Motivation and Cognition*, and at first I demurred because I really did not know much, if anything, about the field of motivation. But Tory insisted (thanks, Tory!), saying it would be a stretch and therefore good for me. So that was the writing project I took with me on my first sabbatical, at the University of Mannheim in the spring of 1989. There I not only had the time to think about how automaticity related to goals and motivation (see Bargh, 1990) but also enjoyed the generous hospitality and intellectual stimulation of Norbert Schwarz and Fritz Strack and their lab group in Mannheim.

Second, and also during that stay in Germany, Peter Gollwitzer—then at the Max Planck Institute in Munich—asked me to come down and meet with his research group. Peter and I discovered, to our mutual surprise, that we were working on the same issue, just from opposite perspectives. I was thinking about how the externally triggered mental processes that I studied might link up with motivations and goals, and he was working on how the motivations and goal pursuits he studied—especially implementation intentions—became linked to external, situational triggers. Thus began a fruitful collaboration that continues today.

Peter recognized back then that it was important to build on the efforts of Sorrentino and Higgins (1986), who had been encouraging (if not prodding) social psychologists to

consider the synergistic interaction of cognitive and motivational variables in their research. And so we made plans to take the next step: to explicitly link social cognitive models to action and behavior. With generous support from the Max Planck Society, we brought together a formidable group of scholars at Ringberg Castle in the Bavarian Alps, and for a week we all discussed how the various cognitive and motivational phenomena we studied connected to or manifested themselves in overt behavior (see Gollwitzer & Bargh, 1996).

In the course of preparing my own contribution to that conference and book, I had been pondering any and all possible ways in which the external situation or environment could directly produce behavior; that is, without the need for any intervention by conscious intention or construal processes. What were the possible automatic routes from environment to behavior? One was the "auto-motive" idea presented in the Higgins and Sorrentino volume (Bargh, 1990). In that approach, one's situational goals could be thought of as mental representations, for which the principles of automatization (i.e., frequent and consistent pairing with specific situations or environmental settings) were just as applicable as for any other representation (e.g., stereotypes), so that it was theoretically possible for those situational goals to become automatically tied (over time) to the situations in which those goals were chronically pursued. However, the other possible route I considered was more directly related to the Bargh et al. (1996) research of focal interest here, and it was inspired by another researcher at Max-Planck-Munich: Wolfgang Prinz.

Prinz's research at the time focused on the learning and production of language, and he had developed a "common coding" model in which the same mental representation was used to understand language as to produce it oneself (see Prinz, 1990). He then began to develop and expand this model to apply to all perception and action, based on William James's (1890) notion of ideomotor action. (This research program has been extremely productive and influential over the past decade, and an interesting recent review of it can be found in Knuf, Aschersleben, & Prinz, 2001.) The basic idea was that there was an overlap or even isomorphism between the (perceptual) representations one uses to perceive an action and the (motor) representations used to produce it oneself, so that perceiving an action also made the corresponding motor–behavioral representation active (i.e., more accessible).

Here was a second potential mechanism or route by which the external social environment could directly affect social behavior—through its effect on perception. According to this logic of a direct and passive (automatic) connection between perception and action, then, the same priming manipulations many of us had used in the 1980s to influence social perception (e.g., impression formation) should also influence the perceiver's own social behavior. At the time, just as for the related auto-motive hypothesis, we had no data or evidence that this would be true—it was, again congruent with Fiske's (this issue) analysis, an entirely theoretical notion. But Chen, Burrows, and I (Bargh et al., 1996) tried it out, using the same old priming methods—the Scrambled Sentence Test (Srull & Wyer, 1979) and then subliminal priming (Bargh & Pietromonaco, 1982)—but using behavioral instead of judgmental dependent measures. The rest, as they say, is history.

And speaking of history, there was an interesting turn of the wheel of time that was an important influence in our designs of Experiments 2 and 3 of Bargh et al. (1996). Devine's (1989) article is rightly cited in this issue as a modern classic, and the authors herein give two reasons for this: the differentiation between the activation of a stereotype and its use or application in judgment (one of which is not controllable whereas the other is), and the dissociation between explicit (Modern Racism Scale; McConahay, 1986) and implicit (stereotype priming) indices of prejudice, so that even well-intentioned and egalitarian people were found to be susceptible to nonconscious stereotyping and prejudice. I want to mention here a third important contribution by that article (no wonder it is so highly cited!).

Devine (1989) had based her Experiment 2 subliminal priming manipulation on that of Bargh and Pietromonaco (1982) but designed the study with the critical twist of having the priming stimuli (words related to the African American stereotype) be semantically unrelated to the dependent measure (ratings of a target's hostility). This was how she could show that the subliminal priming effect was not due to the priming of a single trait construct (as in Bargh & Pietromonaco, 1982) but could only be attributable to the participants' "going beyond the information given" and applying concepts in the stereotype that had not actually been presented. This was an important methodological advance, and one that my colleagues and I returned the favor by borrowing in our study (Bargh et al., 1996, Experiment 2) to show that the effect on behavior (walking speed) was due to the activated (elderly) stereotype and not merely to the activation of a single and specific trait concept (of slowness or weakness).

The many subsequent studies that followed again show the zeitgeist at work. I have already mentioned the subsequent (and rather amazing) work on ideomotor action by Prinz and his group at Munich (e.g., Knuf et al., 2001). However, entirely separately, in the mid-1990s there came the discovery in the field of cognitive neuroscience of *mirror neurons*, the likely neural foundation of perception–action or ideomotor effects (e.g., Rizzolatti & Arbib, 1998). In macaque monkeys, the same set of neurons in the premotor cortex "lights up" when the monkey watches the experimenter make a reaching, grasping motion as when the monkey makes that movement itself. The study of mirror neurons and the overlap between perceptual and motoric representations is today a very hot topic in cognitive neuroscience and is being touted as the neural basis of everything from imitation and vicarious learning to the child's develop-

ment of a "theory of mind" and acquisition of culture (Gallese & Goldman, 1998; Hurley & Chater, in press; Meltzoff & Prinz, 2001; Tomasello, 1999; Whiten & Brown, 1999). Far from being a mindless or simple activity that does not require much intelligence, evidence for imitation in animals is found only in the most intelligent animals such as apes and parrots (Hurley & Chater, in press; Whiten & Brown, 1999), and the identical passive, automatic imitative effects are found in humans as well (Chartrand & Bargh, 1999).

All of this ongoing research activity points to an exciting time ahead for research on perception–behavior and ideomotor phenomena, as social psychology teams up with neuroscience to further explore the extent and parameters of the effect as well as its underlying mechanisms (Bargh, in press; Hurley & Chater, in press).

In closing, I'd like to underscore another one of Fiske's conditions for an article's becoming a seminal or classic study—being in the right place at the right time. Especially, in the case of our article, the right time. There were close precedents to our article published much earlier—not only the very prescient Forgas (1976) study as cited in this issue by Fritz Strack, but also the Carver, Ganellen, Froming, and Chambers (1983) study in which hostility was primed and shown to affect how long a participant shocked another in a Milgram-like situation and Neuberg's (1988) priming of cooperation and competition prior to participants' engaging in a Prisoner's Dilemma game. Not to mention the article that originally got me, as a beginning graduate student, interested in things automatic: the Langer, Blank, and Chanowitz (1978) studies of "mindless" enactment of interaction scripts. As researchers, all of us build on the work of our colleagues, past and present, and the impact of an idea depends often on factors outside our own control, such as whether the field is ready for it. In 1996, apparently, the time for this particular idea had finally arrived.

Notes

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References

Bargh, J. A. (1989). Conditional automaticity: Varieties of automatic influence in social perception and cognition. In J. S. Uleman & J. A. Bargh (Eds.), *Unintended thought* (pp. 3–51). New York: Guilford.

Bargh, J. A. (1990). Auto-motives: Preconscious determinants of social interaction. In E. T. Higgins & R. M. Sorrentino (Eds.), *Handbook of motivation and cognition* (Vol. 2, pp. 93–130). New York: Guilford.

Bargh, J. A. (in press). Bypassing the will: Towards demystifying the nonconscious control of social behavior. In R. Hassin, J. S. Uleman, & J. A. Bargh (Eds.), *The new unconscious*. New York: Oxford University Press.

Bargh, J. A., Chen, M., & Burrows, L. (1996). Automaticity of social behavior: Direct effects of trait construct and stereotype priming on action. *Journal of Personality and Social Psychology, 71*, 230–244.

Bargh, J. A., & Pietromonaco, P. (1982). Automatic information processing and social perception: The influence of trait information presented outside of conscious awareness on impression formation. *Journal of Personality and Social Psychology, 43,* 437–449.

Carver, C. S., Ganellen, R. J., Froming, W. J., & Chambers, W. (1983). Modeling: An analysis in terms of category accessibility. *Journal of Experimental Social Psychology, 19,* 403–421.

Chartrand, T. L., & Bargh, J. A. (1999). The chameleon effect. *Journal of Personality and Social Psychology, 76,* 893–910.

Devine, P. G. (1989). Stereotypes and prejudice: Their automatic and controlled components. *Journal of Personality and Social Psychology, 56,* 5–18.

Dijksterhuis, A., & Bargh, J. A. (2001). The perception–behavior expressway: Automatic effects of social perception on social behavior. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 33, pp. 1–40). New York: Academic.

Dijksterhuis, A., & van Knippenberg, A. (1998). The relationship between perception and behavior, or how to win a game of Trivial Pursuit. *Journal of Personality and Social Psychology, 74,* 856–877.

Gallese, V., & Goldman, A. (1998). Mirror neurons and the simulation theory of mind-reading. *Trends in Cognitive Science, 12*, 493–501.

Gollwitzer, P. M., & Bargh, J. A. (Eds.). (1996). *The psychology of action: Linking motivation and cognition to behavior*. New York: Guilford.

Higgins, E. T., & Sorrentino, R. M. (Eds.). (1990). *Handbook of motivation and cognition* (Vol. 2). New York: Guilford.

Hurley, S. L., & Chater, N. (Eds.). (in press). *Perspectives on imitation: From cognitive neuroscience to social science.* Cambridge, MA: MIT Press.

James, W. (1890). *Principles of psychology.* New York: Holt.

Knuf, L., Aschersleben, G., & Prinz, W. (2001). An analysis of ideomotor action. *Journal of Experimental Psychology: General, 130*, 779–798.

Langer, E. J., Blank, A., & Chanowitz, B. (1978). The mindlessness of ostensibly thoughtful action: The role of "placebic" information in interpersonal interaction. *Journal of Personality and Social Psychology, 36,* 635–642.

Meltzoff, A. N., & Prinz, W. (Eds.). (2001). *The imitative mind: Development, evolution, and brain bases*. Cambridge, MA: MIT Press.

McConahay, J. G. (1986). Modern racism, ambivalence, and the modern racism scale. In J. F. Dovidio & S. L. Gaertner (Eds.), *Prejudice, discrimination, and racism* (pp. 91–125). New York: Academic.

Neuberg, S. L. (1988). Behavioral implications of information presented outside of conscious awareness: The effect of subliminal presentation of trait information on behavior in the Prisoner's Dilemma game. *Social Cognition, 6*, 207–230.

Prinz, W. (1990). A common coding approach to perception and action. In O. Neumann & W. Prinz (Eds.), *Relations between perception and action* (pp. 167–201). New York: Springer-Verlag.

Rizzolatti, G., & Arbib, M. (1998). Language within our grasp. *Trends in Neuroscience, 21,* 188–194.

Sorrentino, R. M., & Higgins, E. T. (Eds.). (1986). *Handbook of motivation and cognition* (Vol. 1). New York: Guilford.

Srull, T. K., & Wyer, R. S., Jr. (1979). The role of category accessibility in the interpretation of information about persons: Some determinants and implications. *Journal of Personality and Social Psychology, 38*, 841–856.

Tomasello, M. (1999). *The cultural origins of human cognition*. Cambridge, MA: Harvard University Press.

Whiten, A., & Brown, J. (1999). Imitation and the reading of other minds. In S. Braken (Ed.), *Intersubjectivity, communication, and emotion in early ontogeny* (pp. 260–280). New York: Cambridge University Press.