

From student to superhero: Situational primes shape future helping[☆]

Leif D. Nelson^{a,*}, Michael I. Norton^b

^a Stern School of Business, New York University, 44 West Fourth Street, New York, NY 10012, USA

^b Sloan School of Management, Massachusetts Institute of Technology, USA

Received 16 September 2003; revised 16 June 2004

Available online 5 November 2004

Abstract

The present research uses priming techniques to modify commitment to and engagement in future helping behavior. Relative to a control condition, people primed with the exemplar Superman saw themselves as less likely (Studies 1a and 1b), and participants primed with the category superhero saw themselves as more likely (Study 1a), to help in hypothetical situations. Study 2 extended these effects to real-world planned helping behavior, by demonstrating that these primes impacted commitment to future volunteerism. Finally, Study 3 showed that these changes in initial commitment impacted volunteering behavior up to three months after initial exposure. These results demonstrate that fleeting situational primes can impact not only spontaneous behavior, but also future behavior.

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“Like...Superman you will come to save me...”
-Aimee Mann “Save Me”

Psychologists have exhaustively researched factors that promote and inhibit altruism, with two primary goals: Understanding the processes which underlie helping, and developing strategies for increasing helping behavior. These investigations have focused both on the stable individual differences that reflect altruistic motives and the subtle situational factors that can impact helping, reflective of a dichotomy in the broader effort of psychologists to document the determinants of human behavior. Although research has suggested that behavior reflects the conscious workings of a complex psychological system (e.g., Ajzen, 1991; Carver & Scheier, 1998), a growing subset of findings has indicated

that subtle priming techniques can cause behavior without conscious regulation. Such primes have been shown to impact an increasingly diverse set of behaviors, from intellectual performance (Dijksterhuis & van Knippenberg, 1998), conformity (Epley & Gilovich, 1999), and walking speed (Bargh, Chen, & Burrows, 1996) to one most relevant to the present investigation, spontaneous helping behavior (Garcia, Weaver, Moskowitz, & Darley, 2002; Macrae & Johnston, 1998).¹

Early research on helping focused on the ways in which modest manipulations could lead to dramatic changes in behavior. Darley and Batson (1973), for example, showed that merely telling people that they were running late reduced the likelihood that they would stop to help someone slumped in a doorway. Macrae and Johnston (1998) showed that an even more subtle manipulation could impact helping behavior, as participants primed with helping-related words were

[☆] The authors thank Kevin Carlsmith, Robyn Leboeuf, Benoît Monin, and Sam Sommers for their helpful comments on an earlier version of the manuscript.

* Corresponding author.

E-mail address: leifnelson@stern.nyu.edu (L.D. Nelson).

¹ We note that Darley and Batson (1973) used another classic helpful exemplar—the Good Samaritan—and failed to find significant effects. Because participants in this experiment were also exposed to two unhelpful exemplars (the priest and the Levite), it should perhaps not be a surprise that this manipulation was not entirely successful.

subsequently more likely to help someone pick up spilled pens. While this line of research has focused on the ease with which such spontaneous helping behavior can be manipulated, a parallel line of research has examined a different type of helping behavior—planned, or long-term, helping behavior—with often very different determinants. We chose volunteerism as our instantiation of this kind of helping behavior, a form of helping that has received increased attention in recent years (see Putnam, 2000; Wilson, 2000). Volunteering, unlike the spontaneous helping behaviors examined in many investigations, may require a great deal of time and effort (Omoto & Snyder, 1995). The act of volunteering, moreover, has consequences for long-term behavior: a split-second decision to volunteer may lead to weeks, months, or even years of commitment. Research on volunteering has shown a relative insensitivity to situational influences: Because the decision to volunteer involves commitment beyond the immediate future, volunteering has been shown to be best predicted by more stable factors, such as individual differences in prosocial orientation (e.g., Penner & Finkelstein, 1998), and, as is the case with many behaviors, prospective volunteers' own past behavior (e.g., Piliavin & Callero, 1991). These two stable factors, individual differences and past behavior, are by their very definition situationally inalterable. Given these constraints, one possible inference is that the subliminal priming procedures shown to influence many types of spontaneous behavior would be unlikely to impact behaviors that are predicted by more stable factors, like volunteering.

Though research on volunteerism suggests that situational factors should have little effect, some findings indicate that even stable dispositions can be impacted by priming manipulations. In a prisoner's dilemma paradigm, for example, individuals primed with competitiveness were more likely to compete, but *only* if they had already shown a predisposition towards competing (Neuberg, 1988). More recent work has further suggested that pro-social and pro-self dispositions are further moderated by individual self-consistency (Smeesters, Warlop, Van Avermaet, Corneille, & Yzerbyt, 2003). Unlike the non-competitive response in a prisoner's dilemma situation, volunteering—due to its positive connotations—may be a domain towards which individuals generally might consider themselves disposed: The vast majority of people, for example, see themselves as more likely than the average person to donate blood (Allison, Messick, & Goethals, 1989). Primes that activate “helping” constructs, therefore, may have the potential to influence behaviors that are generally seen as resistant to the impact of fleeting situational forces.

Echoing the behavioral priming research cited above, we used a category and exemplar prime paradigm (e.g., Dijksterhuis et al., 1998) to prime helpfulness, selecting the category “superheroes” and the exemplar “Super-

man”—both highly altruistic constructs—as our target stimuli. Previous research has shown that individuals compare themselves to the standards set by such social stimuli (e.g., Festinger, 1954; Mussweiler, 2003). Typically, these comparison processes result in assimilation in both judgments and behavior (e.g., Bargh et al., 1996; Dijksterhuis & Bargh, 2001; Dijksterhuis & van Knippenberg, 1998; Kawakami, Dovidio, & Dijksterhuis, 2003), in part because when making comparisons, people first focus on shared features (e.g., Srull & Gaelick, 1983), a focus which frequently leads to assimilation due to activation of this information (Mussweiler, 2003). Although people default to similarity testing—and the assimilation that results—people do engage in dissimilarity testing as well (Mussweiler, 2003). This less common comparison is more likely to occur when comparisons are made with extreme, unambiguous standards (e.g., Dijksterhuis et al., 1998; Herr, 1986; Herr, Sherman, & Fazio, 1983; LeBoeuf & Estes, in press; Lockwood & Kunda, 1997; Stapel, Koomen, & van der Pligt, 1997), precisely the kind of standard that a superhuman target such as Superman represents. Thus, we predicted that people would contrast from helpful exemplar primes (Superman), but assimilate to helpful category primes (superheroes) in judgments of themselves, predictions of their behavior, and their actual behavior.

Overview

In a series of studies, we used situational primes designed to elicit increased or decreased helping behavior. Participants were primed to think about a helpful category (e.g., superheroes), or an exemplar member of that category (e.g., Superman). We had three primary goals in the studies reported below. First, we wanted to demonstrate that situational primes can both make people think of themselves as more helpful and cause them to predict more helpful behavior in the future (Studies 1a and 1b). Second, we wanted to show that these primes could move beyond impacting spontaneous behaviors and make people more likely to volunteer for a real community service group (Study 2). Our third and most important goal was to show that such commitment to volunteering, even when induced through priming, would lead to increased volunteering behavior in the future, many months after initial exposure (Study 3). Moreover, because we apply the exemplar/category paradigm in our attention to helping behavior, some of the studies specifically compare neutral controls with Superman and/or superhero primes (Studies 1a and 1b, and Study 2), while others compare Superman to superhero primes (Study 1a and Study 3). Though the quote with which we opened this paper illustrates Mann's faith that people like Superman—the most helpful exemplar the

authors could generate—will behave altruistically, we predict that participants primed with this construct will help less than the average person, while those primed with superheroes will help more.

Study 1a

Method

Fifty-six Princeton undergraduates participated in the experiment as partial fulfillment of a course requirement, were recruited via electronic mail and telephone, and were scheduled in groups of three to participate in the experiment. Participants were seated in three separate quiet rooms, and completed large questionnaire packets containing the manipulation and dependent measures. Participants were told to answer every question and to complete the questionnaire in order, without returning to previous pages.

Participants first answered a brief set of demographics questions, then completed the priming manipulation. Analogous to the procedures used in other research (Dijksterhuis & van Knippenberg, 1998; Dijksterhuis et al., 1998), participants in the superhero (Superman) condition were asked the following: “For this task we would like you to describe the characteristics of a superhero (Superman). Think of a superhero (Superman) and list the behaviors, values, lifestyle, and appearance associated with these characters (this character).” Participants in the control condition were given nearly identical instructions, but were asked to describe a dorm room. Following the priming procedure, participants completed the (purportedly unrelated) dependent measure, which asked participants to evaluate their behavior in a series of scenarios. The critical measure of planned helping behavior was, “An elderly woman gets on a crowded subway on which you are riding. Although all the seats are taken and many people are standing, you have a seat. Relative to the average Princeton student how likely is it that you would offer your seat to this woman?” (1: *much less likely*, 8: *same*, 15: *much more likely*). We used the “relative to average” measure for two reasons. First, it provides a reference point that is modestly meaningful for participants. Moreover, the comparison to a typical Princeton student provides the best test of our hypothesis—this was the one group that all participants belonged to and felt fairly knowledgeable about. The remaining questions on the page were similar in format but asked questions that were not explicitly related to the primed constructs. These questions were intended to be either self-enhancing, but not directly related to the prime (e.g., likelihood of winning an essay contest), or unrelated (e.g., likelihood of choosing pizza or Chinese food for dinner), and used the same scale as above. When participants had com-

pleted this page, they continued to work through the packet until finished, at which point they were probed for suspicion and debriefed.

Results and discussion

In debriefing, one participant expressed suspicion about the unrelatedness of the various tasks; though unable to identify the hypothesis, we excluded this participant’s data from further analysis.

As predicted, participants primed with superhero reported being most likely to help ($M = 11.32$), followed by participants in the control ($M = 9.93$) and Superman ($M = 8.95$) conditions. The omnibus ANOVA was significant, $F(2, 54) = 6.93$, $p = .002$, as was the predicted linear contrast, $F(1, 54) = 13.76$, $p < .001$. These priming effects were limited only to prime-specific behaviors; as expected, none of the alternative measures (of both self-enhancing and irrelevant behaviors) were affected by the priming manipulation ($F_s < 1$).

To ensure that our manipulations were successful we had an independent coder, blind to condition, identify the Superman-specific features (e.g., kryptonite, phone booth, etc.) listed by each participant. Consistent with our predictions, participants reported more of these features when primed with Superman ($M = 1.1$) than when primed with superhero ($M = .04$) or dorm room ($M = .00$), $F(2, 63) = 14.54$, $p < .001$. Most importantly for rejecting alternative hypotheses about the manipulations, there was a reliable difference between the Superman and superhero conditions specifically, $t(43) = 3.78$, $p < .001$.

Given that the two experimental conditions critically differed, we also wanted to show that differences in the dependent variable did not occur as the result of participants’ general approach to the original feature-listing task. We further analyzed the content of the feature listings in order to show that our primes generated the predicted types of thoughts. Two independent coders, blind to condition, rated the overall valence of each feature (positive, negative, or neutral), and whether a listed feature was related to helping behavior or not.² There was an acceptable 85.2% agreement rate; a second pair of coders resolved any differences between the ratings. We computed an overall score for the valence of the listed features by computing the difference between the number of positive features listed and the number of negative features listed. Not surprisingly, features listed by participants primed with Superman ($M = 6.6$) and superhero ($M = 7.4$) were significantly more positive than the features listed by participants in the control condition ($M = -.87$), $F(2, 54) = 116.4$, $p < .001$. Most

² Typical positive features: *strong*, *handsome*, and *honest*. Typical negative features: *arrogant*, *secretive*, and *violent*. Neutral terms were typically non-valenced descriptors: *male*, *big*, and *white*.

importantly, there was no significant difference in feature valence between participants in the two experimental conditions, $t(38) = 1.23$, $p > .20$. In addition, while participants primed with Superman and superhero ($M_s = .79$ and $.67$ respectively) listed more helping-related features than did participants in the control condition (where no helping features were listed, of course), $F(2, 54) = 7.72$, $p = .001$, there were again no differences between the superhero and Superman conditions, $t < 1$. The two experimental conditions, then, did not differ in number of helping-related words listed, but both differed substantially from the control condition. In addition, there were also no significant relationships between the types of thoughts listed and the primary dependent measure, all $p_s > .20$. The fact that predictions of helping differed so markedly between the two experimental conditions despite the construct being similarly activated suggests that it is specifically the different nature of social comparison the two primes elicit—similarity testing for superheroes and dissimilarity testing for Superman (Mussweiler, 2003) that caused differences in predicted helping behavior.

In this study, participants assimilated information from the category prime, and judged themselves as more helpful, while other participants contrasted with the exemplar prime, and judged themselves to be less helpful. Study 1a also revealed that the impact of our primes was specifically limited to predictions of future helping behavior, and did not apply more generally to other positive behaviors.

Study 1b

Method

Having demonstrated the effect, we next wanted to replicate the effect with subtler priming, in this case a sentence-unscrambling task similar to that used in previous priming studies (e.g., Macrae & Johnston, 1998), and show similar effects on predicted helping behavior in a different situation. We again chose to use the exemplar Superman (because of the nature of the procedure, we were unable to replicate the category prime condition). As in the first study, our primary dependent variable assessed participants' predictions of their behavior in a hypothetical helping situation. We predicted that participants primed with the Superman exemplar would predict that they would be less helpful than participants in a control condition.

Thirty undergraduates enrolled in introductory psychology participated in the experiment as part of a classroom exercise. Participants first completed a scrambled sentence task, unscrambling 10 sentences. In the control condition, the 10 phrases were all common aphorisms (e.g., *cross that bridge when we come to it*, *a penny for*

your thoughts, and *birds of a feather flock together*). For participants in the Superman condition, three aphorisms were replaced with scrambled phrases associated with Superman (*faster than a speeding bullet*, *more powerful than a locomotive*, and *leaps tall buildings in a single bound*). Those phrases, followed by “look up in the sky—it’s Superman” were originally associated with Superman as part of the introduction to the television series *The Adventures of Superman*, airing first in 1953, a link subsequently bolstered by the many Superman comics, movies, and related television programs that followed. We thus expected the prime to activate the Superman exemplar rather than activating a more general superhero category. Participants next read a description of a potential helping situation (an old man lying in an entranceway), and were then asked how likely they would be to help the man, relative to the average Princeton student ($-5 = \text{much less likely}$ to $5 = \text{much more likely}$).

Results and discussion

As predicted, participants primed with Superman reported being less likely to help than participants in the control condition ($M_s = -.08$ vs. 1.35), $t(27) = 1.90$, $p = .034$, one-tailed. Consistent with the results of Study 1a, this finding provides further evidence that subtle primes can impact predictions about future behavior.

While Studies 1a and 1b showed that primes impacted participants' estimates of future altruism, the most valuable extension of this research would be to show that a similar manipulation could be used to change real-world behavior. The next two studies aim to demonstrate that the effects of superhero primes could be extended both to commitment to and performance of actual future helping behavior. Exploring the impact of primes on planned helping behavior allows us to move beyond simply assessing participants' predictions of future behavior, to using these altered predictions to assess their willingness to commit—in the present—to those future behaviors, and then measure their follow-through on that initial commitment. To explore these issues, in Study 2 participants were primed using a procedure similar to that of Study 1a, and were given an opportunity to volunteer for a real campus community service group. In Study 3, participants were asked to attend a volunteering meeting some three months after the initial priming episode.

Study 2

Method

Forty-nine Princeton undergraduates enrolled in an introductory psychology class participated as part of a

classroom exercise. We used the same thought-listing task as in Study 1a: Participants were randomly assigned to one of two conditions and given 4 min to list features of a superhero or a student dorm room. After collecting these materials, the instructor introduced a confederate posing as a representative of *Community House*, who gave a brief (30 s) summary of the organization, an actual campus organization that arranges to have Princeton students tutor children in neighboring communities. The representative made it clear that students who signed up would be contacted to volunteer in the near future. Participants were then given the organization's standard form, modified to include our primary dependent measure assessing the number of hours per week participants were willing to volunteer.

Results and discussion

As predicted, participants who had been primed with the category superhero volunteered more than twice as many hours ($M = 2.13$ h/week) as participants in the control condition ($M = .94$ h/week). The distribution was highly skewed due to the large number of participants who volunteered zero hours (skewness = 1.94), so we conducted a square-root transformation of hours volunteered, resulting in a less skewed distribution (skewness = .47), and a reliable difference between conditions, $t(47) = 2.09$, $p = .043$. A secondary measure was the frequency of volunteerism, and although a higher percentage volunteered in the superhero condition (15 of 23, 65%) than in the control condition (12 of 26, 48%), this effect was not statistically reliable, $\chi^2(1, N = 49) = 1.79$, $p = .18$.

In parallel to our findings with predicted behavior in Studies 1a and 1b, we showed that the same primes could affect actual commitment to real-world volunteerism: Participants primed with superhero volunteered twice as much time as did controls. While Macrae and Johnston (1998) showed that primes could affect behavior in spontaneous helping situation, the present results provide evidence for priming effects on planned helping behavior as well. In our study, primed participants showed an increase in a prosocial behavior implicating a long-term impact outside of the laboratory. This is not to say that we predict the prime itself will still have a direct influence on behavior long after the manipulation, but as discussed above, the act of initial volunteering can have important consequences. The act of volunteering carries the psychological gravity of being perceived as an action itself, a self-perception that has powerful influences on future behavior (Albarracín & Wyer, 2000). According to Albarracín and Wyer (2000), past behavior operates directly on individuals' attitudes, and thus their behavioral intentions and subsequent behavior. In the studies we have thus far reported we have shown that primes can significantly

impact intentions. We now hope to show that it can impact the long-term behaviors in which participants claim they will engage. Our Studies 1a and 1b show that participants see themselves as more likely to help in a future hypothetical situation, demonstrating a general intention to be more helpful, but hardly a concrete intention to engage in future behavior. Indeed, most theories of behavioral prediction (e.g., Ajzen, 1991) suggest that such weak intentions do not predict behavior. In addition, given the multitude of other influences in daily life, we might be surprised if a single priming episode impacts behavior weeks later—unless, as in the present investigation, people are committed to the new behavioral intention when the prime is still active. Our Study 2, unlike Studies 1a and 1b, committed participants to a specific form of future helping. Such commitments can have strong effects on future behavior, as Freedman and Fraser's (1966) classic foot-in-the-door research demonstrated. In one investigation, the effects of simple commitment to volunteering persisted for six weeks (Cioffi & Garner, 1996). In Study 3, we follow through on participants' initial commitment, to see if our primes influence not only intentions to engage in future behavior, but actual future behavior.

Study 3

In the final study, we sought to replicate the effects reported in Study 2 and extend those findings by demonstrating an impact on actual future behavior. Using a similar design, participants completed the priming manipulation and a seemingly unrelated questionnaire soliciting volunteers for a campus community service group. Participants that volunteered for the fictitious group were contacted three months later and asked to attend an organizational meeting for the group. Frequency of attendance at this meeting was the critical dependent variable in the experiment.

Method

One hundred twelve Princeton undergraduates completed the experimental materials, which were embedded in a larger packet of unrelated questionnaire, and were paid \$8. Participants first completed the priming task, which asked them to list 10 features that described either a superhero or Superman. Because the previous studies had established that the control condition fell between the two experimental conditions, we omitted a control condition in Study 3. On the following page, participants read about *Princeton Community Tutoring*. The group was described as “a new student-run organization, intended to assist undergraduates who are interested in helping to tutor high-school students in the greater Princeton area.” The questionnaire, which was

administered during the Fall semester, further informed participants that if they were interested in volunteering they should report their electronic mail addresses and that they would be contacted sometime in the Spring semester. Participants also reported the approximate number of hours per week they would like to volunteer in support of the organization.

Approximately 90 days after completing the questionnaire, in the Spring semester, those students who had volunteered were sent an email informing them that there would be an informational meeting held in the following week signifying the start of their participation in the program, and that there were three times available to attend. At the meetings, after attendance had been recorded, participants were probed for suspicion, thoroughly debriefed, and provided with information about other volunteer organizations on campus, including *Community House*. We predicted that participants primed with superhero, in contrast to those primed with Superman, would be more likely to volunteer and would volunteer more hours at the initial session, and as a result of this commitment would be more likely to attend the group meeting three months after original exposure to the prime.

Results and discussion

Initial effect of prime

We first investigated the impact of the prime on volunteering behavior immediately following exposure. Consistent with the findings of Study 2 we found that participants volunteered more hours of service when primed with superhero ($M = .98$ h/week) than when primed with Superman ($M = .46$ h/week). Once again the distribution was skewed (skewness = 3.28), so we conducted a square-root transformation which produced a more normal distribution (skewness = 1.36), and a reliable difference between conditions, $t(105) = 2.41$, $p = .018$. We also analyzed the frequency of volunteerism as a function of priming condition, predicting that people would be more likely to volunteer when primed with superhero than when primed with Superman. As predicted, people were more likely to volunteer when primed with superhero (42%, 23 of 55) than when primed with Superman (23%, 13 of 57), $\chi^2(1, N = 112) = 4.64$, $p = .031$.

Long-term effect of prime

Ninety days after initial exposure to the prime, participants who had volunteered for the group were contacted by e-mail and asked to come to the first meeting of the organization. We expected that committing themselves to the group in the first experimental phase would increase the likelihood that participants would participate in the group at a later date. Consistent with our predictions, of the original sample, participants

primed with superhero were more likely to show up to participate in the group (17%, 9 of 52) than were people that had been primed with Superman (4%, 2 of 56), $\chi^2(1, N = 108) = 5.56$, $p = .018$.³ Even after a 90-day delay, people that were primed with superhero were four times more likely to volunteer than were those who had been primed with Superman.

General discussion

Using a novel construct, we were able to demonstrate that primes can influence predictions of, commitment to, and engagement in future helping behavior.⁴ Exposure to primes affected how people evaluated their future altruistic tendencies (Studies 1a and 1b), led them to commit to helping behaviors in the future (Study 2), and as a consequence of that commitment, led them to follow through on this behavior three months after the initial priming episode (Study 3). We also demonstrated the specificity of the effects of our primes, which impacted only helping behavior, and not other kinds of positive behaviors (Study 1a).

Why does priming impact future behavior?

We began this paper by outlining a dichotomy between spontaneous and more deliberative helping behavior, such as volunteering. Although a large body of research has shown that spontaneous helping can be easily influenced (e.g., Darley & Batson, 1973; Macrae & Johnston, 1998), most research suggests that volunteerism—and more deliberative, long-term helping in general—is more difficult to impact. Many theorists have hypothesized that volunteerism is predicted by stable aspects of individuals, primarily their predispositions and chronic goals to help (e.g., Clary et al., 1998); we should thus not be surprised that such behavior is thought to be more difficult to influence. We suggest that the distinction between chronic goals impacting planned behavior and fleeting situational factors (such as primes) impacting spontaneous behaviors, while useful, may be less dichotomous than previously thought.

³ The data from four volunteering participants were excluded from this analysis because the e-mail address they provided was either unreadable or unreported. Three of these participants were in the superhero condition, so if anything, their exclusion operated against our hypothesis.

⁴ The novelty of the target may be potentially as much of a hindrance as it is a help. As Wells and Windshitl (1999) point out, the use of a single stimulus type (superheroes and Superman in this case) makes these results potentially sensitive to variance within the stimulus category. We are nevertheless fairly confident in our effects as the priming-behavior literature has slowly expanded to include a number of different stimuli, with superheroes a reasonable, if perhaps atypical, member of this set.

There is increasing evidence to suggest that priming effects are hardly fleeting. Some research on the impact of primes has revealed effects as long as 24 h after exposure (Merikle & Daneman, 1998), or up to two weeks later when stimuli are particularly strong (Sohlberg & Birgegard, 2003). In the paradigm under investigation in this paper, we hypothesize that the observed long-term effects are not a delayed direct priming effect, but rather the influence of a more direct psychological mediator: Participants' initial commitment at the original priming episode.

One possible mechanism by which primes might impact commitment intentions is through the influence of goals. One theory of the impact of primes on spontaneous behavior suggests that primes affect behavior by modifying the accessibility of relevant goals which then guide behavior (e.g., Bargh, Gollwitzer, Lee-Chai, Barndollar, & Trötschel, 2001). Such goals are explicitly situational, however, and little attention has been devoted to how primed goals might impact behavior outside the testing situation (though see Gollwitzer, 1999). Indeed, common sense tells us that a single priming episode would be hard-pressed to impact behaviors days after an experiment, given the multitude of unrelated goals individuals pursue on a daily basis. Nevertheless, within the experimental situation, priming methods have the capacity to bypass the deliberative phase of behavior choice (Gollwitzer, 1990), shaping intentions and goals without awareness.

By using priming techniques to bypass people's stable altruistic proclivities, and committing them to future behavior while these temporary goals were salient, we were able to commit them to future behavior usually thought to be impervious to such influences. Indeed, much of the research demonstrating relationships between chronic altruistic goals and volunteering is correlational, so while it is possible that altruistic goals lead to volunteering, this prior research does not preclude the possibility that people first volunteer, then develop goals in line with that behavior. The present investigation, in suggesting that subtle situational manipulations may change temporary goals, and thus commitment to behaviors traditionally seen as motivated by chronic goals, disambiguates these correlational studies by demonstrating that manipulated goals change personal intentions, and causally lead to chronic behavior.

Goal-directed behavior and role models

Few investigations have examined long-term effects of behavioral priming research, but work on the effects of role models (often exemplars of a given category) has arrived at similar conclusions. Role models have been shown to be a central means for guiding people's behavior. Some research has suggested that role models lead to greater inspiration, and thus presumably to bet-

ter performance (Lockwood & Kunda, 1997). These results are inconsistent with the results of our Studies 1a and 1b and Dijksterhuis et al. (1998), where positive exemplars actually lead to less helping. Our own recent work has investigated this incongruity, and has shown that though role models may be inspiring, this inspiration can be undercut when participants are faced with actual evaluation (Johnson, Chartrand, Norton, & Nelson, 2004), leading to decreased performance. There are particularly disturbing implications of such contrast effects when superheroes are used as role models, given the fact that superheroes are most often used as role models for children (e.g., White & O'Brien, 1999). Children, however, may have enough malleability in self-definition (Markus & Nurius, 1986)—a crucial factor in determining whether contrast with exemplars occurs (Stapel & Koomen, 2000)—that there may not be the same reversal of intended effects within that population.

Conclusion

On first blush the fact that simple primes can impact behavior three months after the fact conflicts with a view of behavior as resulting from conscious deliberation and intention. Not only can spontaneous, laboratory-induced behaviors be elicited without mindful processing, but behavior far removed from the laboratory setting can be influenced as well. This is the strong version of unconscious intent, where actions are caused by unconscious mechanisms of mind (Bargh & Chartrand, 1999), and social behavior follows directly from social perception (Dijksterhuis & Bargh, 2001). We are not quite so bold. In effect we find that primes can impact an extremely influential mediator: Future commitment. Nevertheless, the present research contributes to the larger argument about unconscious intent by demonstrating how a modest manipulation can impact social behavior beyond the immediate context.

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