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Abstract

Past research has found that primes can automatically initiate unconscious goal striving. Recent models of priming have suggested that this effect can be moderated by validation processes. According to a goal-validation perspective, primes should cause changes in one's motivational state to the extent people have confidence in the prime-related mental content. Across three experiments, we provided the first direct empirical evidence for this goal-validation account. Using a variety of goal priming manipulations (cooperation vs. competition, achievement, and self-improvement vs. saving money) and validity inductions (power, ease, and writing about confidence), we demonstrated that the impact of goal primes on behavior occurs to a greater extent when conditions foster confidence (vs. doubt) in mental contents. Indeed, when conditions foster doubt, goal priming effects are eliminated or counter to the implications of the prime. The implications of these findings for research on goal priming and validation processes are discussed.

Keywords

goal pursuit, automaticity, metacognition, validation

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The study of self-regulation and goal pursuit is a fundamental topic in psychology (Vohs & Baumeister, 2011) with widespread implications for human thought and behavior. At a cognitive level, goals are abstract structures in memory that can become accessible through contextual cues and guide behavior toward the attainment of desired end states (Fishbach & Ferguson, 2007). Although historically thought to be relatively deliberative in nature (Carver & Scheier, 1998; Locke & Latham, 1990), contemporary research indicates that goals can be both activated and pursued outside of conscious awareness. For example, Chartrand and Bargh (1996) demonstrated simple priming manipulations, such as those previously used to activate traits or stereotypes (Srull & Wyer, 1979), can also produce complex, motivated behavior. These priming manipulations have produced motivated behavior for goals as diverse as achievement (Bargh, Gollwitzer, Lee-Chai, Barndollar, & Trötschel, 2001), seeking casual sex (Aarts, Gollwitzer, & Hassin, 2004), forming impressions of others (Chartrand & Bargh, 1996), dieting (Fishbach, Friedman, & Kruglanski, 2003), and knowledge seeking (Riketta & Dauenheimer, 2003).

Once activated, primed goals operate in the same manner as consciously selected goals. That is, goal priming

produces hallmark features of conscious goal pursuit, including increases in goal strength over time, persistence in the face of obstacles, and resumption after interruption (Bargh et al., 2001; see also, Förster, Liberman, & Friedman, 2007). In addition, success and failure at non-conscious goals produce emotional responses parallel to those experienced with success and failure at conscious goals (Chartrand, Cheng, Dalton, & Tesser, 2010; Loersch, Aarts, Payne, & Jefferis, 2008; Riketta & Dauenheimer, 2003).

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The Goal-Validation Perspective

In efforts to explain a wide range of automatically enacted behavior, several recent articles have provided integrative accounts for when and how activated concepts will influence behavior (e.g., Dijksterhuis, Chartrand, & Aarts, 2007). A common theme across a number of frameworks is that primed mental contents, such as goals, will only direct behavior to the extent that they are seen as a valid (e.g., correct, appropriate) basis for judgment and behavior (see Briñol & Petty, 2009; Loersch & Payne, 2011; Wheeler & DeMarree, 2009; Wheeler, DeMarree, & Petty, 2007). Drawing on research from attitudes (Gawronski & Bodenhausen, 2006), social judgment (Kruglanski, 1990), and persuasion (Briñol & Petty, 2009), these models propose that a primed concept can often act as information that people use to directly (Loersch & Payne, 2011; Wheeler & DeMarree, 2009) or indirectly (Wheeler & DeMarree, 2009) infer their current motives. Critically, it is only to the extent that this prime-related information is perceived as valid (i.e., held with confidence) that it is used in guiding goal adoption and pursuit. For example, an individual primed with the goal of helping others will only adopt and pursue this goal if the content activated by the prime is associated with confidence. If the same content was instead associated with doubt, it would no longer be perceived as an appropriate guide for behavior. Because of this process, any variable that affects the confidence in one's current mental contents should moderate the influence of an activated goal.

Although other research has identified moderators of goal priming such as the value (sometimes also called evaluation or reward cue) of the activated goal (e.g., Custers & Aarts, 2005) and reactance motives (Chartrand, Dalton, & Fitzsimons, 2007), the goal-validation perspective suggests that the moderators of goal priming can be extended even further to include a much wider set of variables. In particular, this perspective argues that *any* variable that increases or decreases confidence should similarly be able to increase or decrease the impact of goal priming. Here, we provide the first direct test of the goal-validation hypothesis by demonstrating that manipulating variables known to affect thought confidence (i.e., power, ease, and episodic recall of confidence) can indeed moderate the impact of goal primes on participants' actions.

The Current Research

In this research, we postulate that the extent to which prime-related mental contents are viewed as valid can determine whether a primed concept influences motivated behavior. Using manipulations that have been previously shown to influence confidence of non-goal-related mental contents (see Briñol & Petty, 2009), we manipulated participants' sense of power (Experiment 1), the ease with which a person recalls goal-relevant behavior (Experiment 2), and an episodic recall of one's own past experiences of confidence

versus doubt (Experiment 3) to determine whether these variables affect the degree of goal striving that results from a priming manipulation. We examined a variety of goals, including competition versus cooperation, achievement, and self-improvement versus saving money. We use sequential (Experiments 1 and 3) and simultaneous (Experiment 2) manipulations of goal priming and confidence. The sequential manipulations were ordered such that the manipulation of goal priming preceded the manipulation of confidence. In a sequential paradigm, manipulating confidence following the prime provides the strongest test of our hypotheses because it ensures that the *activation* by the goal primes is not influenced by validity perceptions. This approach allows us to examine the impact of the validation manipulations while ensuring equivalent construct activation across conditions. In addition, this timing increases the odds that the primed mental contents will be perceived to be the source of any confidence or doubt, as they are highly accessible at the time participants experience confidence or doubt.

Because confidence (induced via writing about it or stemming from variables such as power and ease) has been shown to validate activated mental contents, we expected the primes to have a significant effect on goal-relevant behavior under high confidence conditions. The same primes should not, however, produce as much motivated behavior if conditions instead foster perceptions of doubt and invalidity, and might even lead to contrast from goal primes. In addition to providing the first direct empirical support for the hypothesized role of validation processes in goal pursuit (e.g., Loersch & Payne, 2011; Wheeler & DeMarree, 2009; Wheeler et al., 2007), these experiments add to the current literatures on both goals and metacognition by showing that goal pursuit is amenable to a thought-validation analysis (e.g., Petty, Briñol, & Tormala, 2002).

Experiment 1

Past research has demonstrated that high (vs. low) power is associated with confidence (vs. doubt) and therefore can validate what people have in their minds (Briñol, Petty, Valle, Rucker, & Becerra, 2007; See Morrison, Rothman, & Soll, 2011). In Experiment 1, we primed participants with the goal to cooperate or compete and then had them reflect on times when they held high or low levels of power. We manipulated power after goal priming to ensure that participants would have equivalent construct accessibility, which could then be validated or invalidated by feelings of high or low power. After inducing high or low power, we examined the impact of the primes on people's simulated behavior in two economic decision-making tasks. If validity processes can influence goal adoption and pursuit, then more goal-congruent behavior (regardless of the goal) should occur among individuals made to feel powerful than powerless. Indeed, low power conditions should attenuate or even reverse the impact of primed goals on behavior.

Method

Participants were primed with the construct of competition or cooperation using a word-completion task. They were then induced to feel powerful or powerless using an episodic recall task. Participants then engaged in a pair of simulated economic decision-making tasks that offered them the opportunity to cooperate with a hypothetical partner. Finally, participants were probed for suspicion (Bargh & Chartrand, 2000) and then fully debriefed.

Participants. Participants were 92 undergraduates at Ohio State University who received partial fulfillment of an introductory psychology course requirement for their participation. Participants were seated in a room with visually isolated cubicles. Prior to beginning the study, we obtained informed consent and ensured participants of the anonymity and confidentiality of their responses. The experiment was a 2 (Goal Prime: competition vs. cooperation) \times 2 (Power: high vs. low) between-subjects design, with random assignment to conditions ($n = 23$ in each condition).

Materials

Goal prime. For the goal priming manipulation, participants were asked to engage in a word-completion task, ostensibly as a test of language processes. Participants were asked to determine what word could be created by filling in the one to two missing letters for each trial (e.g., _hoes, v_cuu_). The 10 prime words included in this task were associated with pursuing either competitive/proself (compete, victory, battle, strive, succeed, loser, best, worst, pedestal, executive) or cooperative/prosocial goals (cooperate, together, assist, help, support, mutual, team, reciprocal, share, collective), whereas the 22 filler words were unrelated to either prime (e.g., bridge, shoes, vacuum, recliner). Similar tasks have been used successfully to prime other constructs (e.g., Mussweiler & Neumann, 2000; Petty, DeMarree, Briñol, Horcajo, & Strathman, 2008). The prime words were similar to those used in other research that has primed competition or cooperation goals (e.g., Bargh et al., 2001). Prime and filler words were presented in a random order for each participant.

Power. Immediately following the priming induction, participants were made to feel powerful or powerless through a brief essay task (from Galinsky, Gruenfeld, & Magee, 2003, Experiment 2), ostensibly a pretest measure for the development of a Life Events Inventory. Participants in the high power condition were asked to describe two experiences in which they held power over another person or persons (i.e., had control over their outcomes or evaluations), including the details of the situation, how they felt, and so forth. Participants in the low power condition were asked to write about two experiences where someone else held power over them. Previous research using this manipulation has shown that it can increase confidence (Briñol, Petty, Valle, et al., 2007, Study 4).

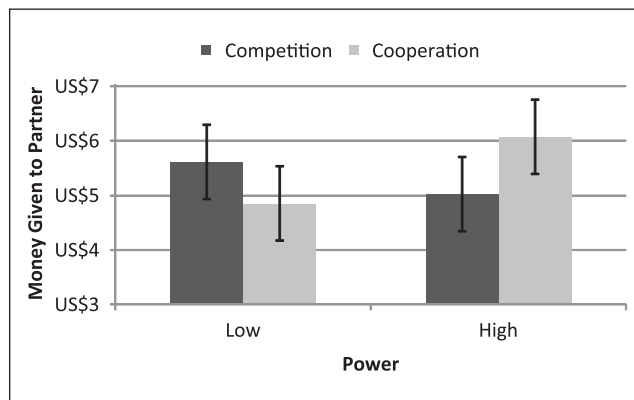


Figure 1. Money given to a partner as a function of goal prime and power conditions

Note: Positive values indicate more cooperative behavior. Error bars represent 95% confidence interval.

Economic games. Following the power induction, participants were asked to take part in two economic decision-making tasks, ostensibly so that we could develop norms for the different procedures. Participants were told to imagine they were playing with a real partner for actual money. The first task was a dictator game (e.g., Bolton, Katok, & Zwick, 1998), a commonly used measure of altruistic or prosocial motivation. In the dictator game, participants were told to imagine that they would be given 10 dollars (US\$10) and that they could divide this money with another person if they chose. Any money they did not give to their partner was theirs to keep. This was followed by a trust game (e.g., Berg, Dickhaut, & McCabe, 1995), a commonly used measure of trust or cooperative motives. In the trust game, participants were told to imagine playing with a partner with a new US\$10. In the trust game, participants were told that any money sent to their partner was tripled in value and that once their partner had received the money, the partner would have an opportunity to return some portion of their earnings to them. Higher values on both tasks thus represent more prosocial/cooperative motivation.

Results

Although the two measures were uncorrelated ($r = .07$), participants' responses to both tasks revealed parallel results. As such, the dependent measure reported is the average amount of money participants sent to their partner across the two tasks (out of US\$10).¹ This dollar value was submitted to a Goal Prime (competition vs. cooperation) \times Power (high vs. low) ANOVA ($MSE = 236.59$). The only significant effect was the predicted Prime \times Power interaction, $F(1, 88) = 6.96, p = .01, \eta_p^2 = .07$ (see Figure 1). Decomposition of this interaction indicated that there was a main effect of the prime when people were made to feel powerful, $F(1, 88) = 4.66, p = .03, \eta_p^2 = .05$, such that people in the cooperation condition ($M = US\$6.07$,

$SD = US\$1.89$) allocated significantly more to their partner than people in the competition condition ($M = US\$5.02$, $SD = US\$1.41$). In the low power condition, no significant effect of prime emerged, $F(1, 88) = 2.48$, $p = .12$, $\eta_p^2 = .025$, although the tendency was for a contrast effect to emerge, with cooperation-primed participants behaving somewhat less cooperatively ($M = US\$4.85$, $SD = US\$1.73$) than competition-primed participants ($M = US\$5.61$, $SD = US\$1.48$).

Discussion

Consistent with the goal-validation perspective, only participants for whom the goal primes were followed by a validity cue in the form of high power displayed prime-congruent behavior. The same primes had no effect for participants who instead were required to think about low power. In fact, for the latter group, the goal priming effect tended to be reversed. A reversal would be likely to the extent that low power produced enough doubt that participants wanted to do the opposite of their thoughts. This is consistent with past research on validation processes in persuasion showing that doubt can sometimes lead to such overcompensation (contrast) effects (e.g., Briñol, Petty, & Barden, 2007), an outcome that is more likely when the activated construct is dichotomous in nature (e.g., compete vs. cooperate) rather than continuous (e.g., degree of competitive behavior; Gandarillas, Briñol, & Petty, 2012; see Briñol, DeMarree, & Petty, 2010, for a discussion).

In addition to providing the first direct support for our goal-validation perspective, these results also contribute to the general literature on goal pursuit by demonstrating that power can also moderate the relationship between primed goals and behavior. Prior to these findings, only goal value (e.g., affect; see Aarts, Custers, & Holland, 2007; Custers & Aarts, 2005) and reactance motives (Chartrand et al., 2007) have been shown to moderate goal priming effects. The findings are also informative for the study of power because they show that power can alternatively lead to positive and negative behaviors depending on the current situation. Here, we saw power produce prosocial behavior (e.g., cooperating with others) and antisocial behavior (e.g., sharing less resources with others) depending on the power holder's currently accessible goal (for further discussion, see also Rucker, Galinsky, & Dubois, 2012).

Although these results are promising, one could argue that this study is not uniquely supportive of our hypotheses. Past research has demonstrated a direct link between the experience of power and confidence (Briñol, Petty, Valle, et al., 2007; See et al., 2011), but other mechanisms for the effect of power are possible. For example, Guinote and colleagues postulate that power is associated with greater accessibility of and attention to self-relevant goals (e.g., Guinote, 2007; Slabu & Guinote, 2010). Importantly, because power followed (rather than preceded) goal priming in our study, it is less likely that differences in goal activation could underlie

the effects. In addition, Keltner and colleagues argue that power is associated with an approach orientation (Keltner, Gruenfeld, & Anderson, 2003), which might increase the adoption of a primed goal in a similar manner to confidence. To address this issue, Experiment 2 used an established source of confidence that is not associated with approach—the sense of ease of thought generation (Schwarz et al., 1991; Tormala, Petty, & Briñol, 2002).

In addition, although we are interested in the effects of primed goals, the behavior measured in Experiment 1 is not completely unique to goal pursuit. That is, although our results are consistent with a goal priming effect (Loersch et al., 2008), they could also be caused by the direct influence of a prime on behavior (Bargh, Chen, & Burrows, 1996; Loersch & Payne, 2012), or the indirect influence of primes on behavior through shifts in self-perceptions (DeMarree, Wheeler, & Petty, 2005), situational perceptions (Kay & Ross, 2003), or perceptions of participants' ostensible interaction partner (for reviews, see Loersch & Payne, 2011; Smeesters, Wheeler, & Kay, 2010; Wheeler & DeMarree, 2009).² Because several researchers have argued that goal activation differs from the activation of other constructs (Bargh et al., 2001; Förster et al., 2007), in Experiment 2, we shifted our dependent measure to examine a unique consequence of goal pursuit: effort expenditure in the face of failure (Bargh et al., 2001).

Experiment 2

Experiment 2 was designed to conceptually replicate Experiment 1 using a new prime, validity cue, and dependent measure. In addition, we examined a goal-relevant outcome and measured additional control variables. In Experiment 2, we primed all participants with an achievement goal during a recall task. To associate the primed content with a validity cue, we manipulated the experienced ease of recall (Schwarz et al., 1991). Past research has demonstrated that ease (versus difficulty) of thought retrieval increases confidence in the recalled content (Tormala et al., 2002; for a review, see Briñol, Tormala, & Petty, in press). We then examined the impact of goal priming on participants' persistence in the face of failure.

If validity perceptions affect goal adoption and pursuit, then we should see more goal striving among people who associated the recalled content with a sense of ease (vs. difficulty). Thus, we hypothesize that participants should be more inclined to rely on the primed goal in a subsequent test when the accessible construct is associated with confidence (from the easy recall task) than when associated with doubt (from the difficult recall task). Furthermore, because past research has shown that affective states (which can convey the value of the activated goal; Custers & Aarts, 2005; Huntsinger & Clore, 2012) can moderate the impact of activated goals on behavior, we measured participants' mood to determine whether it was influenced by our ease manipulation. If the manipulation of ease affects validity independent

of mood, this measure should be unaffected by the manipulation and any effects of ease should hold when controlling for mood. In addition, because primes can affect self-perceptions (DeMarree et al., 2005) and because the ease-of-retrieval paradigm has been used to influence self-perceptions (Schwarz et al., 1991), we also measured self-perceptions relating to achievement. If we are truly examining nonconscious goal pursuit, then any effects we observe should be independent of explicit self-reports of achievement orientation.

Method

To test our hypothesis, participants were randomly assigned to a single factor (number of examples recalled: 4 vs. 10) between-subjects design. An achievement goal was primed by having participants recall past instances of achievement striving. The number of examples recalled served as a manipulation of participants' subjective ease of retrieval (Schwarz et al., 1991). Based on pilot testing among the same population as our primary experiment, recalling 4 examples was expected to feel relatively easy and recalling 10 was expected to feel relatively difficult. After completing the recall task, all participants completed a series of *very* difficult anagram items and were then given a chance to raise their score on the anagram task by completing additional, easy items. The amount of time spent on the second anagram task served as our measure of achievement striving. Following this, participants completed a mood assessment, rated the subjective ease of the recall task and their achievement orientation, and completed a funnel-debriefing procedure.

Participants. Participants were 64 undergraduates enrolled in introductory psychology courses at Ohio State University. Preliminary data analysis found one outlier (greater than 2.5 standard deviations from the mean) on our primary dependent measure. This participant was excluded from subsequent analyses, leaving 63 individuals in the final data set. Inclusion of this participant did not alter the significance level of the findings reported below.

Materials

Achievement striving recall task. Participants began the study by completing the achievement priming task, modeled after other research examining ease of retrieval (Schwarz et al., 1991). In the "easy" condition of the experiment, participants were required to recall (and summarize in one or two short sentences) 4 times in which they had tried very hard to achieve some task. In the "difficult" condition, participants instead recalled 10 instances of past achievement striving. Participants were not forewarned about the number of instances to be recalled. Depending on condition, the task simply ended after participants had completed either 4 or 10 recall screens.

Anagram tasks. After completing the priming task, participants were provided with an opportunity to pursue an

achievement goal during a two-part anagram task. On each item of this task, participants were asked to rearrange a series of letters into a proper English word. If, for instance, a participant was given the letters *w e t r a*, a correct solution would be *water*. Framed as a measure of basic language skill, the first part of the anagram task was constructed so as to provide all participants with the impression that they had failed to achieve, with a score indicative of low skill level. To do this, the measure consisted of three items, the first of which was very easy (*a z z i p*) followed by two anagrams that were constructed so as to be virtually impossible for participants to successfully solve. The first was *c s r a p o t*. The second was *relation*, which participants were asked to rearrange into a different word. As expected, all participants but one correctly solved the easy anagram and none were able to successfully complete the two very difficult items.

After seeing the correct answers to these three items, participants were introduced to a second anagram task that served as our measure of achievement motivation. On this second task, participants were informed that they could spend as much time as they liked completing an easier set of anagram items to raise their score from the previous task. After each individual item in this part of the task, they were asked to choose one of the following options: (a) "I would like another chance to raise my score" or (b) "I am satisfied with my score." Those who selected the first option received another anagram, whereas those who selected the second moved on to the next task of the experiment. After receiving the instructions for this second anagram task, all participants were given a relatively easy item (*f o o b a l t l*) followed by the choice options above. The task ended without warning after 20 total items. The amount of time each participant spent attempting to raise his or her score was recorded and served as our measure of achievement striving (for a similar measure, see McFarlin, Baumeister, & Blascovich, 1984).

Affect measure. To examine whether our validity manipulation influenced participants' mood, we administered the affect subscale of the Affect Arousal Scale (Salovey & Birnbaum, 1989) after participants had completed the anagram task. This measure consists of three bipolar, 7-point scales (ranging from -3 to +3) anchored with the labels *very sad/very happy*, *very depressed/very elated*, and *very dissatisfied/very satisfied*.

Subjective ease of recall. To check that our manipulation affected the perceived ease of recall as expected, participants were next asked, "How difficult/easy was it for you to recall the examples of times you were highly motivated to achieve?" This item was rated on a 7-point scale ranging from -3 (*extremely difficult*) to 3 (*extremely easy*).

Achievement orientation. To determine whether our manipulation produced conscious changes in self-perceptions (see Schwarz et al., 1991) rather than nonconscious goal activation as intended, we also included a single item designed to assess self-perceived achievement orientation. This item was completed after the ease of recall rating and was worded, "To

what extent do you view yourself as someone who tries hard to achieve?" Participants completed this item on a 7-point scale ranging from 0 (*not at all*) to 6 (*a lot*).

Results

Manipulation check. As expected, the manipulation affected the subjective ease of the recall task. Participants who recalled 4 examples found the task significantly easier ($M = 0.91$, $SD = 1.35$) than those who recalled 10 ($M = -0.13$, $SD = 1.62$), $t(62) = 2.76$, $p = .01$, $d = 0.70$.

Goal striving. As predicted, the ease manipulation had the predicted effect on the amount of time participants spent attempting to raise their score during the second anagram task, $t(62) = 2.08$, $p = .04$, $d = 0.53$. Participants who had recalled only 4 examples of past achievement striving exerted more effort (as indicated by time working on task) attempting to raise their score ($M = 75.2$ s, $SD = 57.7$ s) than those who had recalled 10 examples ($M = 47.3$ s, $SD = 49.3$ s). Because participants in the two experimental conditions necessarily spent very different amounts of time recalling examples of achievement striving prior to the dependent measure, we also ran an ANCOVA analysis that controlled for the amount of time spent on the recall task ($MSE = 2,920.41$). The effect of our manipulation remained marginally significant when this variable was used as a covariate, $F(1, 61) = 3.36$, $p = .07$, $\eta_p^2 = .05$.

Mood. In addition, we examined the effect of our manipulation on participants' mood. It was not affected, $t < 1$. We then ran an ANCOVA analysis that examined the effect of the ease manipulation on goal striving while controlling for participants' affect ($MSE = 2,926.71$). Mood was not a significant predictor of the time spent on the second anagram task, $F < 1$, and the effect of the manipulation remained significant, $F(1, 61) = 4.27$, $p = .04$, $\eta_p^2 = .06$.

Achievement orientation. In addition, we examined the effect of our manipulation on participants' self-perceived achievement orientation. It was not significantly affected, $t(62) = 1.25$, $p = .21$, $d = 0.32$, although the means were in the direction expected by prior ease of retrieval studies. We then ran an ANCOVA analysis that examined the effect of the ease manipulation on goal striving while controlling for participants' self-perceived achievement orientation ($MSE = 2,774.26$). Self-perceptions were a marginally significant predictor of goal striving, $F(1, 61) = 3.40$, $p = .07$, $\eta_p^2 = .05$, and the ease manipulation still produced a significant effect, $F(1, 61) = 5.66$, $p = .02$, $\eta_p^2 = .08$.³

Discussion

We expected and found the achievement goal primed in this study to have a larger effect on motivated behavior when people associated the primes with the experience of ease (vs. difficulty). By using a variable known to influence confidence (Tormala et al., 2002), we obtained further evidence for the goal-validation hypothesis. This study addresses a

number of shortcomings from Experiment 1. First, because our dependent measure (postfailure effort expenditure) is uniquely associated with motivational striving, we were able to demonstrate that validity cues do affect goal pursuit. Second, the use of ease as our validity cue makes our results less susceptible to the alternative explanations raised earlier (i.e., that power is associated with approach). Third, because the results are independent from changes in mood, we also rule out the alternative that participants in the ease condition persisted simply because they felt better. This finding is important because it suggests that our findings are independent from other goal priming research on the moderating role of affective states (i.e., goal value; see, for example, Custers & Aarts, 2005; Huntsinger, Sinclair, Dunn, & Clore, 2010). Finally, because the results are independent of conscious shifts in self-perceptions, we add additional credence to the claim that we examined *nonconscious* goal pursuit.

Critically, although ease of recall has been shown to produce confidence, we still must infer that confidence and doubt produced the observed results. To address this limitation, Experiment 3 more directly manipulated this variable to demonstrate its critical role in moderating goal priming effects.

Experiment 3

Our first two studies offer initial support for the prediction that primes' effects on subsequent motivated behavior can be moderated by validation processes. Although the manipulations used in these studies are established determinants of confidence and have been used extensively in other research, it remains possible that they may have manipulated constructs other than confidence. Consequently, in Experiment 3, we sought to more *directly* manipulate confidence. Confidence is defined as the extent to which mental content is perceived as valid (Gross, Holtz, & Miller, 1995) and has been identified as the primary mediator of other validation effects, including the validating effects of power, ease, and other variables (e.g., see Briñol, Petty, & Barden, 2007; Briñol, Petty, Valle, et al., 2007; Petty et al., 2002; Tormala et al., 2002).

In this experiment, we primed participants with either a self-improvement or money-saving goal immediately prior to having them reflect on times when they felt confidence or doubt and examined the impact of the primes on people's intentions to donate to charity. We expected those who articulated past instances of confidence to become more certain of the validity of the primed goal compared with those who reflected on instances of doubt and thus become more likely to act on the goal. Furthermore, this confidence in the validity of the accessible goal was predicted to lead to greater goal-congruent behavior among participants made to feel confident after priming. The same primes should have reduced impact on those participants who are subsequently made to feel doubtful.

Method

Participants were primed with self-improvement or money-saving goals and then induced to feel confident or doubtful. Participants then read about three ostensible charities and indicated their interest in donating to each. Finally, participants were probed for suspicion and debriefed.

Participants. Participants were 93 undergraduates at Ohio State University who received partial fulfillment of an introductory psychology course requirement. The experiment was a 2 (Goal Prime: self-improvement vs. saving money) \times 2 (Confidence: high vs. low) between-subjects design, with random assignment to condition.

Materials

Goal prime manipulation. Parallel to Experiment 1, participants completed an ostensible pretest measure for the development of a Life Events Inventory. This task served to manipulate both independent variables. The goal prime instructions were as follows:

Different people choose to pursue different activities in order to improve themselves (save money). In this survey, we are interested to learn about the type of activities that you usually pursue in order to become a better person (save your money). Please list everything that you do in order to become a better person (save money).

Participants were provided with up to 150 s to provide their responses. The self-improvement and saving money goals were selected because both are socially sanctioned motivations that can be viewed positively, but have opposite implications for our dependent variable (DV), charity donation intentions. Because donating to charity can fulfill a goal to improve the self and be a better person, this should increase donation intentions. In contrast, a goal of saving one's money should be negatively related to giving money to charity.

Confidence manipulation. After the goal prime induction, participants completed the life-events task a second time, but were instructed to write about a single instance when they had felt either confident or doubtful (from Petty et al., 2002). The instructions for this task were as follows:

For this recall task we are interested in the type of events and the experiences people associate with doubt (confidence). To help us address this question we would like you to write about a time you felt doubt (confident). Please write down, as specifically as you can, what that event was like that made you feel doubt (confident) and how you felt during that event.

Charity donation intentions. Following the above inductions, participants viewed three brief print advertisements for



Figure 2. Intentions to donate to charities as a function of goal prime and confidence conditions

Note: Error bars represent 95% confidence interval. Values represent scale points (x). To calculate dollar value of each scale point (y), use the following formula: $y = 2^{(x-4)}$.

charities that were created to “help children pursue their dreams.” For each charity, participants were asked, “If you had an opportunity to donate some money to this charity at the end of today’s experiment, how much money would you donate based on the scale below?” Participants responded on an 11-point scale labeled with monetary values ranging from “US\$0” to “more than US\$64.” The second scale point was US\$0.25, and from there, each scale point doubled in value (to translate scale points to monetary values, the formula $y = 2^{(x-4)}$ was used), providing greater sensitivity at the low end of the distribution, congruent with the low income that is common in a college student sample. Responses for each of the three charities were averaged ($M = 6.85$, corresponding to US\$7.21, $\alpha = .61$). Higher values on this index represent greater self-improvement (and lower money-saving) motivation.

Results

Participants’ responses for donating to the charities were submitted to a Goal Prime (self-improvement vs. saving money) \times Confidence (average scale responses as well as the associated high vs. low) ANOVA. For ease of interpretation, we report monetary totals. The only significant effect was the predicted Prime \times Confidence interaction, $F(1, 89) = 6.20$, $p = .02$, $\eta_p^2 = .064$ (see Figure 2). Decomposition of this interaction indicated that there was a main effect of the prime when people were made to feel confident, $F(1, 89) = 4.78$, $p = .03$, $\eta_p^2 = .050$, such that people in the self-improvement condition, $M = 7.70$ (US\$13.00), $SD = 1.88$, $n = 23$, were willing to donate significantly more money than people in the saving money condition, $M = 6.40$ (US\$5.28), $SD = 2.17$, $n = 21$. In the doubt condition, no significant effect of prime emerged, $F(1, 89) = 1.72$, $p = .19$, $\eta_p^2 = .017$. As in Experiment 1, there was hint of a reversal, as the saving money-primed participants tended to donate more

money ($M = 7.00$ [US\$8.00] $SD = 1.94$, $n = 26$) than self-improvement-primed participants ($M = 6.26$ [US\$4.79], $SD = 1.88$, $n = 23$).

Discussion

In line with the goal-validation perspective, participants made to feel confident behaved in a manner congruent with the primed goals while those made to feel doubtful did not. Critically, we obtained this effect by directly manipulating confidence. By targeting this key variable, we provide the strongest evidence to date that the validity associated with a prime can moderate the extent to which it causes goal adoption and pursuit.

General Discussion

Several recent theories of automatic behavior suggest that primed goal-related concepts are more likely to result in motivated behavior when perceived as valid (Loersch & Payne, 2011; Wheeler & DeMarree, 2009; Wheeler et al., 2007). Here, we presented this general goal-validation perspective and provided the first direct evidence for these theoretical arguments. Across three experiments, we demonstrated that manipulations affecting the validity of primed mental contents determined the extent of goal pursuit that followed priming. Although past theory and research in this area has emphasized the relative inevitability of goal priming (Bargh, 2006), we only found prime-congruent motivation under conditions that fostered thought confidence (vs. doubt). Completing manipulations known to produce doubt after priming eliminated these normal priming effects (and even tended to reverse them; see Experiments 1 and 3). This same moderation occurred whether confidence (vs. doubt) was manipulated directly or through a sense of power or the ease of goal generation, and was evident using a range of different goals and priming methods. The consistency of the findings across these divergent manipulations suggests that *any* variable that influences confidence or doubt (e.g., posture, self-affirmation, emotions; for a review, see Briñol & Petty, 2009) has the potential to affect automatic goal pursuit under the right conditions. Thus, the current results add validity perceptions to the rather limited subset of previously identified variables that moderate goal priming effects. These effects are uniquely predicted by the goal-validation perspective, which focuses on confidence, rather than other moderators of goal pursuit such as the value (i.e., valence) of the activated goal (e.g., Aarts, 2007; Veltkamp, Aarts, & Custers, 2009; see also Dijksterhuis et al., 2007).

Moderators of Goal Priming

As noted earlier, relatively few variables have been shown to moderate the impact of goal priming on behavior. To our knowledge, this list previously included only reactance motives

(Chartrand et al., 2007) and the reward value of the activated goal (e.g., Custers & Aarts, 2005; Huntsinger et al., 2010). On the surface, the current research might appear to overlap with research on the value of goals. Notably, past research manipulated the pairing of goal-relevant constructs with valenced stimuli (e.g., Aarts et al., 2007; Custers & Aarts, 2005) or accompanying goal activation with general affective experiences (e.g., Huntsinger et al., 2010). Because confidence is generally perceived to be positive, it is possible that our studies manipulated both value and confidence. Importantly, a number of past investigations using validity manipulations similar to our own have found that they had a significant impact on the confidence of consciously generated thoughts while leaving the valence of those thoughts unaffected (Briñol, Petty, Valle, et al., 2007; Petty et al., 2002; Tormala et al., 2002; Weick & Guinote, 2008). This, in conjunction with the null effect on mood in Experiment 2, increases our confidence in our theoretical perspective.

Conversely, it is also possible that past studies attempting to manipulate value have also manipulated confidence. This seems less likely in studies that have manipulated evaluation of a goal in a very specific manner (i.e., pairing valenced stimuli with goal-relevant stimuli; Aarts et al., 2007; Custers & Aarts, 2005) or that *measured* the evaluation of the goal independent of goal activation (Custers & Aarts, 2007). However, in studies that manipulated general affective states (e.g., Fishbach & Labroo, 2007; Huntsinger et al., 2010), such alternatives are possible, particularly because manipulations of affective states have been shown to influence confidence (e.g., Briñol, Petty, & Barden, 2007; Tiedens & Linton, 2001).

In addition, the hints of contrast under conditions that produce doubt (Studies 1 and 3) also lend support to the goal-validation perspective. Past studies examining affective variables have found that pairing goals with negative valence will only eliminate goal pursuit (Aarts et al., 2007; Huntsinger et al., 2010), not cause people to pursue antithetical motives. However, the validation perspective predicts that there are conditions when contrast from activated goals might occur (Briñol et al., 2010; Loersch & Payne, 2011). Most notably, if doubt in an accessible thought is so great that a person desires to do the opposite of this thought or if a person's behavioral options are perceived to be dichotomous instead of continuous (e.g., approach versus avoid), contrast can emerge. To examine contrast in the current studies, we conducted a meta-analysis of Experiments 1 and 3 (Experiment 2 did not manipulate goal activation independent of validity). We first standardized scores on the DVs prior to combining the files. We then submitted the DVs to a Goal Prime \times Validity Condition \times Study ANOVA ($MSE = 167.67$). The only significant effect to emerge was the Goal Prime \times Validity Condition interaction, $F(1, 177) = 13.91$, $p < .001$, $\eta_p^2 = .072$. Simple effects tests revealed significant assimilation under confidence-fostering conditions, $F(1, 177) = 9.47$, $p = .002$, $\eta_p^2 = .048$, and significant contrast under doubt-fostering

conditions, $F(1, 177) = 4.78, p = .03, \eta_p^2 = .025$. This finding, combined with the research discussed above, suggests that goal validity, in addition to goal value, can be a critical consideration for predicting the final goal-directed behavior that emerges after exposure to a prime.

Implications for Priming Mechanisms

Although the present studies focused on goals, the theoretical perspectives from which our predictions were derived apply to priming effects more broadly (Loersch & Payne, 2011; Wheeler & DeMarree, 2009). These models posit that an activated construct can guide a range of different judgments and behaviors (see also Bargh, 2006), but these models suggest that the precise effect of the prime is determined by a range of contextual features, such as which targets (e.g., oneself, another person) are most salient (e.g., DeMarree & Loersch, 2009; Kay, Wheeler, & Smeesters, 2008). Based on these models, primed concepts act as information that can help a person to figure out an appropriate judgment or response in a given situation. In line with these models, we expect that the validity of activated mental contents should moderate the impact of a prime on judgment, behavior, and motivation, no matter whether the effect is mediated by the goals one pursues or some other mediator, such as perceptions of oneself, the situation, or another person.² Thus, although the current article focuses on goal pursuit, we believe that validity processes will moderate the impact of any type of prime across a wide range of judgments and behaviors (Briñol & Petty, 2009; DeMarree, Briñol, & Petty, 2012; Loersch & Payne, 2011; Wichman et al., 2010).

In addition, it is worth noting that our validity perspective could account for some of the variability in effect sizes across priming studies. Although we manipulated perceived validity in our studies, mental contents might be stored with some “default” degree of validity (e.g., Petty, Briñol, & DeMarree, 2007). If mental contents are activated that a person perceives to be low in validity (e.g., negative stereotypes of African Americans among egalitarian individuals; Maddux, Barden, Brewer, & Petty, 2005), typical priming effects might not emerge. In most cases, however, the default level of validity is likely to be high because mental contents are generally believed to be valid unless sufficient evidence invalidates them (see, for example, Gilbert, 1991; Petty, Briñol, & DeMarree, 2007). This is one possible reason why past research has not needed to take validation processes into consideration when attempting to demonstrate the efficacy of goal priming (e.g., Bargh et al., 2001; Chartrand & Bargh, 1996) and suggests that the current findings were likely driven by the low confidence conditions *decreasing* reliance on primed thoughts.

Validation Effects

The current findings also extend prior research on thought-validation processes. Research on these processes has focused

primarily on relatively intentional responses to persuasive messages occurring in high thought situations (Briñol & Petty, 2009; Petty et al., 2002). The current findings are consistent with the more general notion that validation processes occur commonly in social and nonsocial judgments. Interestingly, whereas past research demonstrates that validation processes occur to the greatest extent under high thinking conditions (Briñol, Petty, & Barden, 2007; Petty et al., 2002), the present findings suggest that an extension of the previously identified boundary conditions of validation processes might be warranted. In past research, the thoughts that were validated or invalidated were in conscious awareness and were clearly related to the outcome (e.g., thoughts in response to an advertisement are clearly related to a person’s evaluation of the advertised product). However, in the present studies (and particularly, Experiment 1), the origin of participant’s prime-relevant thoughts and the connection of the thought activation to the outcome variable was less obvious (indeed, funnel-debriefing procedures revealed that our participants did not see a connection between the priming tasks and DVs). Future research should continue to extend research on validation processes to identify the critical boundary conditions of their operation.

In addition to highlighting the role of validity in automatic goal pursuit, we should note that sources of validation can play multiple roles in guiding judgment and behavior. Parallel to Briñol and Petty’s (2009) analysis of persuasion, it is likely that the current article’s validation mechanism is most likely to operate when the validating variable follows (rather than precedes) goal activation. In other conditions, different effects are likely. For example, when the confidence of the validating information (power, ease) precedes the activation of goals, it could bias the generation of goals and goal accessibility, consistent with emerging research on power (e.g., Guinote, 2007). Future research on self-regulation can benefit from considering the timing of the key manipulations as placement of the independent variable in the sequence of goal-related stimuli can have an impact on the mechanism by which it operates.

Caveats and Future Directions

As we have noted, one of the primary contributions of the current research is that it greatly expands the list of known goal priming moderators. Across studies, we used a number of very different validity cues, demonstrating how they similarly influenced the effect of a goal priming manipulation on behavior. Because any single validity cue may play a number of roles, one strength of the current approach is its ability to account for the similar effects of three apparently disparate manipulations (related by their common link to confidence). Together, these findings add any variable that affects validity perceptions (e.g., self-affirmation, a person’s posture; for a review, see Briñol & Petty, 2009) to the other well-established moderating influences on goal pur-

suit such as positive and negative affect (Aarts et al., 2007; Custers & Aarts, 2005, 2007; Fishbach & Labroo, 2007; Huntsinger et al., 2010) and high dispositional reactivity (Chartrand et al., 2007).

Although the current findings established the moderating role of validity inductions in the translation of a prime into motivated behavior, the precise locus of this effect remains unknown. Past research suggests that there are two possible routes by which this influence could occur. On one hand, one might suspect that validation processes alter the probability that the information made accessible by the primes is used to infer a motivational state (Loersch & Payne, 2011). In this case, the validity cue affects whether prime-related accessible content is perceived as a valid or invalid source of information, altering the probability of goal adoption itself. On the other hand, an alternative possibility is that the primes do activate a goal that is adopted by participants in all conditions and that validation processes then affect the likelihood that this adopted goal is perceived as a valid guide to action (compare Bargh, 2006). Here, the validity cue affects the process of goal pursuit, but not goal adoption. This differentiation essentially parallels the distinction attitudes researchers make between thought confidence (e.g., Briñol & Petty, 2009) and attitude confidence (e.g., Tormala & Rucker, 2007). In each case, increased confidence is associated with the increased use of the associated mental content (e.g., in thoughts predicting attitudes or in attitudes predicting behavior; see Petty, Briñol, Tormala, & Wegener, 2007). As in the work on attitudes, it is likely that both processes can occur (see also Wheeler & DeMarree, 2009).

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Notes

1. Measures with a low correlation can be combined when they represent a formative rather than reflective model (Jarvis, MacKenzie, & Podsakoff, 2003). In this case, each game represents a separate chance to be cooperative and the goal prime could affect each person on one game or the other or both. Separate analyses on the dictator and trust games revealed parallel effects (interaction $F_s = 2.88$ and 4.41 , $p_s < .10$ and $< .05$, respectively). Further, a Prime \times Power \times Game Type mixed ANOVA revealed the same effects as the main analysis, which were not moderated by game type, $F(1, 88) < 1$, ns .
2. It is also possible that goals can be activated as a result of a change in perceptions of the self, the situation, or people in the social situation (see Wheeler & DeMarree, 2009).

3. We also ran an ANCOVA analysis in which both mood and rated achievement orientation were included as covariates ($MSE = 2,802.26$). The effect of condition remained significant, $F(1, 60) = 5.79$, $p = .02$, $\eta_p^2 = .09$.

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