




Prime and Performance: Can a CEO Motivate Employees Without Their Awareness?

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Abstract

Work motivation research is at a crossroads with the discovery of the causal effects of primed subconscious goals in addition to those of consciously set goals on performance. Although social psychologists continue to demonstrate positive effects of primed goals on a multitude of dependent variables, priming research has been criticized for its lack of generalizability beyond tightly controlled laboratory experiments. Addressing this skepticism, a field experiment was conducted in a for-profit organization, where the CEO used goal priming to motivate job performance. A performance goal for achievement was primed with achievement-related words embedded in an email from the CEO to employees. The goal priming by the CEO necessitated little to no costs yet it increased objectively measured performance effectiveness by 15% and efficiency by 35% over a 5-day workweek. This field experiment illustrates a new alternative for increasing employee performance. In a second experiment, we conducted a conceptual replication of the field experiment in the laboratory with a larger sample size, and we extended theory by testing a measure of motivation level as a mediator of the primed goal-performance effect. The results affirmed the hypothesized motivational influence. These two experiments increase understanding of subconscious motivation processes.

Keywords Primed goals · Conscious goals · Job performance · Subconscious motivation

In his automaticity model, developed inductively, Bargh (1990, 1994) stated that a goal can be created in the subconscious by chronic pursuit of a similar conscious goal. Subsequently, an environmental cue can activate the pursuit of a former goal without an individual's intention or awareness. The cue in the environment that activates the mental representation of the goal is called a prime (Bargh and Gollwitzer 1994). A critical difference between pursuits guided by a primed versus a consciously set goal is that "unlike unconscious goal strivers, conscious goal strivers know why they do what they do" (e.g., Bargh et al. 2010, p. 292). Approximately, 200 laboratory experiments in social and cognitive psychology have supported the automaticity model of goal priming (Bargh 2007, 2017; Dijksterhuis et al. 2007; Molden 2014; Weingarten et al. 2016).

At the same time, behavioral priming is not without criticism. Several streams of priming research have been critiqued as atheoretical (Dijksterhuis 2014; Locke 2015). A case in point is three registered replication reports that neglected theory guidance in designing the experiments and in explicating the mixed findings (Simons et al. 2018). Other lines of priming (e.g., money priming) are both devoid of theory and difficult to replicate (Caruso et al. 2017; Rohrer et al. 2015; Vadillo et al. 2016). For these reasons, Kahneman (2012, p. 1) called priming research "the poster child for doubts in social psychology."

In contrast, this has not been the case with programmatic research on primed goals in I-O psychology (Latham et al. 2010). This research program has relied from its inception (see Stajkovic and Locke 2004) on goal setting theory (GST) (Latham and Locke 2018) to guide hypothesis development, research design, and empirical testing. Correspondingly, the effects of primed goals on organizational behavior outcomes, in virtually every experiment, have been consistent with those postulated in GST. This apparent convergence in effects has considerable functional value for organizations because using primed goals to enhance employee performance necessitates little cognitive or monetary costs.

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Even so, only four goal priming experiments have been conducted in the field. Of these, three were exact replications (Latham and Piccolo 2012; Shantz and Latham 2009, 2011) and one was a conceptual replication (Latham and Piccolo 2012). Although this research demonstrated a causal relationship between primed goals and job performance, the evidence of a primed goal effect on employee performance is, ostensibly, limited. This is because these four field experiments were restricted to university call centers, the same priming manipulation (a photograph), and the same measure of performance (fundraising). Hence, the generalizability of primed goal-performance findings to industry requires further substantiation.

In the present research, we examined goal priming effects on employee job performance in a for-profit business organization, and we tested level of motivation as a mediating mechanism of this effect. We proceed as follows. First, we briefly review GST to provide the theoretical background for the hypotheses tested in the present two experiments. Second, prior laboratory experiments on primed goals in I-O psychology are reviewed, followed by a more detailed discussion of the four field experiments on primed goals that yielded results of both theoretical and practical significance. Third, we report the results from two experiments that we conducted. The first examined whether a company's CEO can increase employee job performance by priming a goal for achievement via an email sent to employees on a Monday morning. This experiment was conducted during regular business hours and an employee's performance was assessed with two objective measures that the company uses on an on-going basis. Employees reported no awareness of the priming effect on their performance. The second experiment is a conceptual replication of this field experiment in a laboratory setting. It extends goal priming theory by examining level of motivation as a mediator of the primed goal-performance effect. Finally, implications for theory and research are discussed. Suggestions for optimizing employee performance are offered and ethical concerns about applying priming at work are considered.

Theoretical Background, Review of the Goal Priming Literature on Organizational Behavior, and Hypotheses

Goal Setting Theory

The core tenets of GST have been supported empirically over the past five decades (Locke and Latham 2013). First, a specific, difficult, consciously set goal leads to better performance than vaguely expressed goals such as "do your best." Second, specific, difficult goals lead to better performance than easier goals. Third, variables such as knowledge of

results (feedback) increase subsequent performance only if they lead to setting a specific, difficult goal. These assertions, however, are qualified by four boundary conditions; namely, ability (i.e., knowledge/skill), goal commitment, feedback on progress toward goal attainment, and the availability of situational resources needed for goal attainment. Mediators of the conscious goal-performance relationship include choice, effort, persistence, and a strategy for goal attainment.

People can pursue various goals, and GST addresses five types: performance, learning, behavioral, attitudinal, and primed (Latham and Seijts 2016). Performance goals are set for a level of desired proficiency (e.g., a cost-related measure). They should only be set, however, when employees have the ability/skill to attain them. On novel tasks that are complex for employees, i.e., when they lack the ability to perform them, a learning goal should be set. A learning goal shifts attention from attaining a performance target to the discovery of processes, procedures, and strategies for task mastery. Not all goals can be expressed as a desired performance outcome nor do they require learning (e.g., being ethical). In this instance, behavioral goals should be set. A fourth type of goal is attitudinal, such as stay positive, do not create waves. This type of goal has little or no effect on behavior. These four types of goals are consciously pursued.

The fifth type of goal addressed in GST (Locke and Latham 2013) is one that is primed in the subconscious. A primed goal influences behavior in the absence of conscious intention or guidance. Given the relatively lesser understanding in the literature of how primed goals influence performance (see Bargh 2005; Custers and Aarts 2010), we discuss next how primed goals are formed in the subconscious and how they are activated, or primed, by situational cues.

Formation of Subconscious Goals and Their Priming

Goals represent desired end-states (Locke and Latham 1990, 2004). They are encoded in memory as part of knowledge structures (Bargh and Gollwitzer 1994; Kruglanski et al. 2002). Knowledge structures represent interrelated concepts (Abelson 1979; Shah and Kruglanski 2003) that are organized according to their functional associations, (e.g., practice—perfection, attire—impression, studying—knowledge). Thus, goals (e.g., promotion) are linked in memory with behaviors that facilitate them (e.g., being competitive), as well as with a symbolic representation of an individual's environment (e.g., the boardroom) which epitomizes goal pursuit over time (Bargh 1984, 1990). Consequently, goals can be primed when these environmental cues are encountered (e.g., a meeting in a boardroom). Once primed, the goal leads to automatic action.

The priming of a goal can occur subliminally or supraliminally. Subliminal priming involves presenting a stimulus below the threshold of visibility. An example would be flashing a prime on a computer screen (e.g., a photograph

of a boardroom) to participants below their field of focal vision. Hence, they are unable to report any awareness of it (Dijksterhuis et al. 2005). Supraliminal priming involves presenting a stimulus within the threshold of visibility (e.g., words in sentences), but in such a manner that participants are unaware of the connection between the primed construct and their subsequent behavior (e.g., primed words for achievement unobtrusively embedded in sentences that contain many other words). Bargh and Morsella (2008) critiqued subliminal priming for its lack of ecological validity. Hence, most I-O goal priming experiments have used supraliminal goal priming.

I-O Psychology Laboratory Experiments on Primed Goals

Following Locke and Latham's (2004) recommendation to I-O psychologists to examine subconscious motivation (see also Stajkovic and Locke 2004), Stajkovic et al. (2006) conducted the first laboratory experiment to examine the effect of both primed and consciously set achievement goals on performance. They used the scrambled sentence task (see Bargh and Chartrand 2000) to prime a goal by embedding achievement-related words into sentences. The two goals had an additive effect on performance. Building upon this finding, Latham et al. (2010) proposed a program of research on primed goals in I-O psychology based on GST. Accordingly, the experiments reviewed next examined conceptual aspects of GST as they relate to primed goals.

Chen and Latham (2014) demonstrated the importance of differentiating between primed learning and primed performance goals. To test their hypothesis, the authors replicated a prior experiment (Winters and Latham 1996) that had demonstrated differential effects of consciously set performance versus learning goals on performance. However, instead of setting goals consciously, as had been done in the prior study, the authors primed these two types of goals. The learning goal was primed with a photograph of Rodin's *The Thinker*; and the performance goal was primed with a photograph of an athlete winning a race. The original pattern of results was replicated; only the primed learning goal enhanced performance when acquisition of knowledge was required for successful completion of the task. These findings showed that primed learning and performance goals influence performance similar to consciously set learning and performance goals.

Extending this line of inquiry, Ganegoda et al. (2016) conducted three experiments to compare the effect of conscious and primed fairness goals on negotiation behavior. They also compared the impact of assigned performance goals and behavioral goals for fairness. The authors found that a primed fairness goal produced identical effects to an assigned fairness goal, and that justice saliency mediated the effect of the primed fairness goal, as well as the effect of the assigned

behavioral goal for fairness. These results further substantiate similarities between the operation of primed goals and conceptual predicates of GST.

Given the similarities between outcome effects of primed and consciously set goals, research next turned to testing mechanisms underlying primed goal effects. Specifically, choice and effort, two mediators in GST, were examined in two goal priming experiments (Latham et al. 2017). The prime in the first experiment was a photograph of a person lifting 20, 200, or 400 lbs. Participants who were primed with the difficult goal (i.e., a photograph of an individual lifting 400 lbs.) exerted more physical effort when pressing a digital weight scale than those who were primed with a moderate or an easy goal. In the second experiment, those primed with a difficult goal consciously set a more difficult goal for a subsequent brainstorming task than those who were primed with an easier goal, and the pattern of results indicated that priming difficult goals also led to higher performance. Conscientiousness moderated the primed goal effect and a self-set goal partially mediated it. Taken together, findings from this research, consistent with GST, suggest that individuals who are primed with difficult goals set higher goals and have higher performance.

In summary, these experiments suggest a causal relationship between a primed goal and subsequent task performance. Although application is important for organizational research (Eden 2017), only four I-O experiments on primed goals have been conducted in the field.

I-O Psychology Field Experiments on Primed Goals

Shantz and Latham (2009), consistent with the laboratory findings of Stajkovic et al. (2006), obtained two main effects, one for a conscious goal and the other for a primed goal. Employees in a university call center who were primed with a photograph of an athlete winning a race raised significantly more money from donors during their 3-h shift than those who were not primed. As noted earlier, this finding was subsequently supported in two exact replications (Latham and Piccolo 2012; Shantz and Latham 2011). A conceptual replication that used a context-specific prime (i.e., a photograph of people performing their job) also increased the amount of money raised from donors relative to the amount of money raised in the two other conditions.

Hypotheses: Conceptual Replication and Theory Extension

The findings of Stajkovic et al. (2006), Ganegoda et al. (2016), and a recent meta-analysis (Weingarten et al. 2016) revealed a significant effect of primed goals on sundry performance-related outcomes. Each of these experiments used words as goal primes. Comparatively, the I-O field experiments have all used photographs to prime a goal.

Although words have been used effectively to prime goals in the laboratory, these words were administered using contrived tasks (e.g., sentence unscrambling, word-search puzzles). Therefore, it has yet to be determined whether words that appear as a part of business communication can prime a performance goal.

Hypothesis 1: Written communication by a CEO that contains embedded achievement-related words increases employee performance relative to an achievement neutral communication.

To test this hypothesis, a field experiment was conducted in a customer service organization. The CEO of this organization sends weekly motivational emails to employees on Monday mornings. His emails typically include comments on individual and firm accomplishments, congratulatory notes to employees, and courageous stories. Given the precedent of sending these weekly motivational emails, we were able to unobtrusively manipulate goal priming by asking the CEO to include words in his email to employees that might prime an achievement goal. This experimental approach allowed us to capture the effects of a primed goal on job performance within the existing social dynamics of the organization. Moreover, we assessed job performance both one week preceding and one week following the priming of the achievement goal. This allowed us to test the primed goal effect over time. Thus, a contribution of this field experiment to goal priming literature is that it demonstrates the utility of goal priming in a for-profit organization using naturally occurring business communication. If there was a causal effect of the prime on performance, then priming would be another method that senior management can use to increase employee performance.

The second experiment had two purposes. First, because of the small sample size in our field experiment, we conducted a conceptual replication in a laboratory where obtaining a large sample size was not an issue. The main difference between these two experiments is that participants in the laboratory experiment knew they were participating in an experiment, the priming of a goal for achievement was administered by a researcher rather than a CEO, and the task in the laboratory experiment was contrived rather than a measure of actual job performance.

Second, we extended goal priming theory by examining the level of motivation associated with primed goals. Like conscious goals, primed goals are conceptualized to have motivational properties (Chartrand and Bargh 2002; Stajkovic et al. 2006). Latham et al. (2017) found that primed goals increase effort, but effort was not tested as a mediator. Further, those authors found that goal choice partially mediated the primed goal-performance effect. Latham and Piccolo (2012) found that implicit need for achievement was heightened after a goal was primed, but this implicit need was not

tested as a mediator of the primed goal-performance effect. Building on this research, as postulated in GST for conscious goals, we hypothesized the following:

Hypothesis 2: A primed achievement goal (a) increases motivation level associated with a performance task compared to no primed goal, and (b) level of motivation mediates the relationship between the primed goal and performance.

Taken together, we coupled both original and replication research with theory extension to offer new contributions to the goal priming literature in I-O psychology.

Experiment 1

Method

Participants, Setting, and Procedure

The participants were 46 employees (37.5% female) of a customer service organization located in the Southwestern United States. The employees' average age was 30.15 years ($SD = 7.80$), and their average tenure with the company was 0.93 years ($SD = 0.8$). Their job was to answer phone calls to address questions and offer solutions to customer inquiries and complaints about products sold at major retail stores in the United States. All employees worked 8-hour days. The company's Human Resources (HR) department provided an email list that was used to randomly assign employees to an experimental ($n = 23$) or control group ($n = 23$). During the experimental week, the CEO embedded achievement-related words (12 out of 100 words) within an email sent to employees in the experimental group (see Table 1). Employees in the control group also received an email from the CEO (100 words) that did not contain achievement-related words (see Table 2).¹ This manipulation of the independent variable was relatively unobtrusive because of the CEO's history of sending weekly emails to employees on Monday mornings.

The two emails were sent on Monday morning of the experimental week within 30 min of the start of the work day. Both emails contained a "read receipt requested" to allow us to track if an employee opened the email. All employees opened

¹ To ensure no other differences were infused between the two emails, we conducted Linguistic Inquiry and Word Count analysis (Pennebaker et al. 2015) to assess scores on achievement and several other dimensions between the prime and control group emails. Achievement scores between the conditions differed as hypothesized (prime = 12.12, control = 3.12), but positive emotion (prime = 9.09, control = 7.29), power (prime = 3.03, control = 3.12), reward (prime = 6.06, control, 4.17), future focus (prime = 1.01, control = 0), and tone (prime = 99, control = 99) did not differ between conditions. This suggests that we only primed an achievement goal.

Table 1 Primed achievement goal condition email for experiment 1

Prime words used:

1. Prevail
2. Accomplish
3. Compete
4. Strive
5. Thrive
6. Triumphed
7. Achieve
8. Mastered
9. Win
10. Success
11. Gain
12. Attain

Total number of words, and the word ratios:

These 12 prime words were embedded in the text (delivered as email) containing 100 words total to match the word total used by Stajkovic et al. (2006) in 20 scrambled sentences (20 sentences \times 5 words = 100 words). The actual text, sent as an email to employees, is shown below. We highlight the prime words here for the clarity of what we did, but they were not highlighted in the actual email from the CEO sent to employees.

Actual email sent from the CEO of this company to employees in this condition:

All,

I want to take a minute to celebrate our accomplishments at [one-word, name of the company]. As we move past the holiday season, let us remember our successes. I see you master what you do, strive to overcome obstacles, and prevail. With such mindset, sky is the limit to what we can achieve. As you live our motto—have fun, make money, grow your career—please know that your triumphs are appreciated! Our attainments are impressive. How we continue to thrive is in our hands. I hope we continue to compete each day, gain customers, and win together. Thank you for your service!

Thank you for your commitment to [one-word, name of the company], CEO name

the email within 1 hour of its release. Although the “read receipt” does not guarantee employees actually read each word of the email, it nonetheless provides a reasonable manipulation check to ensure employees opened it.

Performance Measures

The company’s automated tracking system recorded each employee’s job performance. In this organization, job

Table 2 Control condition email for experiment 1

All,

I want to take just a few minutes out of your day to thank you for all that you do for [one-word, name of the company]. As we move past the holiday season, I want to remind you that we need to do our best and take advantage of all that we have built over the last several months. When you come to work each day, you need to remember what is important to our business. As you live our company motto—have fun, make money, grow your career—know that you are appreciated. Thank you for your service to [one word, name of the company].

Thank you for your commitment to [one-word, name of the company], CEO Name

performance is assessed with two key measures. Average Call Handling Time (ACHT) is the time (in seconds) that it takes an employee to handle a customer call from start to finish (i.e., efficiency measure). ACHT, though, does not indicate if the issue the customer called about was resolved. For this reason, a second measure of employee performance is Average Call Resolution Time (ACRT). ACRT represents the percent of customer calls handled by an employee in which the employee resolved the customer’s issue on the first call (i.e., effectiveness measure). If calls are not resolved on the initial call, the customer’s complaint may be escalated to a manager, the customer may be asked to call again, or the employee may have to call the customer back at a later time.

We collected data for the week preceding the experimental week, the experimental week, and the following week. According to the company managers, average weekly performance is a more reliable performance estimate than is daily performance due to uncontrollable exogenous factors. For example, more customers tend to call about product returns on Mondays because they purchased products over the preceding weekend.

Awareness Check

After the post-experimental week ended, the HR department emailed employees in the experimental group to probe for awareness of achievement-related words in the CEO’s email. Sample questions included the following: “Was there anything different about the CEO’s recent email message? Yes or No. If yes, what was different?” “The CEO’s emails are really needed: strongly disagree, disagree, neutral, agree, agree strongly,” and, “As of late, the CEO’s approach has been: the same, better, or worse?” Responses were received from 71% of the employees. A few employees responded to HR with comments such as “he is sentimental,” “he tries,” “he is just getting old.” None, however, indicated an awareness of the achievement words, and none reported a change in the substance of the CEO’s email compared with his previous motivational emails. This awareness check is consistent with previous goal priming studies that have probed employees in field settings (e.g., Shantz and Latham 2009).

Results

Descriptive statistics and correlations among all performance measures by experimental condition are reported in Tables 3 and 4. Complementary analyses provided consistent results.

Controlling for pre-week ACHT performance, analysis of covariance (ANCOVA) revealed that a primed goal significantly improved average ACHT performance during the experimental week. In particular, holding pre-week ACHT and experimental condition constant, average call handling time

Table 3 Descriptive statistics for two dependent variable measures by experimental condition for experiment 1

Variable	Control					Primed goal				
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
ACHT prior week	18	101.50	10.30	81.10	121.20	21	97.85	18.09	79.10	156.10
ACHT exp. week	23	122.31	63.94	39.20	275.20	23	81.35	26.01	31.00	126.30
ACHT Tues.–Friday	23	91.92	15.14	60.30	131.93	21	74.98	16.59	44.80	101.08
ACHT post-week	22	86.57	17.13	56.44	118.24	22	95.23	12.85	65.72	120.92
ACRT prior week	22	80.63	8.38	68.76	96.06	23	85.65	6.15	68.94	95.66
ACRT exp. week	23	81.52	18.67	8.60	100.00	23	91.88	5.49	80.20	100.00
ACRT Tues.–Friday	23	82.06	5.93	70.75	90.25	23	87.65	5.99	75.30	96.73
ACRT post-week	23	82.06	5.93	70.75	90.25	23	82.59	8.19	69.18	96.73

was 101.41 s. We observed a significant mean difference of $b = 43.13$ s in call handling time between employees in the primed goal condition (79.84 s) and those in the control condition (122.98 s), $F(1, 36) = 7.01$, $p = .011$, $\eta_p^2 = .16$. This represents a 35% efficiency performance improvement from the control group to the primed goal condition. The statistical power to obtain this effect was 75.43%.

Three complementary analyses substantiated the above finding. To test if the priming effect on average week performance was influenced by priming effect on Monday alone, we re-ran the analysis using average performance excluding Monday (i.e., Tuesday–Friday). We continued to find significant effect of the primed goal on ACHT, $F(1, 34) = 14.09$, $p < .001$. The statistical power to obtain this effect was 92.27%. We also tested for differences in ACHT by primed goal condition in the pre- and post-week and found no significant effects. Time series assessment corroborated the findings for ACHT over the 3 weeks (as depicted in Fig. 1).

Holding pre-week ACRT and experimental condition constant, average percent of calls resolved on the first call was 86.47%. We observed a significant mean difference of $b = 11.82\%$ in percent of calls resolved between employees in the primed goal condition (92.38%) and those in the control condition (80.55%), $F(1, 42) = 7.20$, $p = .01$, $\eta_p^2 = .15$. This represents a 15% effectiveness performance improvement from the control group to the primed goal condition. The statistical power to obtain this effect was 76.53%.

To test if the priming effect on average week performance was influenced by priming effect of Monday alone, we re-ran the analysis using average performance excluding Monday (i.e., Tuesday–Friday). We continued to find significant effect of primed goal on ACRT, $F(1, 42) = 9.71$, $p = .003$. The statistical power to obtain this effect was 87.61%. Differences in ACRT by primed goal condition in the pre- and post-week were not significant. Time series assessment corroborated the findings for ACRT over the 3 weeks (as depicted in Fig. 2).

Discussion of Experiment 1

This field experiment demonstrated that subconscious goals can be primed in a business organization. The primed goal improved both efficiency, i.e., handling calls faster, and effectiveness, i.e., resolving the customer complaints. This was the first study in which a CEO of a company used primed goals to improve the performance of employees without their awareness.

A structural limitation of this field experiment that we could not overcome is the small sample size. In this case, the small number of employed individuals might have affected our conclusions in the direction of a Type I error. Consequently, we conducted a conceptual replication in a laboratory where we could obtain a much larger sample. Further extending theory, we examined the level of motivation associated with goal priming effects.

Experiment 2

Method

Participants

Participants were 151 fully employed MBA students and undergraduates from two U.S. universities. Their average age was 30.74 years ($SD = 9.26$), with an age range of 19–53 years. Average full-time work experience for Executive MBA and Evening MBA students was 8.12 years ($SD = 7.96$). Of the 137 participants that reported their gender, 34.3% were female.

Procedure

Participants were presented with study protocols. A performance goal was primed by achievement-related words embedded in scrambled sentences (Bargh and Chartrand 2000). The word ratios were the same as those in the field experiment

Table 4 Correlation table by experimental condition for experiment 1

Variable	1	2	3	4	5	6	7	8
1. ACHT prior week		-.22	.80**	.27	.32	.30	.03	-.15
2. ACHT exp. week	.45*		-.29	-.02	-.32	.05	.19	-.08
3. ACHT Tues.–Fri.	.49*	.64**		.14	.19	.10	-.14	-.25
4. ACHT post-week	-.26	-.26	-.20		.05	.22	-.24	-.08
5. ACRT prior week	.01	-.22	-.28	.21		-.20	-.12	.14
6. ACRT exp. week	.12	-.23	-.16	-.27	.20		-.09	.19
7. ACRT Tues.–Fri.	-.13	-.35	-.49*	.19	-.15	.15		.29
8. ACRT post-week	-.10	-.33	-.65***	.38	.31	.10	.49*	

Note: Correlations on each variable for the primed goal condition are presented below the diagonal and correlations for the control group are presented above the diagonal

*** $p < .001$, ** $p < .01$, * $p < .05$

(12 achievement words in 100 words), but some primed words were changed to accommodate this performance task (see Appendix Table 5). For the control group, scrambled sentences contained only neutral words. Next, participants were given a timed brainstorming task that required them to list uses for a common object (coat-hanger). As has been noted (see Maltarich 2009), adding survey items after priming but before performance can interfere with an effect of the prime. Therefore, following the brainstorming task (DV), motivational level was assessed by asking participants the following question: “How motivated were you to do well on the previous task?” Scale anchors ranged from 1 (not at all motivated)

to 6 (very motivated). A funneled debriefing six-item questionnaire (Bargh and Chartrand 2000; Stajkovic et al. 2006) was administered to assess participants’ awareness of the primed words on their performance (see Appendix Table 6). None indicated awareness.

Results

An ANOVA revealed a significant positive effect of the primed goal for achievement on performance ($M_{\text{Prime}} = 4.13$, $SD = 2.03$) compared to the control group

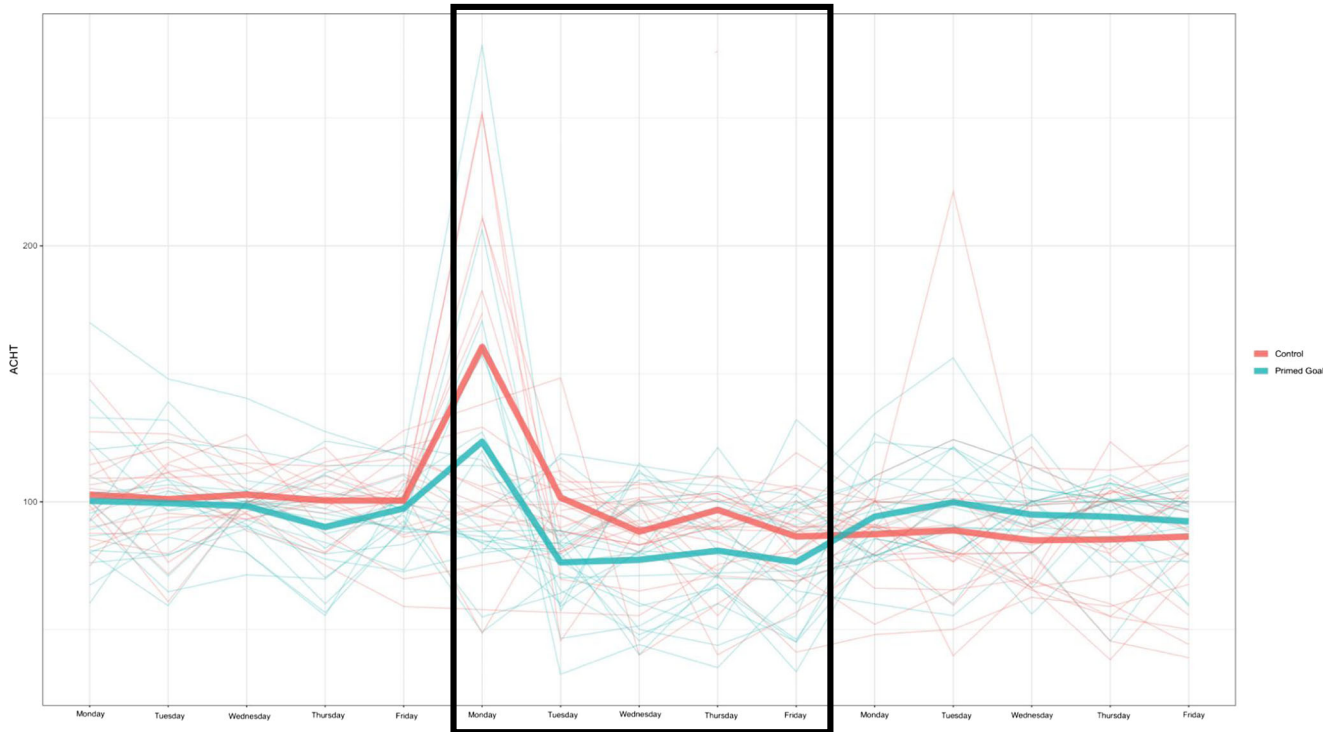


Fig. 1 ACHT time series data plot from experiment 1: pre-week, experimental week, post-week. Note: The thick lines represent the average ACHT by day, where lower ACHT equals better performance. The thin lines represent participants’ raw data; blue is from the primed

goal group and orange is from the control group. The experimental week is outlined in the black box. We controlled for average pre-week ACHT to eliminate any pre-week performance differences between groups

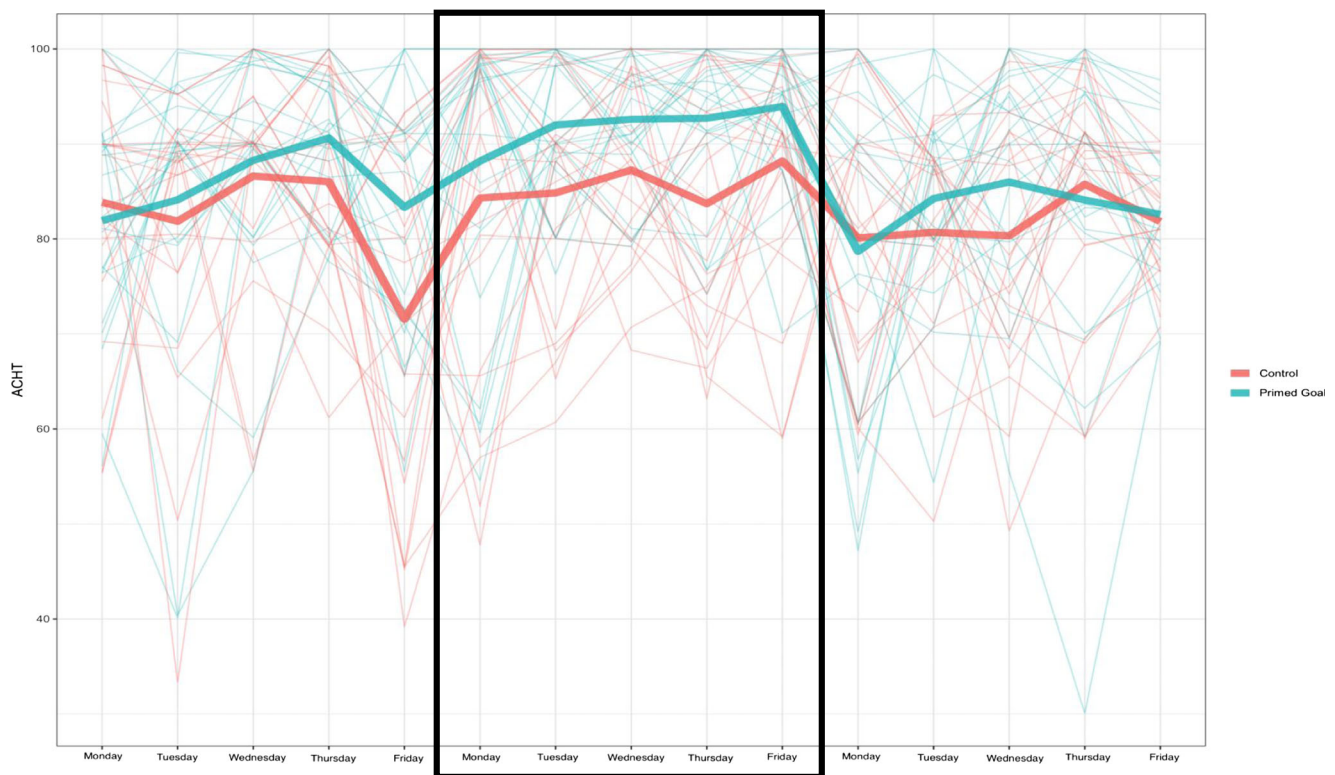


Fig. 2 ACRT time series data plot from experiment 1: pre-week, experimental week, post-week. *Note:* The thick lines represent the average ACRT by day, where higher ACRT equals better performance. The thin lines represent participants' raw data; blue is from the primed

goal group and orange is from the control group. The experimental week is outlined in the black box. We controlled for average pre-week ACRT to eliminate any pre-week performance differences between groups

($M_{\text{control}} = 2.74$, $SD = 1.49$), $F(1, 149) = 22.72$, $p < .001$, $\eta_p^2 = .13$. We also found that participants who were primed with an achievement goal reported higher levels of motivation for the task ($M_{\text{Prime}} = 4.17$, $SD = 0.96$) than those in the control group ($M_{\text{control}} = 3.36$, $SD = 1.12$), $F(1, 102) = 6.90$, $p = .01$, $\eta_p^2 = .16$.² Motivation level was also related to performance, $F(1, 102) = 42.64$, $p < .001$, $\eta_p^2 = .29$.

To test for mediation, we estimated a multiple regression model in which we regressed performance on both the primed goal condition and motivation level (Baron and Kenny 1986). The results revealed that the effect of the primed goal on performance became nonsignificant ($p = .19$), but the level of motivation remained statistically significant, $F(1, 101) = 36.10$, $p < .001$. We then followed the recommendations of Preacher and Hayes (2004). They suggested using a bootstrapping procedure to compute a confidence interval around the indirect effect. We used Tingley et al. (2014) mediation package in “R” to estimate these confidence interval (Hayes 2009). The results revealed that the indirect effect of

primed goal on performance through motivation had a value of 0.39 and a 95% confidence interval that ranged from 0.09 to 0.78 ($p = .002$). Of the total 0.75 increase in performance (i.e., uses listed) attributed to the primed goal ($p = .008$), 0.39 of the gain was due to increased motivation induced by the primed goal. Said differently, the indirect effect accounted for 53.2% of the total primed goal-performance effect ($p = .006$) (as calculated with the Tingley et al. in “R”). Taken together, the data from this laboratory experiment are consistent with the full mediation model (see Fig. 3).

General Discussion

These two experiments add to the programmatic research in I-O psychology undertaken to examine whether goals that are primed can improve performance, the mechanisms that mediate these effects, and the boundary conditions that moderate them (Latham et al. 2010). To build cumulative theory on primed goals based on GST, the results of this research should be considered in tandem with the results of the four prior field experiments conducted in call centers, as well as the results obtained in prior laboratory experiments. We found support for the hypothesis that primed goals enhance performance in a for-profit business organization. The results were conceptually replicated in a laboratory with a larger sample size. The

² The difference in degrees of freedom occurred due to a printing error. We ran this experiment in several classes and one batch of protocols was printed without this item (it inadvertently went over to the next page when the file was opened in the copy center). We re-ran all analyses reported here and all the patterns of results remain the same.

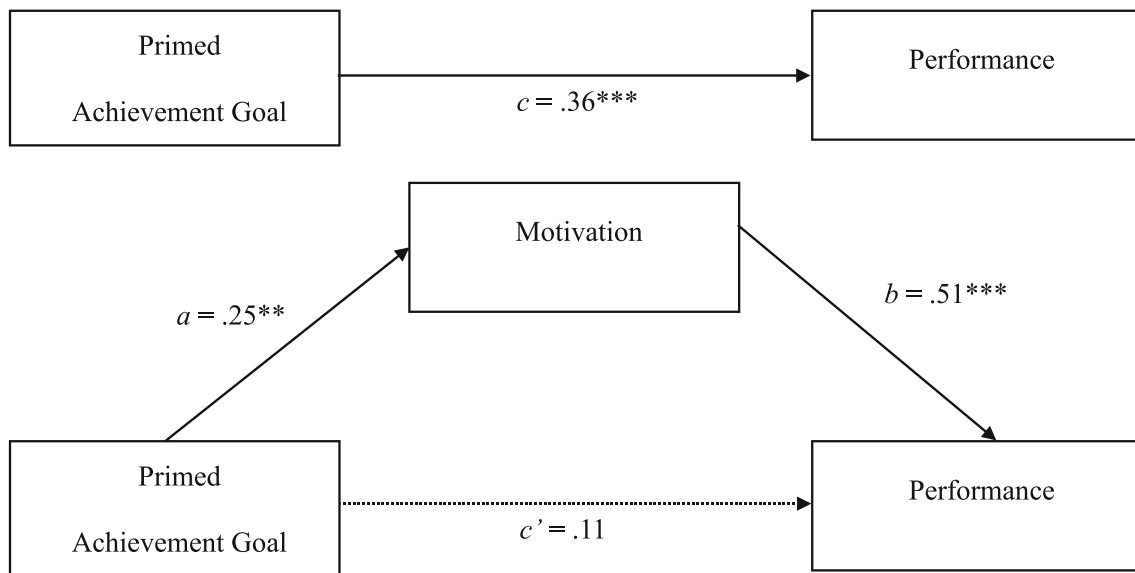


Fig. 3 Mediation results from experiment 2. *Note.* This figure reports the standardized regression coefficients from the mediation analysis conducted for experiment 2. ** $p < .01$, *** $p < .001$

hypothesis that an individual's level of motivation mediates the goal priming-performance effect was supported.

The contribution of these findings to the goal priming literature is at least twofold. First, the present research adds rigor and relevance to the program of research on primed goals in I-O psychology. With study one being a field experiment, the contribution is enhanced through generalizability (Eden 2017). It is hard to elucidate complex work phenomena without causal testing of hypotheses in organizations (Mohrman and Lawler 2011) and putting evidence-based findings in the hands of managers hinges on it (Pfeffer and Sutton 2006).

Second, Latham et al. (2017) examined choice and effort, two established mediators in GST, as mechanisms of goal priming effects. The present research contributes to this line of inquiry by showing that level of motivation generated by a primed goal mediated the primed goal-performance relationship. Goal setting is a motivational technique (Locke and Latham 1990, 2013). The present findings provide further evidence of the congruence of primed goals with GST. Markedly, the present results are consistent with full mediation. This suggests that primed goals influence task performance solely through motivation, a finding we now address.

Future Research

The results from the present work may be catalysts for future goal priming research (see also Latham and Locke 2018). Future research should conceptually replicate our mediation finding. Our method of mediation analysis is consistent with the Hyman-Tate conceptual timing criterion that is specified as follows: "Mediation requires a conceptual time-ordering of the predictor, mediator, and outcome ... the variables do not have to be measured using the sequential time standard of first

(predictor), second (mediator), third (outcome) positions..." (Tate 2015, p. 237). Therefore, given the sensitive nature of priming effects (e.g., Maltarich 2009), we made a purposeful design choice to administer the motivation item after participants completed the performance task. Conceptually, though, the item probed participants for their motivation level *during* their engagement with the task (e.g., "how motivated *were you* ..."); hence, their motivation level conceptually preceded their performance.

In other words, the causal sequence has a clear time-ordered relationship: (1) participant is primed with a goal, (2) s/he experiences a given level of motivation while performing the task, and (3) performance is assessed upon task completion. Although this approach marries conceptual and statistical considerations (Tate 2015), future research should conduct replications using alternative design features, such as longitudinal analysis of temporal antecedents or obtaining a measure of motivation level prior to measuring performance (e.g., Rubin 2006). Such variation in approach would reduce causal ambiguity among primed goals, level of motivation, and performance outcomes.

Second, the effect of a consciously set goal on performance has been shown to endure for weeks (e.g., Latham and Kinne 1974), months (e.g., Latham and Baldes 1975) and years (e.g., Howard 2013; Pritchard et al. 2013). Contrawise, research on primed goals has been limited to evidencing more transient effects. In a laboratory setting, Stajkovic et al. (2006) reported that the primed goal-performance effect carried over to the next day, but participants were reminded on the second day to recall the tasks they had completed the day before. Empirically, it is impossible to disentangle whether the second day performance effects were the result of lasting primed goal effects or whether the reminder, in essence, "re-primed" the goal by re-activating

the memory of the priming manipulation. Two experiments have examined this temporal issue in the field. Latham and Piccolo (2012) found that a primed goal increased performance over a 4-day work-week relative to a control group. However, the prime was a photograph that the employees viewed on an on-going basis. In the field experiment conducted herein, the prime was embedded in an email that was only sent once to employees, namely Monday morning. Yet, the performance effect lasted, on average, over a 5-day work-week.

Future research is also needed to buttress knowledge of the decay effects of primed goals on performance and to enhance understanding of organizational moderators of this relationship. This point has been overlooked in social psychology, but it is of considerable importance in organizations given the complex nature of relationships among managers and their employees. That is to say, does a primed goal for achievement continue to increase performance even if there are poor management-employee relations? Under these conditions, conscious performance goals assigned by a supervisor would likely be rejected by an employee. However, because primed goals reside in the subconscious and unfold without conscious interference, they could potentially be effective in such circumstances. Conceptualizing and empirically testing a rich set of contextual organizational factors that moderate the prime-performance relationship would appear to be a fruitful avenue for further research.

Practical Implications

Several implications for practice arise from the present findings. First, it appears that the primed goal-performance relationship is additional to the conscious goal-performance relationship, as predicted and explained by GST. Moreover, a prime frees-up limited attentional resources, while producing the same performance effects as a consciously set goal. This introduces alternatives for increasing an employee's performance that have not existed before in organizational practice.

Second, to our knowledge, the present field experiment is the first to show that an organizational leader can prime a performance goal for employees through written communication. This is likely to be an appealing technique for time-constrained executives. According to a recent report, 45% of executives indicate time constraints as the main obstacle to their daily involvement in the affairs of the organization (Hanratty and Stahl 2015). This method for improving performance should be especially appealing to leaders of geographically dispersed teams. Finally, compared to off-site training and related initiatives that require travel, goal priming can enhance employee performance while allowing business to continue as usual.

Limitations

In the field experiment, 29% of the employees did not respond to the follow-up email sent by HR that probed awareness. In

spite of this limitation, we minimized threats to internal validity in the following ways. Random assignment of employees to conditions minimized a selection-testing interaction and a selection-mortality interaction. These selection artifacts were unlikely to unfold in only 1 week. Ambiguity about direction of causality between the primed goal and performance can be ruled out as the priming manipulation preceded the performance measures. General history bias can be ruled out given absence of unusual events in a broader social context. We minimized local history bias by having the same (and only) CEO send emails to employees in the experimental and control groups. It is possible that employees compared emails with colleagues in other conditions; but, if diffusion of treatment was consequential, it would have reduced the likelihood of observing significant effects. The time interval between behavior and performance measurement was minimal, reducing risk of dependent variable contamination. Demand effects and experimenter bias were eliminated because we had no contact with the employees. Thus, these threats were preemptively mitigated. Finally, we conducted a tightly controlled laboratory experiment that replicated the results of our field experiment.

Second, goal priming experiments arguably raise ethical concerns as primes influence behavior without employees' will. A related concern is lack of transparency when priming is used to modify behavior. These issues have sparked spirited dialog that has been reviewed and discussed in detail elsewhere (Latham and Ernst 2006). Accordingly, we reiterate the main considerations and juxtapose them with the ethical safeguards we built into our field experiment.

It should be remembered that some opacity in I-O psychology research is not new. Many companies use personality assessments for employment selection purposes without informing job applicants of what is being measured and how their test scores will affect their chances of employment. In response to "free will" concerns, extant research suggests that primed goals only induce behaviors that are relevant to and valued by individuals (Papies 2016; Papies et al. 2014). Correspondingly, it has been shown that priming goals can actually mitigate unethical behavior (Welsh and Ordóñez 2014) and can be used to help promote health-compliance behaviors (Reilly et al. 2002).

To address ethical concerns in our field experiment, the employees were fully debriefed. After data collection and HR follow-up, the CEO sent an email to employees explaining the research purposes. The email included copies of the two emails he had sent as the prime and control manipulations. The employees were informed that the emails were hypothesized to generate different performance effects. Under those circumstances, the CEO announced an appreciation bonus for all employees at the end of the month in the event that employees in the control group felt that random assignment had placed them at a professional disadvantage.

Finally, more complicated ethical scenarios occur if priming interventions convey mixed messages, such as work more

for less pay. Another ethical dilemma, in I-O psychology priming in particular, is what to do with research findings that are intellectually interesting but make little sense in organizations. One case in point would be a study by Sitzmann and Bell (2017), in which the authors primed participants' underachievement. It is unclear what business purpose would compel managers to purposefully prime underachievement, to say nothing of the potential for abuse.

Appendix

Table 5 Sentence unscrambling task to prime achievement goal for experiment 2

1. was Bob visits yesterday married
2. accomplished he green the task
3. well barking race vessels swift
4. melts water when butter heated
5. are thinkers made innovative students
6. pet soccer the gently dog
7. get to compete mountain promoted
8. wood eating pie she likes
9. work mirror does fast Suzanne
10. solution helpfully original was that
11. on sleeping turn the lamp
12. to study achieve hard comet
13. promptly Sally mail sunny answered
14. an aspirin Suzie clock took
15. wins he race superficial the
16. a trees fly kite go
17. her enjoys swear success she
18. are imaginative she naturally children
19. sang sweetly robin the scratching
20. attain import perfection to try

Table 6 Funneled debriefing questions to probe for awareness in experiment 2

Please answer the following six questions in the space provided. "Not sure" or "don't know" are acceptable answers.

1. What do you think the purpose of this experiment was?
2. What do you think this experiment was trying to study?
3. Did you think that any of the tasks you did were related in any way? If yes, in what way were they related?
4. Did anything you did on one task affect what you did on any other task? If yes, how exactly did it affect you?
5. When you were completing the scrambled sentence test, did you notice anything unusual about the words?
6. Did you notice any particular pattern or theme to the words that were included in the scrambled sentence test? If yes, what was it?

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