

An Experimental Inquiry about the Additive Effects of Assigned and Primed Goals and Their Interaction with Performance Feedback

Atanmış ve Uyandırılmış Hedeflerin İlave Etkileri ve Performans Geribildirimini ile Etkileşimleri Üzerine Deneysel Bir Araştırma

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ABSTRACT

Goal setting and performance feedback are two important tools used to improve organizational effectiveness. The roles of these two variables in improving job/task performance have been investigated by numerous studies; however, there are still questions that need to be answered. The current study aims to investigate the effects of goal setting and performance feedback on a creativity task. The study hypotheses were tested using a 4 (assigned goal, primed goal, a combination of assigned and primed goals, and no goal) X 2 (performance feedback and no performance feedback) experimental design. The primed goal was manipulated with achievement suggesting photos. Task performance was measured twice, following Trial 1 and Trial 2. The difference between Trial 1 and Trial 2 performance scores was used as the dependent variable. The participants were 294 undergraduate students. The results showed significant goal setting and performance feedback main effects and a marginally significant interaction effect. The assigned goal and performance feedback improved performance more than did no goal and no-feedback conditions, respectively. However, the performance-enhancing effects of primed goals and the combination of assigned and primed goals were not more than simple practice effects. Regarding the marginally significant interaction, findings indicated that performance feedback is critical only when there is no goal in the system. The results did not support our expectation that using goal and performance feedback together would lead to the highest performance improvement. Consequently, this study is believed to have important implications as it yielded counterevidence concerning the expected effect of primed goals, additive effects of primed goals over assigned goals and complementary effects of goals and performance feedback in improving performance.

Keywords: Assigned goal, primed goal, performance feedback, performance improvement, human resources management

ÖZ

Hedef belirleme ve performans geribildirimini, örgütsel etkililiği artırmak için kullanılan iki önemli araç olarak değerlendirilmektedir. Bu iki değişkenin iş/görev performansını artırmadaki rolü çok sayıda çalışma tarafından araştırılmıştır; ancak bu konuda hala cevaplanması gereken sorular bulunmaktadır. Mevcut çalışma temel olarak hedef belirleme ve performans geribildirimini bir yaratıcılık görevi üzerindeki etkisini incelemeyi amaçlamaktadır. Çalışma hipotezleri, 4 (atanmış hedef, uyandırılmış hedef, atanmış ve uyandırılmış hedef bir arada ve hedef yok) X 2 (performans geribildirimini ve performans geribildirimini yok) deneysel deseni kullanılarak test edilmiştir. Hedef uyandırma, başarı duygusu ima eden fotoğraflar kullanılması yoluyla yapılmıştır. Görev performansı, Ölçüm 1 ve Ölçüm 2 olmak üzere iki kez ölçülmüştür. Ölçüm 1 ve Ölçüm 2 performans değerleri arasındaki fark bağımlı değişken olarak ele alınmıştır. Çalışmanın katılımcıları 294 lisans öğrencisinden oluşmaktadır. Bulgular, anlamlı düzeyde hedef belirleme ve performans geribildirimini temel etkileri ile marjinal düzeyde anlamlı etkileşim etkisine işaret etmiştir. Atanmış hedef ve performans geribildirimini, görev performansını sırasıyla hedef ve geribildirim olmayan koşullardan daha fazla yükseltmiştir. Ancak, uyandırılmış hedef ile uyandırılmış ve atanmış hedeflerin bir arada sağlandığı koşulların performans artırıcı etkilerinin basit uygulama etkisinin ötesine geçemediği görülmüştür. Marjinal düzeyde anlamlı bulunan hedef belirleme ve geribildirim etkileşimine dair bulgular, performans geribildirimini sadece sistemde hedef belirleme olmadığında kritik olduğunu göstermiştir. Bulgular, hedef belirleme ve performans geribildirimlerini birlikte kullanmanın en yüksek performans artışını sağlayacağı yönündeki beklentimizi desteklememiştir. Sonuç olarak mevcut çalışma görev performansını artırılmasında, uyandırılmış hedefler, uyandırılmış hedefler ile atanmış hedeflerin bir arada sağlanması ve hedef belirleme ile performans geribildirimini tamamlayıcı etkileri konusunda karşı kanıt sunması bakımından alanyazına katkı sağlamaktadır.

Anahtar Kelimeler: Atanmış hedef, uyandırılmış hedef, performans artışı, insan kaynakları yönetimi

Organizations seek ways to improve productivity to continue their existence in the competitive work environment. In practice, goal setting and performance feedback are two commonly used intervention methods to improve employee performance (e.g., Alvero, Bucklin, & Austin, 2001; Yearta, Maitlis, & Briner, 1995). Given the widespread use of these methods in practice, understanding their unique and interactive effects on performance improvement is obviously crucial.

In general, the feedback gives information about the adequacy, accuracy, or correctness of decisions and actions (Ilgen, Fisher, & Taylor, 1979). It provides information about the effectiveness of past behavior. Although it is a widely used tool in today's working life, some contradictory findings have been reported regarding its effectiveness on performance improvement. A widely cited meta-analysis by Kluger and DeNisi (1996) showed that although the feedback was in general, moderately effective, it actually had a negative effect on task performance in about one-third of the cases. Moving from this point, it seems fair to conclude that there is a need to understand the boundary conditions of feedback effectiveness. Specifically, conditions under which the effects of feedback are enhanced needs to be further explored. The current study focused on goal setting as a variable that has potential to affect feedback effectiveness.

Goal setting, as another source of motivation (Earley, Northcraft, Lee, & Lituchy, 1990), has been shown to improve performance (Locke & Latham, 2002; Locke, Shaw, Saari, & Latham, 1981; Seijts & Latham, 2011). Goal Setting Theory (GST, Locke & Latham, 1990) is considered a well-established theory; however, it overlooks the effects of subconscious, the storehouse of knowledge and values beyond awareness (Latham & Locke, 2007). Although limited empirical evidence suggests the effectiveness of subconsciously set goals (Shantz & Latham, 2009, 2011), boundary conditions of the effectiveness of subconscious goal setting are largely unknown. By focusing on this gap in the literature, this study aimed to examine the effect of subconscious goals; in addition to consciously assigned goals and their possible interactions with performance feedback in improving task performance.

This study used priming as a method to set a subconscious goal. Social psychology literature provides evidence that goals can be primed in the subconscious to influence thoughts and actions (Bargh, Gollwitzer, Lee-Chai, Barndollar, & Tröetschel, 2001; Shah, 2005); and industrial/organizational psychology literature provides insight the

effectiveness of primed goals on performance improvement (Shantz & Latham, 2009, 2011; Stajkovic, Locke, & Blair, 2006). However, some contradictory findings about priming effects in general and a relative lack of reproducibility of the reported priming effect findings call for new studies on this topic. In response to this call, we aimed to experimentally test the effect of primed subconscious goals in improving task performance.

In the following sections, brief summaries of the literature on consciously assigned goals and GST in general, primed subconscious goals and their association with performance improvement, and performance feedback are presented with related hypotheses of the current study.

Conscious Goals: An Established Performance Enhancer

As one of the most supported theories in work motivation literature (Mitchell & Daniels, 2003), GST (Locke & Latham, 1990, 2002) focuses on the effect of conscious goals on various work outcomes. In general, the theory states that there is a positive linear link between task difficulty and task performance; in that, specific and difficult goals predict higher levels of task performance compared to easy or vague goals (Locke & Latham, 2006).

GST focuses exclusively on conscious motivation and excludes the effect of subconscious motivation on human action (Locke, 1996; Locke & Latham, 2002). However, some goal theorists state that not all motivation is conscious and emphasize the need to examine the effect of subconscious goals on work motivation (e.g., Latham, Stajkovic, & Locke, 2010; Locke & Latham, 2002; 2004; 2006). Some goal theorists even underline that “the lack of focus on the subconscious is a limitation of goal setting theory” (Locke & Latham, 2002, p. 714). Moving from this point, in this study we aimed to investigate the effect of a primed subconscious goal and its combination with a consciously assigned goal in improving task performance.

Primed Subconscious Goal: Is It also a Performance Enhancer?

Historically, social psychology has long been interested in investigating the subtle and unforeseen influences of people’s social environment on their behaviors (Molden, 2014). Since the priming term was presented to the psychology literature by Lashley (1951) as an intervening variable between the intention and the production of intended behavior, various social psychological studies have examined its effects on a wide range of variables (Latham et al., 2010; Shantz & Latham, 2009). The findings demonstrated

that psychological processes and concepts like social norms and emotions, knowledge structures like stereotypes and social behaviors, interpersonal relations and even representations of close relationship partners can be primed in the subconscious (Bargh, 2006). Studies have also shown that goals can be primed in the subconscious to influence thoughts and actions (Bargh, et al., 2001; Shah, 2005). For example, in a laboratory experiment conducted by Bargh, Chen, and Burrows (1996), participants were primed by asking them to circle words related to elderly people (e.g., wrinkles and sentimental). The results showed that participants in the experimental group walked significantly more slowly down a hallway while leaving the experiment compared to control group participants. In another study by Fishbach, Friedman, and Kruglanski (2003), participants were primed with the concept of dieting by sitting in a room in which magazines about exercise and dieting were exhibited; then were offered food. Findings showed that an apple was chosen significantly more frequently than a piece of chocolate by participants in the experimental group than those in the control group. Lastly, in their study, Aarts and Dijksterhuis (2003) examined the influence of a photo on the activation of situational norms. Participants were randomly assigned to one of three conditions: Those in the first condition were subjected to a library picture for 30 minutes and were informed that they would go to the library at a later day; those in the second condition were subjected to a railway station picture and participants in the third condition were shown a library picture but visiting the library later was not mentioned. Then, all participants were asked to read aloud 10 words which were shown on a computer screen. A device measuring sound pressure was used. Results showed that participants who had been subjected to a library picture and assigned the goal of visiting the library later talked more quietly than participants in the other two conditions. A significant sound pressure difference was not found between participants who viewed a railway station picture and participants who viewed the library picture alone. These findings on different outcome variables show the value that researchers have placed on conducting priming studies and indicate the effectiveness of priming as a useful methodological tool.

More recently, researchers in industrial and organizational psychology have begun to explore the effects of subconscious goals in the workplace and findings indicated that like consciously assigned goals, primed subconscious goals improve both experimental task performance (Bipp & Kleingeld, 2018; Stajkovic et al., 2006) and actual employee performance (Latham & Piccolo, 2012; Shantz & Latham, 2009, 2011).

These findings are important as they highlight that human performance may be affected by goals of which people are not consciously aware. Many of the priming studies in industrial and organizational psychology literature have used photos as the prime object. This may be considered a logical choice by taking into consideration the finding that implicit motives are activated better by nonverbal cues (Schultheiss, 2008). Laboratory and field experiment results provided evidence for the effectiveness of using photos in priming. In Shantz and Latham's (2009) laboratory experiment, participants were randomly assigned to either the primed goal condition or the control condition. All participants were given an information sheet containing information regarding the performance task. The information sheet given to participants in the primed goal condition included a backdrop photo of a woman winning a race, but the other information sheet given to participants in the control condition did not include any backdrop photo. Results showed that participants in the priming condition scored higher on the need for achievement test which was measured by a projective test, the Thematic Apperception Test (TAT). The field experiment results provided further evidence for the main effect of primed subconscious goals by indicating that call center employees who were primed with an achievement related photo (i.e. a woman winning a race) performed better in soliciting money from donors. The results of subsequent research with different participants also repeated this finding (Shantz & Latham, 2011). In their article, Latham and Piccolo (2012) investigated the relative effects of a context-specific photo (people making telephone calls in a call center) and a general prime photo (a woman winning a race) in leading to higher performance for call-center employees. TAT results showed that both goals aroused the implicit need for achievement and increased job performance, but employees in the context-specific photo condition performed significantly better. All these findings provide support for the external validity of using photos in priming achievement-motivation.

Although studies revealed that subconscious goals have similar effects with conscious goals (e.g., Bargh et al., 2001; Kawada, Oettingen, Gollwitzer, & Bargh, 2004; Shantz & Latham, 2009; Stajkovic et al., 2006), in recent years, misgivings about the effectiveness or even existence of the priming effects have been voiced (see Bower, 2012, for a discussion). Independent research results that could not replicate the priming effects, a growing belief in the existence of a file drawer problem (Kahneman, 2012), and a suspected experimenter effect (Doyen, Klein, Pichon, & Cleeremans, 2012)

formed the basis of doubts about priming effects. Motivated with these doubts and concerns, Daniel Kahneman (2012), a Nobel laureate psychologist, wrote an open letter to the priming researchers pointing out the need for double checking the robustness of their findings. In his letter, Kahneman stated that priming had become a “poster child for doubts about the integrity of psychological research” (2012, p.1) and proposed the establishment of a review board investigating the replicability of priming results. More recent attempts to replicate the effects of subconscious goals have also continued to show mixed results (e.g., Bipp, Kleingeld, van Mierlo, & Kunde, 2017; Harris, Coburn, Rohrer, & Pashle, 2013).

Joint Effects of Goal Setting and Performance Feedback

Goal setting and feedback are specified as *integral management tools* to improve work performance because of their information providing and motivation enhancing capabilities (Earley et al., 1990, p. 87). Feedback or knowledge of results (Ilgen et al., 1979) informs individuals about the adequacy, accuracy and correctness of their work behaviors and motivates them through perceptions of competence, accomplishment and control (Earley et al., 1990).

Meta-analytic findings have indicated the superiority of goal setting plus feedback condition over goal setting only condition in improving performance (Mento, Steel, & Karren, 1987; Neubert, 1998). The complementary effects of goal setting and feedback were explained with two mechanisms: “Individual’s self-regulatory response to a discrepancy” and “the evaluation of performance strategies” (Neubert, 1998, p. 322, p. 323, respectively). Neubert (1998) stated that feedback is beneficial in a goal-performance relationship because it shows the discrepancy between a goal and the existing performance level (revealed by feedback). This discrepancy motivates people to regulate their effort and persistence to reach the goal. He further stated that information provided by feedback is used to evaluate the effectiveness of current performance strategies and to search for and formulate alternatives in order to attain a goal.

Recent research also provided evidence that goal setting and feedback interact to affect performance (e.g., Cianci, Schaubroeck, & McGill, 2010; Eisele, 2012; Stansfield & Longenecker, 2006). Cianci et al. (2010) showed that a goal type (learning or performance goals) interact with feedback valence (positive or negative feedback) to influ-

ence performance improvement. Moreover, Eisele (2012) examined the joint effect of goal setting and feedback in group level performance and found that both goal setting and its interaction with feedback improved a group's idea-generating performance whereas feedback alone did not. In a similar vein, in their field study, Stansfield and Longenecker (2006) suggested that goal setting and feedback enhanced actual employee performance and led to greater productivity.

Although few, there were also studies that focused on feedback and subconscious goal interaction on performance. Specifically, Kawada et al. (2004) investigated the interaction of different goal conditions (i.e., implicit goal, explicit goal, or no goal) and feedback (i.e., success feedback or failure feedback) on the amount of projection participants did. They found that in both goal conditions, participants who received failure feedback projected more than those who received success feedback. Also, Bipp and Kleingeld (2018) conducted research composed of two studies that examined the moderating effect of negative feedback (personal/comparison) in the association between subconscious goals and performance in attention and concentration tasks. The results in study 1 revealed a significant interaction between subconscious goals and feedback. That is, subconscious goals positively affected performance when participants received no personal feedback, and negatively affected performance when participants received negative personal performance feedback. However, in Study 2, they found mixed results regarding the interaction effect of subconscious goals and feedback on self-efficacy and performance. Although, these few studies contributed to an understanding of how subconscious goals interacted with feedback in affecting performance, the existence of mixed results shows the need for new studies on this subject.

To sum up, in an attempt to respond to Kahneman's call (2012) and understand the mixed results about the effectiveness of priming manipulations, the present study aimed to retest the main effects of priming subconscious goals and its interaction with performance feedback in improving task performance. Additionally, based on claims suggesting that conscious and subconscious goals are not necessarily correlated and their effects on performance may be additive (Shantz & Latham, 2009; Stajkovic et al., 2006), we investigated the additive effects of assigned and primed goals by including a combination goal condition as a level of goal setting factor. Building on information given about goal setting, the following hypothesis was formulated.

H1: Performance improvement was higher among participants in the assigned goal (H1a), primed goal (H1b), and combination goal (H1c) conditions than participants in the no goal condition.

Additionally, this study aimed to test the main effect of performance feedback in improving performance on the creativity task with the following hypothesis:

H2: Performance improvement is higher for participants in the feedback condition than those in the no feedback condition.

Furthermore, in order to better understand the mixed results in this regard, the study aimed to investigate the interactive effects of different goal types and performance feedback in improving performance, with the following hypothesis:

H3: Goal setting interacts with performance feedback in improving performance such that participants assigned to the conditions with goal setting and performance feedback achieve higher performance improvement than do participants in all other conditions (i.e., goal setting without feedback, feedback without goal setting, and no feedback no goal setting).

We consider that there are three expected contributions of this study. First, the current study provided further integration of theories from social and industrial/organizational psychology by combining theoretical approaches about the effects of primed goals, assigned goals, and feedback in order to predict their effects on performance improvement. By covering all these conditions, the present study thought to provide a more comprehensive picture about performance improvement in relation to goal setting and performance feedback. Second, as indicated by the meta-analysis findings, task characteristics (e.g., task complexity) may be a potential moderator in the association between goal setting and performance (Wood, Mento, & Locke, 1987). Specifically, the role of primed goals on a number of different tasks, such as brainstorming (e.g., Stajkovic et al., 2006), attention and concentration (Bipp & Kleingeld, 2018), and soliciting money from donors (e.g., Shantz & Latham, 2009, 2011) have been demonstrated. The current study aimed to test the role of goal setting and feedback on a creativity task. To the best of our knowledge, this is the first study investigating the role of primed goals on a creativity task. Thus, our findings are expected to provide additional information about the effects of goal setting and feedback on a different task. Lastly, the nature

of the prime material has also been shown to influence priming effectiveness (e.g., Latham, Brcic, & Steinhauer, 2017). A scrambled sentences test (e.g. Bipp & Kleingeld, 2018; Stajkovic et al., 2009), discerning words in a matrix (e.g., Ganegoda, Latham, & Folger, 2016), or subliminally presenting the face of a leader (Zdaniuk & Bobocel, 2013) are some priming methods used in the literature. The current study used photos to prime achievement. In industrial/organizational psychology, using photos as prime is not a new idea. In fact, their effectiveness in improving performance has been shown in both laboratory and field studies. However, in these studies only one priming photo at a time has been used. In line with Latham et al.'s (2010) question that "Are there an optimal number of photos? (e.g., 1, 10, 100)" for the effectiveness of priming (p. 251), we used two context-specific achievement priming photos at the same time. So, as the third contribution, our findings expected to make a contribution to the related literature by using plural photos as the prime.

METHOD

Participants

The sample was composed of 294 undergraduate students whose ages range between 19-33 years (167 women, 126 men, 1 undefined; $M_{\text{age}} = 21.78$ years), and who were taking entry-level psychology courses offered by the psychology department for other departments at a large state university in Ankara, Turkey. Participants were not likely to be knowledgeable about the topic of the study. One participant was excluded from the data because he reported noticing the priming manipulation. There were not any drop-outs in the experiment. Participants received experimental credit (1 point, %1 of the course credit) for their participation.

Design and Procedure

A 4 (assigned goal, primed goal, combination of assigned and primed goals, and no goal) X 2 (feedback and no feedback) experimental design was conducted. Task performance was measured twice, following Trial 1 and Trial 2. The difference between Trial 1 and Trial 2 performance scores were used as the dependent variable in the analysis. Participants were randomly assigned to one of the eight study conditions reflecting combinations of goal setting and performance feedback levels (see Table 1 for study conditions). Data was collected in two cohorts.

Table 1. Eight Study Conditions

Conditions	Assigned Goal	Primed Goal	Combination Goals	No Goal	Feedback	No Feedback
1	Yes	No	No	No	Yes	No
2	No	Yes	No	No	Yes	No
3	No	No	Yes	No	Yes	No
4	Yes	No	No	No	No	Yes
5	No	Yes	No	No	No	Yes
6	No	No	Yes	No	No	Yes
7	No	No	No	Yes	Yes	No
8	No	No	No	Yes	No	Yes

The study was conducted in a lab with two cubicles (i.e., priming cubicle and control cubicle) specifically designed for the current study. The cubicles were identical with a computer, desk, two chairs, and stationery (pencils, erasers, note sticks, etc.). The aim was to create an impression that these cubicles belonged to two different research assistants. The only difference between the two cubicles was the photos put on the desk. That is, in the priming cubicle, there were two framed achievement-related photos on the desk (see Photo 1 and Photo 2, for achievement-related photos); and in the control cubicle, there were two nature photos, thought to be achievement-neutral (see Photo 3 and Photo 4, for achievement-neutral nature photos).

**Photo 1:** Prime photo 1 (Copyright was taken from www.istock.com)



Photo 2: Prime photo 2 (Copyright was taken from www.123rf.com)



Photo 3: Achievement-neutral nature photo 1 (Copyright was taken from Photographer Tahir Uzun)



Photo 4: Achievement-neutral nature photo 2 (Copyright was taken from Photographer Tahir Uzun)

After participants arrived at the lab and signed the informed consent form, they were taken to the control cubicle to perform Trial 1. They were instructed to list all the uses they could imagine about a common object (i.e., plastic bag) in three minutes. Following this, experimental manipulations varied based on different study conditions (Condition 1: assigned goal and performance feedback, Condition 2: primed goal and performance feedback, Condition 3: combination goal and performance feedback, Condition 4: assigned goal and no performance feedback, Condition 5: primed goal and no performance feedback, Condition 6: combination goal and no performance feedback, Condition 7: no goal and performance feedback, Condition 8: no goal and no performance feedback). Participants who were assigned to the primed and combination goal conditions (i.e., Conditions 2, 3, 5, and 6) were taken to the priming cubicle. They were told that they should wait approximately four minutes in this cubicle while their Trial 1 performance scores were calculated by the researchers. Within this time, these participants were exposed to achievement-related photos. Participants who were assigned to the assigned goal and no goal conditions (i.e., Conditions 1, 4, 7, and 8) remained in the control cubicle and again they were asked to wait four minutes. Two researchers calculated Trial 1 performance score of all participants based on the pre-determined performance criteria. The different experimental procedures for eight study conditions are summarized in Table 2. To give an example, following Trial 1 performance score calculation, a participant assigned to Condition 3 (combination goal and performance feedback condi-

tion) was given feedback about his/her Trial 1 performance in relation to pre-established standards of performance. They were then assigned a conscious goal for Trial 2 and exposed to achievement-related photos in the priming cubicle. In another example, participants in Condition 5 (primed goal and no performance feedback condition) were not provided feedback about their Trial 1 performance and were not assigned a conscious goal for Trial 2. However, they were exposed to priming photos in the priming cubicle.

Table 2. Experimental Procedure of Eight Study Conditions

Condition		Trial 1	Performance Evaluation	Manipulation	Trial 2
1	Task Object	Plastic bag	-	-	Scarf
	Cubicle Type	Control	Control	Control	Control
	Goal Setting Level	-	-	Assigned Goal	-
	Feedback Level	-	-	Feedback	-
2	Task Object	Plastic bag	-	-	Scarf
	Cubicle Type	Control	Priming	Priming	Priming
	Goal Setting Level	-	-	Primed Goal	-
	Feedback Level	-	-	Feedback	-
3	Task Object	Plastic bag	-	-	Scarf
	Cubicle Type	Control	Priming	Priming	Priming
	Goal Setting Level	-	-	Combination Goal	-
	Feedback Level	-	-	Feedback	-
4	Task Object	Plastic bag	-	-	Scarf
	Cubicle Type	Control	Control	Control	Control
	Goal Setting Level	-	-	Assigned Goal	-
	Feedback Level	-	-	No Feedback	-
5	Task Object	Plastic bag	-	-	Scarf
	Cubicle Type	Control	Priming	Priming	Priming
	Goal Setting Level	-	-	Primed Goal	-
	Feedback Level	-	-	No Feedback	-
6	Task Object	Plastic bag	-	-	Scarf
	Cubicle Type	Control	Priming	Priming	Priming
	Goal-setting Level	-	-	Combination Goal	-
	Feedback Level	-	-	No Feedback	-
7	Task Object	Plastic bag	-	-	Scarf
	Cubicle Type	Control	Control	Control	Control
	Goal-setting Level	-	-	No goal	-
	Feedback Level	-	-	Feedback	-
8	Task Object	Plastic bag	-	-	Scarf
	Cubicle Type	Control	Control	Control	Control
	Goal Setting Level	-	-	No Goal	-
	Feedback Level	-	-	No Feedback	-

For Trial 2 performance, all participants were asked again to list the possible uses of another common object (i.e., scarf) within three minutes. After Trial 2 performance, while researchers were calculating performance scores, participants filled out a post ex-

perimental awareness questionnaire consisting of three questions adapted from Bargh and Chartrand (2000). The aim of this questionnaire was to assess awareness about the study purpose. The questions were “*What do you think about the purpose of this study?*”, “*Do you think that the environment in which the study was conducted had any effect on you?*”, and “*If yes, please explain.*” Following the completion of the awareness questionnaire, Trial 2 performance feedback was given to participants, and Trial 1 performance feedback was given to participants in the no feedback condition. Debriefing was provided to participants at the end of the study.

Performance Task

The performance task involved listing alternative uses of a common object, a commonly employed task in goal setting research (see Stajkovic et al., 2006; Wegge & Haslam, 2005). Typically, in studies using such a task, performance is operationalized as the number of listed uses for the common object. However, we think such operationalization of performance overlooks the qualitative differences between the listed uses, hence may be deficient in representing true performance. Therefore, we attempted to improve measurement of performance by including the novelty weights of presented uses in the performance scoring. Toward this aim, we conducted two preliminary studies.

Preliminary Study 1¹ was conducted to determine the objects (*plastic bag* for Trial 1 and *scarf* for Trial 2) used in the main study, for which participants listed the alternative uses to develop the *uses list* for the chosen objects. The purpose of Preliminary Study 2² was to identify a) the novelty weights of the uses in the uses lists; and b) to determine the criteria used to rate novelty. The novelty criteria were then employed to rate novelty weights of new uses not given by participants in the preliminary studies.

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- 1 In Preliminary Study 1, our goal was to determine the objects which would be used in Trial 1 and Trial 2 performance tasks. Participants were 100 undergraduate students who were asked to list different uses for 10 objects (i.e., paperclip, scarf, newspaper, wool yarn, paper napkin, jar, plastic bag, rubber band, plastic bottle, and rope) within three minutes for each object. Then, we listed the uses for each object separately. Among them, we chose plastic bag and scarf based on the criterion of having nearly the same number of presented uses.
 - 2 In Preliminary Study 2, we had two aims: (a) To identify the novelty weights of the uses for both plastic bag and scarf, the two objects identified in Preliminary Study 1; and (b) to determine the criteria used to rate novelty. For the first aim, participants, 81 undergraduate students, were asked to rate each use of plastic bag and scarf on a 5-point Likert scale (1 = *not at all novel* and 5 = *extremely novel*). The median of novelty weights was used as the novelty weights of the corresponding use. Hereby, the uses lists for plastic bag and scarf including novelty weights were developed to be used in the main study performance calculation. Furthermore, participants of Preliminary Study 2 were asked to explain the criteria they had used to rate novelty of a given use. An analysis of their responses indicated that they defined novelty of a given use as being “*unusual, creative, logical, useful and offering a practical solution.*” Hence, in the main study, this definition was used in scoring the novelty weights of uses not found in the pre-determined uses lists. Further information about the method and findings of these two preliminary studies can be obtained from the first author.

Performance Rating

Two raters, one of them was blind to the conditions of the participants, separately calculated performance scores of each participant. Raters automatically gave the corresponding novelty weights for uses already available in the use's lists. Otherwise, they determined the novelty weight for the reported uses not included in the use's lists based on pre-determined novelty criteria (i.e., being unusual, creative, logical, useful, and offering a practical solution). After the two raters compared scores and reached an agreement, all novelty weights were summed to set the performance score of the participant. The inter-rater reliability (agreement among raters) was measured by using intra-class correlation coefficient (ICC). The ICC estimates and their 95% confident intervals were assessed based on absolute-agreement and a two-way random-effects model. The agreement among raters was found to be excellent for both Trial 1 (ICC = 1, $p < .001$), 95% CI [.999, 1]) and Trial 2 (ICC = 1, $p = .001$), 95% CI [1, 1]) performance scores.

Treatment Manipulations

Performance Feedback. After the Trial 1 performance, participants in the *feedback* condition were provided norm-based, relative performance feedback. Participants in the *no feedback* condition were not provided any information about their Trial 1 performance.

Four performance levels (i.e., below average, average, above average, and excellent) were formed based on the performance scores of participants in the preliminary studies.³ Feedback information included a) participant's performance level, b) his/her total performance score, and c) corresponding novelty weight for each use he/she had offered.

Assigned Goal. The goal to be assigned was determined based on participants' Trial 1 performance levels. Basically, the goal for Trial 2 was to move performance level one level further. For instance, if a participant's performance was in the *average* level (performance score: 12-16) in Trial 1, then the goal for Trial 2 was to move it to the *above average* level (performance score: 17-21). After the Trial 1 performance, participants in the assigned goal condition were provided information that their performance scores were calculated by assigning a novelty value ranging from 1 (not original at all) to 5 (highly original) for each proposal and then summing these novelty values for each pro-

3 Performance scores of participants in Preliminary Study 1 were calculated by summing the corresponding novelty weights of presented uses. The mean ($M = 13.89$) and standard deviation ($SD = 5.07$) of performance scores were utilized to determine the four performance levels for the main study (below average: < 11 , average: 12-16, above average: 17-21, Excellent: > 22).

posal. In this way, they were provided information that both the quantity (number of the proposals) and quality (proposals' novelty values) of the proposals are important factors in calculating the total performance scores. Participants were informed about the score ranges of the expected performance level in Trial 2 and they were asked to raise their performance scores to this target level.

Primed Goal. The study used photos as prime based on the findings that nonverbal cues are better in activating implicit motives (Schultheiss, 2008). Findings of Latham and Piccola (2012) revealed that both a general prime photo (a woman winning a race) and a context-specific prime photo (people making telephone calls in a call center) aroused the implicit need for achievement as measured by TAT. Although both types of photos led to a significant increase in performance, employees in the context-specific condition performed better. Building on this finding, the study aimed to use a context-specific achievement photo to prime achievement motivation with our student participants.

As a first step, a brainstorming session was conducted with a group of subject matter experts (SMEs, three psychology graduated academicians) to decide on possible context-specific achievement prime photos for students. It was determined that both academic and sport success photos might evoke feelings of achievement in students. The findings of Preliminary Study 3⁴ supported this proposal. Students rated academic achievement and sports success photos significantly higher in terms of evoking feelings of achievement compared to the photos about financial success.

Building on this, we used *the photo of a woman winning a competition* (see Appendix, Photo 1) as the first prime photo for the following reasons. First, it was difficult to understand the gender of the person in the photo, so the potential for different effects on male and female participants was low. Second, the photo was quite similar with the photo used by Shantz and Latham (2009). The researchers showed that a photo of a woman winning a race significantly increased the student participants' subconscious need for achievement, as measured by a projective test, relative to those in the control group. In the current study, we decided to use a more general sport success photo, a woman win-

4 In Preliminary Study 3, 55 undergraduate students rated 21 photos representing achievement in academy, sports, and finance on a 5-point Likert scale in terms of evoking feelings of achievement (1 = *not associated with achievement at all* and 5 = *completely associated with achievement*). Paired-samples t-test results indicated that academic achievement and sports achievement photos were in general not significantly different from each other and they were rated higher than financial achievement photos in terms of evoking feeling of achievement. Further information about the method and findings of Preliminary Study 3 can be obtained from the first author.

ning a competition, because we considered that for participants interested in other sports, the race may not be a good prime for evoking achievement motivation. The prime photo represented a person (male or female) who won first place in a game/race (in any branch). The second photo (see Appendix, Photo 2) used to prime a subconscious achievement goal included *a group of students graduated from college holding their diplomas*. This photo was context-specific. It included both male and female students. The photo belonged to a graduation ceremony of a university other than the one where the participants were studying. After Trial 1, participants who were randomly assigned to the primed and combination goal conditions were exposed to priming photos. Copyright of priming photos was obtained from istock.com and 123rf.com websites, respectively. We employed two nature photos lacking content about achievement in the priming control condition (see Appendix, Photos 3 and 4). Permission to use these copy-righted photos was gotten from Tahir Uzun, a known photography artist.

RESULTS

Primed Goal Manipulation Check Analysis

A primed goal manipulation check was conducted to test whether the primed goal manipulation in this study was successful in enhancing performance. For this aim, additional data ($N = 26$) was collected in which participants were asked to list the possible uses of a plastic bag in three minutes in the priming cubicle hosting achievement-related photos. Since all the participants in the main study Trial 1 ($N = 294$) had already performed in the control cubicle, 26 of them were randomly selected to compare their performance scores with the performance scores of participants who performed in the priming cubicle. In order to test whether performance scores of participants varied as a function of the cubicle type (i.e., priming cubicle or control cubicle), a One-Way Analysis of Variance (ANOVA) was carried out. As a result of this analysis, the main effect for cubicle type was found statistically significant, ($F(1, 50) = 9.18, p < .05$), suggesting a significant difference between mean performance scores of participants in the priming cubicle ($M = 16.65, SD = 5.10, 95\% CI [14.59, 18.72]$) and in the control cubicle ($M = 12.51, SD = 4.76, 95\% CI [10.59, 14.43]$). This finding provided evidence for the effectiveness of primed goal manipulation in the current study.

Main Hypotheses Analysis

We conducted a factorial ANOVA to compare the main effects of goal setting and performance feedback and their interaction on performance improvement from Trial 1

to Trial 2. Goal setting consisted of four levels (i.e., assigned goal, primed goal, combination of assigned and primed goals, and no goal) and performance feedback included two levels (i.e., feedback and no feedback). The difference between Trial 1 and Trial 2 performance scores were used as the performance improvement indicator in the analyses. Table 3 summarizes the descriptive statistics for the eight study conditions.

Table 3. Descriptive Statistics of Eight Study Conditions

Goal Setting Conditions						
Feedback Conditions		Assigned Goal	Primed Goal	Combination Goal	No Goal	Total
Feedback	\bar{X}	6.22	4.21	5.00	5.93	5.32
	<i>SD</i>	4.83	5.94	5.57	3.70	5.16
	<i>N</i>	41	38	40	30	149
No Feedback	\bar{X}	6.30	2.69	4.54	1.46	3.86
	<i>SD</i>	6.20	4.97	4.64	4.60	5.43
	<i>N</i>	38	40	37	30	145
Total	\bar{X}	6.26	3.43	4.78	3.69	4.60
	<i>SD</i>	5.50	5.48	5.12	4.71	5.34
	<i>N</i>	79	78	77	60	294

Note. Dependent variable is the difference between Trial 1 and Trial 2 performance scores. \bar{X} = Mean, *SD* = Standard Deviation, *N* = Number.

Levene's test for equality of variances was not significant for this analysis ($F(7, 286) = 1.93, p = .065$) indicating that the error variance of the performance improvement was equal across groups. Table 4 presents descriptive statistics for the main and interaction effects. The ANOVA results revealed that the goal setting main effect was significant, suggesting that performance improvement from Trial 1 to Trial 2 varied depending on the goal setting condition ($F(3, 286) = 4.66, p = .003, \eta_p^2 = .05$). Tukey's HSD comparisons revealed that performance improvement was significantly higher among participants in the assigned goal condition than those in no goal condition ($\Delta M = 2.57, SE = .88, p = .05, 95\% CI [.83, 4.31]$), providing support for H1a. However, no significant differences in performance improvement were observed between primed goal and no goal conditions, and between combination of assigned and primed goals and no goal conditions, so H1b and H1c were not supported. Results also indicated that performance improvement of participants in the assigned goal condition was significantly higher than participants in the primed goal condition ($\Delta M = 2.81, SE = .83, p = .05, 95\% CI [1.19, 4.34]$); whereas performance improvement of participants in the combination of assigned and primed goals condition was not significantly different from either participants in the assigned goal or participants in the primed goal conditions. The post hoc power analysis conducted by *G*Power* (Erdfelder, Faul, & Buchner, 1996; Faul & Erd-

felder, 1992) indicated that the statistical power ($1 - \beta$) to detect the goal setting main effect in performance improvement was .90 ($\alpha = .05$). The main effect for feedback was also found as significant, suggesting that performance improvement from Trial 1 to Trial 2 changed as a function of performance feedback ($F(1, 286) = 6.88, p = .05, \eta_p^2 = .02$). In accordance with H2, performance improvement was significantly higher among participants who were given feedback than those who were not ($\Delta M = 1.59, SE = .61, p = .05, 95\% CI [.40, 2.79]$). Statistical power to detect the main effect of feedback in performance improvement was .75 ($\alpha = .05$).

Table 4. Descriptive Statistics of the Main Effects and the Interaction Effect

Condition	Mean	SE	95% confidence interval	
			Lower bound	Upper bound
Descriptive statistics for goal setting main effect				
Goal setting				
Assigned	6.26	.58	5.12	7.41
Primed	3.45	.59	2.30	4.60
Combination	4.77	.59	3.61	5.93
No goal	3.69	.67	2.38	5.00
Descriptive statistics for performance feedback main effect				
Feedback				
Feedback	5.34	.43	4.50	6.18
No Feedback	3.75	.43	2.90	4.60
Descriptive statistics for goal setting * performance feedback interaction effect				
Goal setting * Feedback				
Feedback				
Assigned	6.22	.81	4.64	7.81
Primed	4.21	.84	2.56	5.86
Combination	5.00	.82	3.39	6.61
No goal	5.93	.94	4.07	7.78
No feedback				
Assigned	6.30	.84	4.65	7.95
Primed	2.69	.82	1.09	4.30
Combination	4.54	.85	2.87	6.21
No goal	1.46	.94	-4.0	3.31

Note. Dependent variable is the difference between Trial 1 and Trial 2 performance scores.

The ANOVA results demonstrated that goal setting and performance feedback interaction were marginally significant ($F(3, 286) = 2.52, p = .01, \eta_p^2 = .03$). Pairwise comparisons indicated that in the no goal condition, performance improvement of participants who were provided feedback was significantly higher than that of participants who were not provided feedback ($\Delta M = 4.47, SE = 1.33, p = .05, 95\% CI [1.84, 7.09]$).

However, in the other three goal conditions, performance improvement did not change depending on the feedback condition.

In testing H3, we conducted a series of planned comparisons to see whether groups/conditions in which goal setting and performance feedback were provided together performed better than the other groups (i.e., goal setting without feedback, feedback without goal setting, and no goal setting no feedback). To do this, we compared groups with goal setting and feedback (i.e., assigned goal with feedback, primed goal with feedback, and combination goal with feedback) (1) to groups with goal setting without feedback (i.e., assigned goal without feedback, primed goal without feedback, and combination goal without feedback); (2) to the group with feedback without goal setting; and lastly (3) to the group with no goal setting and no feedback. The performance improvement of participants in the groups with goal setting and feedback together performed significantly better than those in the control condition (i.e., no goal setting no feedback, $t(147) = 3.42$, $SE = 1.08$, $p = .05$). However, contrary to expectations, groups with goal setting and feedback were not significantly different compared to the group with goal setting without feedback and the group with feedback without goal setting. Taken together, the results of planned comparison analyses led to the rejection of H3, which proposes that participants assigned in groups with goal setting and feedback achieve higher performance improvement than participants in all other groups.⁵ For the current study, the statistical power to detect the interaction effect was calculated to be .64 ($\alpha = .05$). A priori power analysis indicated that a sample size of 535 would be necessary to detect a significant interaction effect with a power of .90 ($\alpha = .05$), so an interaction effect may have a stronger level of significance with a larger sample size and statistical power.

5 We conducted additional contrasts, one for each goal type separately. In the first planned contrast we examined whether performance improvement was higher in the assigned goal with feedback condition (Condition 1) than assigned goal without feedback, feedback without goal, and no goal-no feedback conditions (Conditions 4, 7, 8). In the second planned contrast we examined whether performance improvement was higher in the primed goal with feedback condition (Condition 2) than primed goal without feedback, feedback without goal, and no goal-no feedback conditions (Conditions 5, 7, 8). In the last planned contrast, we tested whether performance improvement was higher in the combination goal with feedback condition (Condition 3) than combination goal without feedback, feedback without goal, and no goal-no feedback conditions (Conditions 6, 7, 8). However, none of the goal types with feedback resulted in higher performance improvements than the remaining conditions leading us further reject H3 ($p = .069$, $p = .369$, $p = .253$, respectively).

DISCUSSION

Responding to calls to set the record straight regarding the effectiveness of subconscious motivation and its relation to conscious motivation (see Locke & Latham, 2002, 2004, 2006) and priming (Kahneman, 2012), this study aimed to examine the relationship between conscious and subconscious goals in improving performance and investigate the possible interaction between subconscious goals and performance feedback.

Findings concerning the effects of assigned goals were especially in line with GST research (e.g., Locke & Latham, 1990, 2002, 2006) such that consciously assigned specific goals resulted in performance improvement on a novel task requiring creativity. Hereby, given the improvement in task performance over time, the present study provides support for the use of assigned goals to enhance performance.

In light of claims made by goal setting theorists who stated that not all motivation is conscious and that there is a need to work on subconscious motivation (i.e., goals) (e.g., Latham, et al., 2010; Locke & Latham, 2002; 2004; 2006) and based on findings demonstrating that goals can be primed in the subconscious to influence thoughts and actions (e.g., Bargh, et al., 2001; Shah, 2005), the present study examined whether primed goals improved performance like assigned goals. When putting forward this hypothesis, we were aware of the debate and doubts concerning the effectiveness of priming (see Bower, 2012; Kahneman, 2012). Driven by these debates and doubts, we attempted to retest the findings showing the influence of primed goals in improving performance (e.g., Shantz & Latham, 2009; 2011; Stajkovic, et al., 2006).

While manipulation check results indicated that primed goal manipulation with achievement-related photos was in fact successful, in the current study performance improvement of participants in the primed goal condition was not statistically superior to that of participants in the no goal condition. It looks like the effects of priming in the present study failed to exceed the effect of simple practice. Thus, the current study was not able to replicate the findings pointing to the effectiveness of primed goals in enhancing performance, rather it added to the doubts regarding the effectiveness of priming.

Drawing on claims suggesting that conscious and subconscious goals are not necessarily correlated and effects on performance may be additive (Shantz & Latham, 2009; Stajkovic et al., 2006), it is expected that the effects of assigned and primed goals would

be additive, and this combination would lead to greater performance increment than their individual effects. Yet, the findings demonstrated that the performance increment of participants in the combination goal condition was not more than the increments observed in any of the other goal setting conditions (i.e., assigned, primed, and no goal conditions). Regarding the comparative effects of different goal setting conditions, the only significant difference observed was between assigned goals and primed goals in which assigned goals improved performance significantly more than did primed goals. These findings contradict with the assertion that subconscious goals have similar effects with conscious goals (e.g., Bargh et al., 2001; Kawada et al., 2004).

In the present study, there are at least two possible explanations for not observing the additive effects of assigned and primed goals. First, overstimulation may be a plausible explanation for this rather unexpected finding. That is, assigning participants to a relatively challenging, conscious goal and priming them with achievement could have created an overstimulation about success. This overstimulation might have distracted participants resulting in a slight performance decrement. Furthermore, since they direct cognitive effort and energy to the task, consciously assigned goals may have exhausted all capacity to generate alternative uses of a common object leaving less room for the additive effect of the primed goal. Second, speculatively speaking, assigned conscious and primed subconscious goals may have created conflicting tendencies in participants' minds, and the existence of conflicting goals may be one reason for the failure to observe an additive effect (Légal, Meyer, & Delouée, 2007; Kruglanski et al., 2002) for the effects of conflicting goals. Certainly, future research is needed to better understand the mechanism underlying the reason for not finding additive effects of conscious and subconscious goals.

Regarding the performance feedback main effect, it was found that performance improvement of participants who were given feedback regarding their Trial 1 performance was higher than that of participants who were not given feedback, suggesting that performance feedback enhances performance over time. It is considered that performance feedback was successful in this study as it met the requirements of effective feedback described by Rummel and Brache (1995) (i.e. it was relevant and accurate as it was based on participants' actual Trial 1 performance, it was given in a timely fashion right after the end of Trial 1, and it was specific and easy to understand because it described how the person did compared to the norms established in advance). In this study, draw-

ing on the suggestions of GST emphasizing the importance of feedback for the effectiveness of goal setting manipulation (e.g., Locke & Bryan, 1966; Locke & Latham, 2002) and in-line with the meta-analytic findings (e.g., Mento, et al., 1987; Neubert, 1998), it was expected that goal setting and feedback together would lead to greater performance improvement. However, the results provided only marginal support for the goal setting and performance feedback interaction, and this interaction was not exactly expected. Specifically, findings failed to support the joint effects of goal setting and performance feedback in increasing performance; they revealed that, when goal setting was present, existence of feedback manipulation did not create an additional advantage in improving performance. In any of the assigned, primed, and combination goal conditions, performance feedback did not lead to a significant increase on performance. However, in the absence of goal setting, providing performance feedback resulted in performance increment. Specifically, in no goal setting conditions, performance improvement of participants who received feedback on their Trial 1 performance was significantly higher than that of participants who did not receive feedback. This finding implies that when participants were not assigned a goal for subsequent performance, they benefitted more from receiving feedback, suggesting a compensatory role for performance feedback. This finding contradicts the claims that feedback is crucial for success of goal setting (Locke et al., 1981) and goals with feedback are more effective than goals only (e.g., Locke, 1996; Locke & Latham, 2002; Neubert, 1998).

For this study, there appears to be at least two plausible explanations for not observing additive effects of goal setting and performance feedback in enhancing performance. First, the assigned goal setting manipulation may be considered as already containing feedback regarding Trial 1 performance, since participants were asked that the goal for Trial 2 was to move performance one level further. Although they were not specifically given feedback about their Trial 1 performance level, participants may have estimated their Trial 1 performance level based on the goal assigned. Therefore, providing performance feedback might not have resulted in a dramatic change for them. Feedback may have only confirmed the information received by goal setting manipulation. Second, limited statistical power to detect the interaction effect might have also played a role in not being able to observe possible additive effects of goal setting and performance feedback. To sum up, building on these findings concerning the interaction between goal setting and performance feedback, it seems fair to claim that people need information

about their past performance to perform higher subsequently. They can meet this need either from the goals assigned for the subsequent performance or from the feedback received on previous performance. In general, the results suggest that compared to performance feedback, an assigned goal appears to be a more important performance enhancer. In the absence of an assigned goal, however, people may take advantage of performance feedback.

This study has a number of contributions to the existing goal setting and feedback literature. First, although a manipulation check provided evidence for the general effectiveness of primed goal manipulation, primed goals appear not to be as effective as assigned goals in improving task performance. Furthermore, this study is one of the rare studies examining whether a combination of assigned and primed goals would result in greater motivation and effort. The findings did not support the expected additive effects of primed goals. Rather, they suggested that in the presence of assigned goals, there was no room for improvement to be made by primed goals. Hence, despite empirical evidence supporting the effectiveness of primed goals (e.g., Bargh, et al., 2001; Shantz & Latham, 2009, 2011; Stajkovic et al., 2006), the present findings seem to echo the doubts (e.g., Bower, 2012; Doyen et al., 2012) concerning the added value of primed goals over and above assigned goals. Nevertheless, it is still important to further examine potential additive effects of assigned and primed goals in different contexts and/or with different tasks. Also, as pointed out by a recent meta-analysis study (Weingarten et al., 2018), there might be some variables moderating the effects of priming. Future studies may focus on the moderators affecting the power of priming manipulations.

Second, the present study contributes to the already flourished goal setting and feedback literature by investigating the complementary influence of goals and feedback on performance. After confirming the well-established goal and feedback main effects, the findings indicated that in the presence of proper goals for subsequent performance, feedback may be unnecessary as the goal itself is likely to contain the information which one may also receive from feedback. Finally, as a practical contribution, the results suggest that, as both goal setting and performance feedback are effective ways to improve employee performance and their effects are not necessarily additive, organizations may opt for one of them. That is, organizations may choose to give feedback on past performance, or set goals for the subsequent performance. Choosing one instead of including both in the performance system may save effort, time, and budget.

It is also important to acknowledge and discuss some important limitations of the study along with some suggestions for future research. First, generalizability of the present findings may be limited because of the nature of the sample, priming manipulation, and the performance task used. Future studies are needed to explore the generalizability of the findings using non-student samples in real life work settings. Second, relatively small effect sizes for the two main effects and the interaction effect pose a threat to practical significance of the findings. It was thought that the observed small effect sizes may be associated with the strength of the manipulations. For example, in the priming manipulation it was showed that the achievement-related photos evoked feelings of achievement and that the priming manipulation was generally effective, but the two photos' small presence in an office-like environment may have not been enough to create the intended feelings of achievement at the subconscious level. Moreover, the primed goal manipulation check showed the effectiveness of primed goal manipulation used in this study, but the photos used for achievement priming might have evoked unintended states, such as "relaxing" (after performing and succeeding). Also, using stock photos in place of real student photos might have decreased the power of priming manipulation. Future studies should consider these limitations in the selection of priming photos. In addition, a similar weakness of feedback and assigned goal setting manipulations may have contributed to the observed small effect sizes. Hence, it is recommended to test the same hypotheses with a stronger/different goal setting (both assigned and primed) and feedback manipulations.

Third, a related limitation of the study concerns the photos used in the priming manipulation. It is possible that the two photos might have evoked conflicting subconscious goals. The effects of compatibility and conflict between primed goals or between an assigned and a primed goal have been documented in the literature (Légal et al., 2007). However, as far as is known, previous studies have not examined the effects of compatibility and conflict between two or more primed goals. So, future studies may examine the compatibility of the primed goals used concurrently. Fourth, another issue concerning priming is that photos used in the control condition (i.e., nature photos) may have failed to act as neutral primes. So, in future studies, priming control may also involve no photos. Fifth, the task used in the present study was a novel task, which is atypical of most real-life job tasks. Therefore, it is recommended that future studies use tasks that mimic typical job tasks. As a final suggestion, future research should at-

tempt to explore whether the norm-based nature of feedback played a role in the present results and boundary conditions for feedback effectiveness in different contexts/tasks.

As a conclusion, findings of this experimental study indicated that assigned conscious goals and performance feedback improve performance on a task requiring creativity. However, there was not any evidence that primed goals and its combination with assigned goals enhance task performance. The effect of using an assigned and a primed goal in combination was not greater than the unique effects of either assigned or primed goals. Conscious goal setting seems to be better in improving performance; however, in its absence, providing performance feedback may be considered as an effective way in increasing task performance. Finally, the present results did not support the superiority of goal setting combined with performance feedback in performance improvement. It is expected that these findings will stimulate future research in this area.

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