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# Tell Me What To Do Not How To Do It: Influence of Creative Outcome and Process Goals on Creativity

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ABSTRACT

The current research examines the utility of using creative outcome goals and process goals to enhance creativity. We propose that although creative outcome goals are likely to have a direct positive impact on creativity, the relationship between process goals and creativity is mediated by creative process engagement. Results from an experimental study demonstrated that creative outcome goals, particularly specific creative outcome goals, relate directly as well as indirectly to outcome creativity through creative process engagement. Creative process goals, however, impact outcome creativity only indirectly through creative process engagement. Process goals also had a negative impact on perceptions of autonomy, which resulted in lower levels of intrinsic motivation and ultimately creativity. The findings suggest that goals can be effective for enhancing both creative process engagement and outcome creativity; however, care should be taken to ensure that goals do not negatively impact autonomy.

*Keywords:* creativity, creative process, goals, motivation, autonomy.

Past research on motivation and creativity has focused primarily on the importance of intrinsic motivation for the production of creative outcomes—outcomes that are both novel and useful (Amabile, 1983; Liu et al., 2016). Another much smaller line of research, however, has examined the role of extrinsic forms of motivation such as goals for enhancing creativity. Past research has found that telling individuals to "be creative" often improves scores on creativity tests (Harrington, 1975; O'Hara & Sternberg, 2000–2001), idea generation tasks (Carson & Carson, 1993; Litchfield et al., 2011; Madjar & Shalley, 2008), and creative problem-solving tasks (Shalley, 1991, 1995). Moreover, research on the creative process suggests that directing attention toward relevant behaviors and cognitions (e.g., problem definition and idea evaluation) is beneficial for creative problem-solving (Mumford & McIntosh, 2017). Together, these two bodies of research suggest that there may be two ways to enhance creativity via goals—outcome goals and process goals. We suggest that both types of goals may enhance creative performance but through different mechanisms. Process goals direct attention to the "how" (i.e., relevant behaviors and cognitions) and should relate indirectly to creativity through creative process engagement. Outcome goals direct attention toward "what" is expected (i.e., relevant criteria) and are predicted to relate directly to creative performance.

Past theory and research on goal setting suggest that goals should be specific and challenging; however, this vast body of research tends to focus on *quantitative* outcomes such as productivity (Locke & Latham, 1990, 2002). Creativity, however, is a *qualitative* outcome, and it is not currently clear how to set specific goals for qualitative outcomes. Previous research on outcome goals typically focuses on what we will refer to as a general outcome goal (e.g., "be creative"). The content of such goals only specifies that the outcome should be creative, but otherwise leaves the desired outcome open ended. In contrast, previous research on the creative process often adds specificity by adding quantity standards (e.g., generate at least five ideas), quality standards (e.g., at least 90% of the ideas you generate should be highly novel; Litchfield et al., 2011), and/or adding structure (e.g., by specifying steps to take for engaging in the creative process; Sagiv et al., 2010). Thus, we will investigate creative process and outcome goals that vary in their specificity. General goals involve less structure and do not provide a numerical standard, whereas specific goals include more structure and/or numerical standards. We expect that goal specificity will improve performance for the goal areas—specific outcome goals will yield higher levels of outcome creativity and specific process goals will result in higher levels of outcome creativity indirectly through increased creative process engagement.

One potential impact of goal specificity that must be considered is the impact of goal specificity on autonomy and intrinsic motivation. As noted, creativity research and theory frequently cite intrinsic motivation as an important predictor of creative performance (Amabile, 1983; Liu et al., 2016). Extrinsic constraints, such as goals, may negatively impact intrinsic motivation when perceived as controlling rather than informational (Deci, 1975; Deci et al., 2017). We suggest that specific process goals limit how individuals engage in the creative process which may be perceived as controlling, thereby reducing feelings of autonomy (Deci et al., 2017). Thus, although effective for directing attention toward the creative process, we consider the possibility that specific process goals might negatively impact creativity by decreasing feelings of autonomy and intrinsic motivation.

Taken together, the current research answers past calls for a better understanding of goals in the creativity context (e.g., Litchfield, 2008; Shalley & Koseoglu, 2013) by examining both outcome and process goals within the same study, as well as the role of goal specificity. Moreover, we examine how specific goals influence psychological mechanisms such as autonomy and intrinsic motivation which ultimately impact creativity. If specific goals negatively impact perceptions of autonomy and intrinsic motivation, their ability to enhance creativity would be more limited.

## CREATIVITY

Although there is broad consensus that creativity is defined as an outcome that is both novel and useful (Amabile, 1982; Zhou & Hoever, 2014), focusing solely on creative outcomes does not explain how people arrive at the creative outcome—that is, the creative process. Several models of the creative process exist; however, most models include some version of problem definition, idea generation, and idea evaluation (Montag et al., 2012). During *problem definition*, people work to define the parameters of the problem (Reiter-Palmon, 2017; Reiter-Palmon et al., 1997; Reiter-Palmon & Robinson, 2009). Problem definition often occurs automatically; however, conscious engagement in problem definition predicts higher levels of creativity (Reiter-Palmon, 2017). Once a problem is defined, people often engage in *idea generation* (Reiter-Palmon & Arreola, 2015). Idea generation (also sometimes referred to as brainstorming) is perhaps the most studied part of the creative process, as it is sometimes used as a proxy for creative outcomes (e.g., Batey et al., 2009). Finally, *idea evaluation* involves judging an idea against criteria and forecasting the implementation of that idea (Dailey & Mumford, 2006; Lonergan et al., 2004; McIntosh et al., 2021). Notably, these stages of the creative process represent effective strategies for solving creative problems and thus are likely to enhance creative outcomes, but they also exist independently. That is, individuals may engage in the creative process without producing a creative outcome.

Notably, empirical research examining the creative process as a whole remains rather limited, particularly in relation to creative outcomes (Montag et al., 2012). Researchers frequently examine individual stages of the creative process in isolation (e.g., how problem construction [definition] relates to creativity; Reiter-Palmon et al., 1997) with notable exceptions (e.g., Medeiros et al., 2018; Mumford et al., 1997). Examinations of the creative process are further complicated by the largely invisible cognitive processes taking place alongside the more visible behaviors (Ward et al., 1999; Weisberg, 1993). We use a measure of creative process engagement that has been shown in previous research to relate to supervisor ratings of creative performance (Zhang & Bartol, 2010a, 2010b) and self-ratings of creative performance (Henker et al., 2015; Tan et al., 2019). Although self-reports are subject to certain limitations (Reiter-Palmon et al., 2012), they are not inherently invalid (Ng & Feldman, 2012), and measuring the creative process through self-reports may illuminate some of the less visible aspects.

## GOALS AND CREATIVITY

Goals have been widely applied in the psychological literature as a means of enhancing motivation, productivity, and performance across a number of domains (Austin & Vancouver, 1996; Locke & Latham, 1990, 2002). Put simply, goals direct attention by specifying "an object or aim of an action" (Locke & Latham, 2002, p. 705). Specific, difficult goals have been widely applied in performance settings where the quantity of outcomes is often important. We should not assume, however, that previous research on goal setting will translate to qualitative outcomes such as creativity.

There are important differences between productivity outcomes and creativity outcomes that pose obstacles to applying traditional goal setting (i.e., assigning specific, difficult goals) to creativity tasks. To begin, creativity is a qualitative rather than quantitative evaluation of an outcome. Thus, setting a goal to increase the quantity of an outcome will not necessarily increase creativity unless a quality goal is also present

(Austin & Bobko, 1985; Shalley, 1991). Second, one of the benefits of goal setting is feedback gleaned from goal striving (Ashford & De Stobbeleir, 2013). When a specific, difficult productivity goal (e.g., write a 10-page paper in 3 hours) is assigned, people receive feedback from the task itself and can easily see how close they may be to attaining the goal. In contrast, people who are told to write a creative paper are not as easily able to gauge how close they may be to attaining the goal (Carson & Carson, 1993). Finally, creativity tasks are necessarily ambiguous and complex. Indeed, some (e.g., Beghetto, 2019, 2021; Wang et al., 2011) have argued that a certain level of uncertainty/ambiguity is important for creativity. That is, if the problem is well defined, the process predetermined, and the desired outcome known, there is no room for creative expression. Goal-setting research has traditionally focused on relatively simple tasks or tasks that have clear means, which suggests the research may not perfectly translate to creativity tasks (Kanfer et al., 1994; Mone & Shalley, 1995; Shalley, 1991). The current research examines the application of goals to creative outcomes and the creative process.

## OUTCOME GOALS

Despite these differences between creativity and performance outcomes, goals for creative outcomes may also be beneficial for creativity. Specifically, goals have been shown to encourage persistence, effort, and attention toward goal areas, and indirectly influence performance through the development of effective task strategies (Locke, 1996). Indeed, past research has suggested that creativity requires deliberation and conscious choice (Ford, 1996). That is, when deciding between habitual action and creativity, the habitual action is often less risky and more likely to be positively received by others (Beghetto et al., 2021; Sternberg & Lubart, 1996). Together, this suggests that creativity is not an unconscious default, and setting a creative outcome goal—a goal specifying that outcomes should be both novel and useful—should direct attention toward that goal area and away from habitual action (Shalley, 1995). In support of this idea, studies examining the influence of general creative outcome goals have determined that the presence of a goal to "be creative" increases creativity compared to a do your best goal that does not mention creativity (Carson & Carson, 1993; Litchfield et al., 2011; Shalley, 1991, 1995).

In the current research, we operationalize general creative outcome goals as goals that specify that an outcome should be creative (i.e., novel and useful). Litchfield (2008) noted that adding a quantitative component to qualitative goals may increase their effectiveness. Thus, the specific creative outcome goal examined here includes a goal to be creative and a numerical standard of integrating three highly creative ideas. Notably, we attempted to set a specific numerical goal that was not high in difficulty based on previous research focused on idea generation (e.g., Litchfield et al., 2011; Reiter-Palmon & Arreola, 2015) and did not include a time limit as is frequently done to increase difficulty. Creative outcome goals (whether general or specific) are likely to require greater effort and persistence, as they require foregoing what Ward (1994) referred to as "the path of least resistance." That is, individuals tend to use passive approaches relying upon existing mental models to solve problems (Finke et al., 1992). If, however, a creative outcome goal is present, individuals are prevented from taking the path of least resistance and must exert more cognitive effort to come up with an idea that is novel in addition to being useful. Although general outcome goals are likely to result in higher levels of creativity than if no outcome goal is set, a specific outcome goal is likely to require greater effort and have a stronger positive effect on creativity.

Hypothesis 1a: A general creative outcome goal will result in higher levels of creativity than no creative outcome goal.

Hypothesis 1b: A specific creative outcome goal will result in higher levels of creativity than a general creative outcome goal or no creative outcome goal.

## PROCESS GOALS

Past research suggests that the creative process is an important precursor to creative outcomes (Mumford & McIntosh, 2017; Zhang & Bartol, 2010b). Thus, encouraging higher levels of creative process engagement should result in higher levels of creativity. How to effectively encourage creative process engagement is an important question at the center of the creative problem-solving literature. Creative problem-solving assumes that the creative process is inherently a problem-solving process and can be studied just as any such process and that engaging in certain behaviors and cognitions will yield higher levels of creativity. In a series of studies, Mumford and colleagues supported this notion by using instructions to encourage participants to

engage in various stages of the creative process finding that individual stages were beneficial for creativity (Mumford et al., 1997; Mumford, Baughman, et al., 1996a; Mumford, Supinski, et al., 1996b).

The current study investigates several stages of the creative process, namely problem definition, idea generation, and idea evaluation. General process goals present these different stages to facilitate effective task strategy while also providing flexibility to engage in the creative process stages in any order or not at all. We suggest that process goals can be made more specific by adding both numerical specificity and structure (i.e., requiring users to complete the stages in a specific order) to the creative process. Past research has produced equivocal findings with respect to structure resulting in two different perspectives (Sagiv et al., 2010). On one hand, widely employed strategies such as brainstorming (Osborn, 1953) advocate for free association and no restriction on how ideas are generated. On the other hand, past research has argued that structure imposed through instructions may also result in creative outcomes (Rietzschel et al., 2014; Sagiv et al., 2010). Beghetto (2019), for example, describes the benefits of "structured uncertainty" whereby creative expression in classrooms can be supported by giving students the opportunity to engage with uncertainty while providing instructional supports (e.g., informational constraints; defined criteria). In other research, Sagiv et al. (2010) gave participants a specific set of step-by-step instructions for generating ideas and found that structured idea generation resulted in ideas that were more original and creative than those generated in the no structure condition. Notably, research in this area has primarily focused on idea generation rather than the creative process as a whole. Thus, understanding whether and how to structure the creative process has remained largely untested. We suggest that specific process goals are likely to increase creative process engagement by further directing attention toward these relevant behaviors and cognitions and increasing effort by including numerical standards.

Hypothesis 2a: General process goals will result in higher levels of self-reported creative process engagement than no process goals.

Hypothesis 2b: Specific process goals will result in higher levels of self-reported creative process engagement than general process goals or no process goals.

We predict that process goals direct attention toward important cognitive/behavioral strategies for producing creative outcomes. Past research has noted, however, that engaging in the creative process does not guarantee a creative outcome (Montag et al., 2012). For example, generating ideas even numerous and high in quality does not guarantee that the best idea will be selected, or an effective solution is articulated (Rietzschel et al., 2006). Other research, however, has suggested that more active engagement in the creative process results in higher levels of creativity (e.g., Reiter-Palmon & Robinson, 2009). Additionally, past research on goal setting suggests that goals indirectly impact performance by encouraging relevant task strategy (Locke, 1996). Thus, we propose that process goals direct attention toward cognitive and behavioral strategies that may enhance creative outcomes through increased creative process engagement.

Hypothesis 3: The relationship between process goals (general and specific) and creativity will be mediated by creative process engagement.

## AUTONOMY AND INTRINSIC MOTIVATION

An additional consideration is how specific goals will impact psychological mechanisms believed to be beneficial for creativity. How specific goals impact creativity may be complex and depend on how the goals direct attention. We propose that although specific process goals are likely to increase creative process engagement, specific process goals may also have an indirect negative effect on outcome creativity if autonomy and intrinsic motivation are negatively impacted. Amabile's (1983) componential model of creativity identifies intrinsic motivation as one of the essential components of creativity. If goal-setting procedures reduce intrinsic motivation, they are also likely to reduce creativity.

Drawing from the literature on cognitive evaluation theory (Deci, 1975) and brainstorming (Osborn, 1953), Amabile's (1983) componential model of creativity proposed that intrinsic task motivation would be influenced by the presence or absence of extrinsic constraints in the social environment. Amabile further proposed that extrinsic constraints would decrease intrinsic motivation and lead to less creative outcomes. Although extrinsic constraints may manifest in several ways (e.g., evaluation, time pressure, and external standards), much of the research on extrinsic constraints and creativity has focused on how extrinsic rewards impact intrinsic motivation (e.g., Amabile, 1985; Hennessey & Amabile, 1998). Although much of the early research focused on the potential negative effects of extrinsic rewards (Amabile et al., 1986;

Hennessey, 1989; cf. Eisenberger & Cameron, 1996, 1998; Eisenberger & Selbst, 1994), later theory and research acknowledge that extrinsic rewards do not always work in opposition to intrinsic motivation. In fact, Eisenberger et al. (1999) demonstrated that rewards contingent on performance standards led to higher levels of perceived choice and intrinsic task interest compared to conditions with the same performance standard but no reward. Other research on extrinsic constraints more broadly has also acknowledged that not all constraints will negatively impact intrinsic motivation and creativity (Caniëls & Rietzschel, 2015; Damadzic et al., 2022; Medeiros et al., 2014).

Considering the empirical research, Amabile and Pratt (2016) revised the componential model of creativity to acknowledge the potential positive effects of extrinsic motivation on creativity. They propose that extrinsic motivation can act synergistically with intrinsic motivation to promote creative outcomes. Specifically, how extrinsic constraints impact intrinsic motivation will depend on whether they are viewed as controlling or informational. Extrinsic constraints that are perceived as controlling will reduce perceived autonomy, thereby negatively impacting intrinsic motivation and creative performance (Amabile & Pratt, 2016; Deci et al., 2017). In contrast, when extrinsic constraints are viewed as informational (e.g., information about one's competence), they can increase intrinsic motivation.

In the context of the current study, goals may be construed as extrinsic constraints because they are externally imposed and constrain the outcome and/or process (Chang & Lorenzi, 1983; Mossholder, 1980). We expect that outcome goals are likely to provide clarity and direct attention toward outcomes that are both novel and useful. Process goals, in contrast, are likely to have a more complex relationship with creative performance. Past research on autonomy suggests that individuals are likely to feel less autonomous when they do not have control over the methods used when engaging in a task (Reeve et al., 2003). Thus, we propose that process goals may thwart one's need for autonomy by decreasing the control individuals have over how they engage in the creative process. Given the nature of goal specificity, this may be especially true for specific process goals. Early research drawing from the componential model of creativity (Amabile, 1988) supports this notion finding that external constraints, especially when perceived as controlling (i.e., overly structured), can be harmful to creativity. Taken together, we argue that specific process goals will have a negative impact on autonomy and intrinsic motivation. Moreover, the relationship between specific process goals and creative performance will be serially mediated by autonomy and intrinsic motivation.

Hypothesis 4a: Specific process goals will result in lower levels of self-reported autonomy than general process goals or no process goals.

Hypothesis 4b: Specific process goals will result in lower levels of self-reported intrinsic motivation than general process goals or no process goals.

Hypothesis 5: The relationship between specific process goals and creativity will be serially mediated by autonomy and intrinsic motivation.

## METHOD

### PARTICIPANTS

A total of 587 undergraduate students were recruited from a Midwestern University to participate in this experiment. Of the initial 587 participants, 25 participants were removed due to missing data and 2 participants were removed for spending too little time on the questionnaire items and invariant responding. The remaining 560 participants were included in the analyses ($M_{age}$ = 18.88, $SD_{age}$ = 1.19; 43.1% male; 62.9% White and 25% Asian or Pacific Islander). The study received IRB approval and all participants received course credit for their participation.

### DESIGN

This study implemented a 3 (outcome goal: none, general, and specific) × 3 (process goals: none, general, and specific) between-groups experimental design. All participants completed the experiment in a lab setting on a computer using a task programmed through Qualtrics. The task involved coming up with a plan to increase the participation of undergraduates in community service projects. Participants were randomly assigned to conditions.

Outcome goals were manipulated in the task statement by giving participants the goal to either "come up with a plan" [no outcome goal condition], "come up with a creative (original and practical) plan" [general outcome goal condition], or "come up with a creative (original and practical) plan integrating at least three highly creative ideas" [specific outcome goal condition].

Process goals were manipulated during the second phase of the task. Participants in the no process goals condition were not given goals to engage in the creative process. Participants in the general and specific process goals conditions were given goals for problem definition, idea generation, and idea evaluation; however, how these goals were presented differed. In the general process goals condition, participants were presented with the process goals on the same page with open text boxes and told they could engage in the process behaviors in any order or not at all if they wished. In the specific process goals condition, participants were presented with goals for problem definition, idea generation, and idea evaluation sequentially and were told they must complete the goals in the specified order. Specificity was also imposed in the problem definition stage by specifying the number of ways the problem should be restated (at least three different ways), as well as, in the idea generation stage by giving the goal to come up with at least five [creative (with general or specific outcome goals)] ideas. Numerical standards in the specific goal conditions were chosen based on previous research (e.g., Litchfield et al., 2011; Reiter-Palmon & Arreola, 2015) and were intended to be highly achievable.

## PROCEDURE

Participants in all conditions were introduced to a creative problem-solving task that presented the following problem: "[Your] University has decided that they would like their undergraduate students to be more involved in community service. Currently only about 30% of the students volunteer either on campus or in the community; however, there are many needs in the community. The University has brought in a consultant (you) to help increase involvement in this area. Your goal is to come up with a plan to encourage students at [Your University] to get involved in community service that could be presented to the Dean of Students."

Participants in different outcome goal conditions received slightly different versions of this task introduction. Participants in the no outcome goal conditions were given the prompt as presented above. Participants in the general outcome goal conditions were told that their "goal is to come up with a creative (original and practical) plan..." Participants in the specific outcome goal conditions were told that their "goal is to come up with a creative (original and practical) plan integrating at least three highly creative ideas..." A manipulation check indicated that the outcome goal manipulation was successful. A significant main effect was found for the outcome goal conditions with respect to the statement: "My goal was to come up with a creative solution to the problem" ($F(2,550) = 15.84$, $p < .001$, $\eta^2 = .05$). Compared to the no outcome goal condition ($M = 4.74$), participants were significantly more likely to report coming up with a creative solution as their goal when either a general ($M = 5.22$) or a specific ($M = 5.57$) ($p < .001$ for each comparison) outcome goal was given. In addition, those in the specific creative outcome goal condition were told to integrate three creative ideas into their solution. As expected, the word count for the final solution was higher for the specific outcome goal condition ($M = 119.09$) than the general ($M = 72.39$) and no ($M = 84.54$) outcome goal conditions ($p < .001$). Clearly, the specific outcome goal required more effort.

In the next phase of the experiment, participants in the general and specific process goals conditions were given goals to engage in three phases of the creative process: problem definition, idea generation, and idea evaluation. Participants in the general process goals condition were given instructions that read, "On this page you will find a number of strategies that have been used when solving [creative] problems. You may use these strategies to develop a plan if you would like and complete the strategies in any order." Goals for problem definition, idea generation, and idea evaluation were given on the same page and participants were able to engage in the creative process flexibly. Participants in the specific process goals condition were given the instructions, "Next we will walk you through stages for solving this [creative] problem. All stages must be completed as specified in the order given." Participants were then given the process goals in order and had to complete each stage of the creative process before continuing to the next stage. During the problem definition stage, participants were given the specific goal to restate the problem in at least three different ways. A manipulation check indicated that the majority of participants restated the problem in at least three different ways (99.69%). The specific process goals condition also generated significantly more problem restatements ($M = 3.33$, $SD = 1.28$) than the general process goals condition ($M = 1.85$, $SD = 1.19$), $t(365) = 11.43$, $p < .001$. During the idea generation stage, participants were given the specific goal to come up with at least five creative ideas. A manipulation check indicated that the majority of participants generated at least five ideas (99.9%). The specific process goals condition also generated significantly more ideas ($M = 5.25$, $SD = 1.60$) than the general process goals condition ($M = 2.73$, $SD = 1.46$), $t(365) = 15.81$, $p < .001$. During the idea evaluation stage, participants were given the goal to rate each of their ideas

generated during the previous phase on originality [goodness of idea (no creative outcome goal condition)] and practicality [addressing the problem (no creative outcome goal condition)] on a 5-point scale.

During the final phase of the task, participants were asked to come up with a solution to the problem presented at the beginning of the experiment. Following the experimental task, participants completed measures of creative process engagement, autonomy, intrinsic motivation, and demographic items.

## MEASURES

### Autonomy

Autonomy was assessed using three items adapted from Breaugh's (1989) method autonomy scale. An example item is, "I was allowed to decide how to go about getting the task done (the methods to use)." These items were scaled 1 (*strongly disagree*) to 7 (*strongly agree*).

### Intrinsic motivation

Intrinsic motivation was measured using the interest/enjoyment scale from the intrinsic motivation inventory (http://www.selfdeterminationtheory.org/). The interest/enjoyment subscale includes seven items meant to assess how interesting and enjoyable the task was, such as "I enjoyed doing this activity very much." The responses to these items were scaled from 1 (*not at all true*) to 7 (*very true*).

### Creative process engagement

To measure self-reported engagement with problem definition and idea generation, we adapted Zhang and Bartol's (2010a) measure of creative process engagement to meet the needs of the current study. The adaptation primarily involved changing present-tense verbs to past tense. For example, the item, "I generate a significant number of alternatives to the same problem before I choose the final solution" was changed to be past tense: "I generated a significant number of alternatives to the problem before I chose the final solution." A 5-point response scale was used (1 = *strongly disagree* to 5 = *strongly agree*).

Zhang and Bartol's (2010a) original scale did not include items referring to idea evaluation. Given that idea evaluation is an important part of the creative process, three items were developed to measure idea evaluation. These items are as follows, "I incorporated numerous brainstormed ideas into the final solution," "I evaluated the brainstormed ideas," and "I considered the novelty and usefulness as criteria when evaluating the brainstormed ideas." As with items for problem definition and idea generation, idea evaluation was assessed on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Correlations between problem definition and idea generation and idea evaluation were .60 and .48, respectively. The correlation between idea generation and idea evaluation was .54. Following the example of Zhang and Bartol (2010a), we averaged across subscales for an overall measure of creative process engagement after determining that the three first-order factors plus one second-order factor provided an acceptable fit with our data $\chi^2(34) = 131.42$, $p < .001$; CFI = .93; RMSEA = .07, 90% CI [.06, .09]; and SRMR = .05.

### Creativity

Each final solution was coded by four independent coders using a modified version of the consensual assessment technique (Amabile, 1982). All coders were trained and remained blind to the experimental manipulations. Prior to rating any ideas, coders were introduced to the study materials (e.g., information given to participants and the task). Next, coders read through 150 ideas from the sample to familiarize themselves with common responses. Then, coders rated a small number of randomized proposals for novelty. Discrepancies were discussed in frame-of-reference training. After discussing discrepancies, coders rated a second small group of randomized proposals for novelty. After discussing any discrepancies, the coders rated all proposals for novelty on a scale from 1 (*not at all novel*) to 5 (*very novel*). After rating the proposals for novelty, the same training procedure was used for usefulness ratings. After training, coders rated all proposals for usefulness on a scale from 1 (*not at all useful*) to 5 (*very useful*). The proposals were randomized between and within coders to reduce the possibility of order effects. Rating also took place over the course of several weeks to prevent fatigue among coders. Interrater reliability for novelty (ICC(2) = .85) and usefulness (ICC(2) = .79) was acceptable (Shrout & Fleiss, 1979), and ratings were averaged across the coders for the novelty and usefulness ratings. Creativity was calculated by multiplying novelty and usefulness ratings as recommended by recent research (e.g., Glăveanu et al., 2019; Zhou & Oldham, 2001).

TABLE 1. Descriptive Statistics and Correlations

| | *M* | *SD* | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|
| 1. Outcome goal | — | — | — | | | | | | |
| 2. Specific vs. general outcome goal | — | — | .01 [−.08, .09] | — | | | | | |
| 3. Process goals | — | — | .01 [−.08, .09] | .01 [−.08, .09] | — | | | | |
| 4. Specific vs. general process goal | — | — | .01 [−.08, .09] | .01 [−.07, .09] | −.01 [−.09, .07] | — | | | |
| 5. Autonomy | 6.00 | .99 | −.10* [−.19, −.02] | .02 [−.06, .10] | −.15** [−.23, −.07] | −.05 [−.15, .04] | (.91) | | |
| 6. Intrinsic motivation | 3.98 | 1.28 | .04 [−.05, .12] | .01 [−.07, .10] | .01 [−.07, .09] | −.04 [−.11, .06] | .18** [.10, .26] | (.93) | |
| 7. Creative process engagement | 3.29 | .62 | .06 [−.02, .14] | .13** [.05, .22] | .19** [.11, .27] | .02 [−.06, .11] | .14** [.06, .22] | .46** [.39, .52] | (.83) |
| 8. Creativity | 7.28 | 3.75 | .18** [.10, .26] | .30** [.22, .37] | −.02 [−.10, .06] | .05 [−.05, .12] | .10* [.01, .18] | .23** [.15, .30] | .25** [.18, .33] |

*Note.* $N = 560$; Numbers on the diagonal represent coefficient alpha; Outcome Goal/Process Goals: 1 = yes, 0 = no; Specific vs. General Goals: 0 = no goal, −1 = General Goal, 1 = Specific Goal; Creativity = Novelty × Usefulness; values in square brackets indicate 95% confidence intervals. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). $^{*}p < .05$. $^{**}p < .01$.

TABLE 2. Means and Standard Deviations by Goal Types

| Variable | Process goals | | | Outcome goal | | |
|---|---|---|---|---|---|---|
| | None $N = 193$ | General $N = 186$ | Specific $N = 181$ | None $N = 186$ | General $N = 185$ | Specific $N = 189$ |
| Creativity | 7.39 (3.77) | 6.97 (3.58) | 7.47 (3.89) | 6.31 (3.36) | 6.39 (3.49) | 9.09 (3.70) |
| CPE | 3.12 (.68) | 3.36 (.55) | 3.39 (.59) | 3.24 (.63) | 3.21 (.68) | 3.41 (.55) |
| Autonomy | 6.20 (.82) | 5.95 (1.09) | 5.84 (1.03) | 6.15 (.93) | 5.90 (1.08) | 5.95 (.95) |
| Intrinsic motivation | 3.96 (1.27) | 4.05 (1.33) | 3.92 (1.24) | 3.91 (1.31) | 3.99 (1.25) | 4.03 (1.28) |

*Note*. Creativity = Novelty × Usefulness; CPE = Creative Process Engagement.

## RESULTS

Table 1 includes the zero-order correlations and reliabilities for study variables included in the analyses. Table 2 contains the means and standard deviations by goal types for study variables, and Table 3 contains the means and standard deviations for study variables by condition.

### HYPOTHESIS 1

Hypotheses 1a and 1b predicted that general creative outcome goals would result in higher levels of creativity than no creative outcome goals, and that a specific creative outcome goal would result in higher levels of creativity than a general creative outcome goal or no outcome goal. These hypotheses were tested in a 3 (outcome goal type: none, general, and specific) × 3 (process goals type: none, general, and specific) ANOVA with creativity (novelty × usefulness) as the dependent variable and simple contrasts for the outcome goal conditions. A significant main effect of outcome goal type was found ($F(2,551) = 37.51$, $p < .001$, $\eta^2 = .12$), and the main effect for process goals and the interaction effect were not statistically significant. Simple contrasts for the outcome goal conditions revealed that participants in the specific outcome goal condition had ideas rated higher in creativity ($M = 9.09$ vs. 6.39 and 6.31, $p < .001$) than participants in the general outcome goal condition and participants not given an outcome goal, respectively, providing support for Hypothesis 1b. Hypothesis 1a, however, did not receive support as no significant difference was found with respect to creativity when comparing the general outcome goal condition and the no outcome goal condition. Please see Figure 1 for a depiction of sample means across conditions.

### HYPOTHESIS 2

Next, general process goals were predicted to result in higher levels of self-reported creative process engagement compared to no process goals (H2a), and specific process goals were predicted to result in higher levels of creative process engagement than general process goals or no process goals (H2b). To examine these hypotheses, a 3 × 3 ANOVA was conducted with outcome goal type (none, general, and specific) and process goal type (none, general, and specific) manipulations as the independent variables and creative process engagement as the dependent variable. A main effect was found for the process goal manipulation ($F(2,551) = 10.88$, $p < .001$, $\eta^2 = .04$). Simple contrasts for the process goals conditions revealed that, compared to the no process goal condition, the general process goal condition ($M = 3.36$ vs. 3.12, $p = .001$) and the specific process goal condition ($M = 3.39$ vs. 3.12, $p < .001$) resulted in significantly more creative process engagement consistent with Hypotheses 2a and 2b. However, the general process goal condition did not significantly differ from the specific process goal condition with respect to self-reported creative process engagement ($M = 3.36$ vs. 3.39, $p > .05$), contrary to Hypothesis 2b. This main effect was qualified by a significant interaction between the outcome goal manipulation and the process goal manipulation, $F(4, 551) = 3.02$, $p = .018$, $\eta^2 = .02$. Pairwise comparisons revealed that when no outcome goal was given, the general and specific process goal conditions reported significantly more creative process engagement than when no process goal was given ($M = 3.41$ vs. 2.98, $p < .001$ and $M = 3.33$ vs. 2.98, $p = .001$). Likewise, when a general outcome goal was given, the general and specific process goal conditions reported significantly more creative process engagement ($M = 3.25$ vs. 2.99, $p < .001$ and $M = 3.41$ vs. 2.99, $p = .02$) than the no process goal condition. When a specific outcome goal was present, however, there were no significant differences between process goal conditions. Thus, the observed pattern of process goal means was only

TABLE 3. Means and Standard Deviations by Condition

| Process goals | Outcome Goal | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | No | | | General | | | Specific | | |
| | No $N = 65$ | General $N = 62$ | Specific $N = 59$ | No $N = 64$ | General $N = 62$ | Specific $N = 59$ | No $N = 64$ | General $N = 62$ | Specific $N = 63$ |
| Creativity | 5.90 (2.90) | 6.21 (3.30) | 6.87 (3.85) | 6.58 (3.83) | 6.10 (3.14) | 6.49 (3.50) | 9.71 (3.41) | 8.59 (3.75) | 8.95 (3.89) |
| CPE | 2.98 (.62) | 3.41 (.57) | 3.33 (.61) | 2.99 (.81) | 3.25 (.60) | 3.41 (.50) | 3.40 (.50) | 3.40 (.47) | 3.43 (.66) |
| Autonomy | 6.23 (.78) | 6.15 (1.04) | 6.06 (.97) | 6.13 (.90) | 5.82 (1.23) | 5.75 (1.07) | 6.26 (.76) | 5.88 (.96) | 5.71 (1.04) |
| Intrinsic motivation | 3.75 (1.36) | 4.06 (1.32) | 3.92 (1.23) | 4.00 (1.27) | 4.06 (1.30) | 3.89 (1.19) | 4.12 (1.15) | 4.02 (1.38) | 3.95 (1.31) |

*Note*. Creativity = Novelty × Usefulness; CPE = Creative Process Engagement.

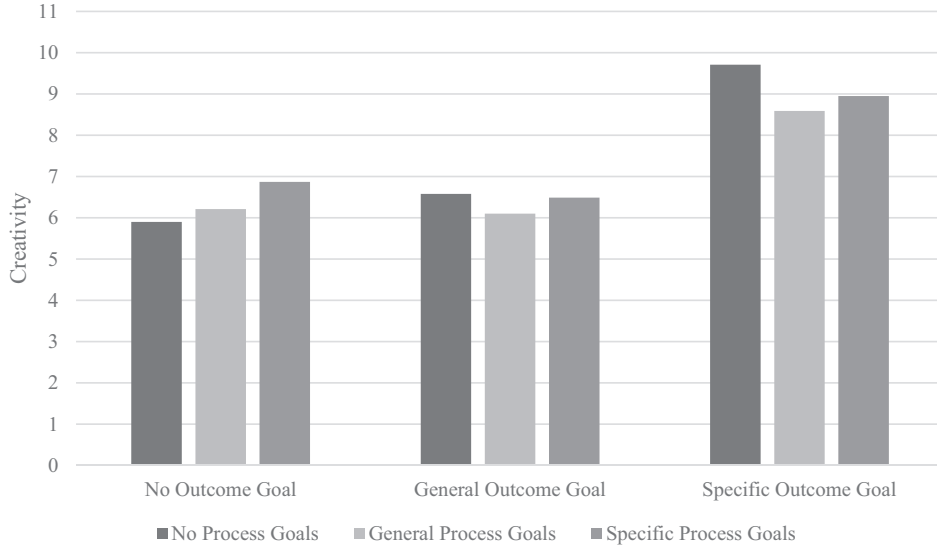


FIGURE 1. Group means for creativity.

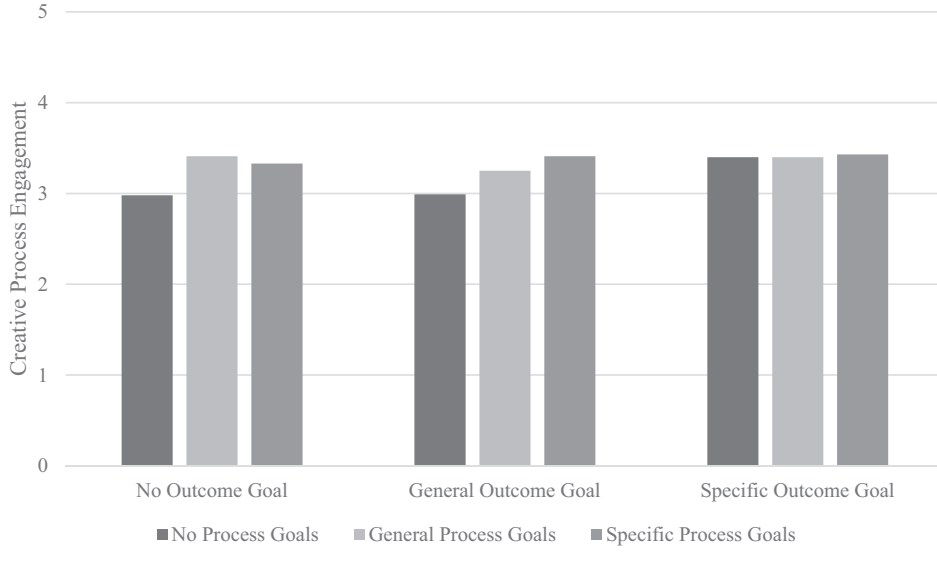


FIGURE 2. Group means for creative process engagement.

supported when there were no outcome goals or general outcome goals. These differences were no longer significant in the presence of specific outcome goals.

Although not hypothesized, analyses revealed that the main effect of the outcome goal manipulation was also statistically significant, $F(2, 551) = 6.03$, $p < .01$, $\eta^2 = .02$. Simple contrasts revealed that although a general outcome goal did not result in higher levels of creative process engagement than no creative outcome goal, a specific outcome goal resulted in higher levels of creative process engagement than a general

TABLE 4. Effect of Goals and CPE on Creative Performance

| Outcome | Process goals | | | Outcome goals | | |
|---|---|---|---|---|---|---|
| | Direct effect of process goals[a] | Direct effect of CPE | Indirect effect through CPE | Direct effect of outcome goals[b] | Direct effect of CPE | Indirect effect through CPE |
| CPE | **.08 [.0478, .1181]** | — | — | **.09 [.0250, .1476]** | — | — |
| Creativity | −.17 [−.3755, .0322] | **1.30 [.8210, 1.7731]** | **.11 [.0517, .1780]** | **1.27 [.9147, 1.6166]** | **1.30 [.8210, 1.7731]** | **.11 [.0325, .2080]** |

[a]Process goals contrast comparing process goals (general and specific) to no process goals. [b]Outcome goal contrast comparing specific outcome goal condition to the no outcome goal; CPE = Creative Process Engagement; Creativity = Novelty × Usefulness; all confidence intervals represent 95% confidence intervals; bolded numbers represent significant results; values represent unstandardized coefficients.

outcome ($M$ = 3.41 vs. 3.21, $p$ = .001) or no creative outcome goal ($M$ = 3.41 vs. 3.24, $p$ < .01). This main effect is also qualified by the significant interaction noted above. Pairwise comparisons revealed no significant differences between the outcome goal conditions with respect to creative process engagement when general or specific process goals were given; however, when no process goal was given, the specific creative outcome goal resulted in significantly more creative process engagement than the general outcome goal ($M$ = 3.40 vs. 2.99, $p$ < .001) and no creative outcome goal ($M$ = 3.40 vs. 2.98, $p$ < .001). Please see Figure 2 for a depiction of sample means across conditions.

## HYPOTHESIS 3

Hypothesis 3 which predicted that creative process engagement would mediate the effect of process goals on creativity was tested using Process macro v.3.4 for SPSS (Hayes, 2018; Model 4). We requested 10,000 bootstrapped samples and controlled for other goal manipulations in all analyses. A process goal contrast comparing process goals (general and specific)[1] to no process goals was included as the independent variable, creative process engagement as the mediator, and creativity as the dependent variable. Control variables included two orthogonal contrasts to represent the outcome goal conditions and one contrast for the process goal conditions comparing the general condition to the specific condition which is orthogonal to the process goal contrast serving as the independent variable. We also included four contrasts to capture the interaction of outcome and process goals. As predicted, creative process engagement mediated the relationship between process goals and creativity (effect = .11, 95% CI [.0517, .1780]). Taken together, the third hypothesis received full support. The results of this analysis are summarized in Table 4.

For exploratory purposes, we also examined whether creative process engagement mediated the relationship between outcome goals and creativity following similar procedures as above. Given the ANOVA results, an outcome goal contrast comparing specific outcome goals to no creative outcome goal was included as the independent variable, creative process engagement as the mediator, and creativity as the dependent variable. Control variables included two orthogonal contrasts to represent the process goal conditions and one contrast for the outcome goal conditions which compared the general outcome goal condition to the specific and no outcome goal conditions which is orthogonal to the outcome goal contrast serving as the independent variable. We also included four contrasts to capture the interaction of outcome and process goals. A significant direct effect was found for the specific outcome goal manipulation on creativity (effect = 1.27, 95%CI [.9147, 1.6166]) as well as a significant indirect effect through creative process engagement (effect = .11, 95%CI [.0325, .2080]; see Table 4). Taken together, it appears that specific outcome goals may result in more creativity *and* creative process engagement. Moreover, the relationship between specific outcome goals and creativity is partially mediated by creative process engagement.

## HYPOTHESIS 4

Hypotheses 4–5 examined the influence of process goals on autonomy and intrinsic motivation. Hypotheses 4a-b predicted that the specific process goal condition would result in lower levels of autonomy (H4a) and intrinsic motivation (H4b) than the general process goal or no process goal conditions. These hypotheses were tested using 3 (outcome goal type: none, general, and specific) × 3 (process goal type: none, general, and specific) ANOVAs with autonomy and intrinsic motivation as dependent variables. A significant main effect of the process goal manipulation on autonomy was found, $F(2,551)$ = 6.86, $p$ = .001, $\eta^2$ = .02. Simple contrasts revealed that this main effect was driven by a significant mean difference between the general and specific process goals conditions versus the no process goal condition. Participants given specific process goals reported significantly less autonomy than participants not given process goals ($M$ = 5.84 vs. 6.20, $p$ < .001). Likewise, the general process goal condition resulted in significantly less autonomy than the no process goal condition ($M$ = 5.95 vs. 6.20, $p$ = .01). No significant mean difference was found between the general process goal condition and the specific process goal condition ($M$ = 5.95 vs. 5.84, $p$ > .05). A main effect of the outcome goal manipulation was also found with respect to autonomy, $F(2, 551)$ = 3.26, $p$ = .039, $\eta^2$ = .01. Contrasts indicated that participants given general outcome goals reported significantly lower levels of autonomy than the no outcome goal condition ($M$ = 5.90 vs. 6.15, $p$ < .01). No other contrasts reached the level of statistical significance. No main effects or interactions were

[1] The general and specific process goal conditions were considered together, as they did not significantly differ in their relationship with creative process engagement.

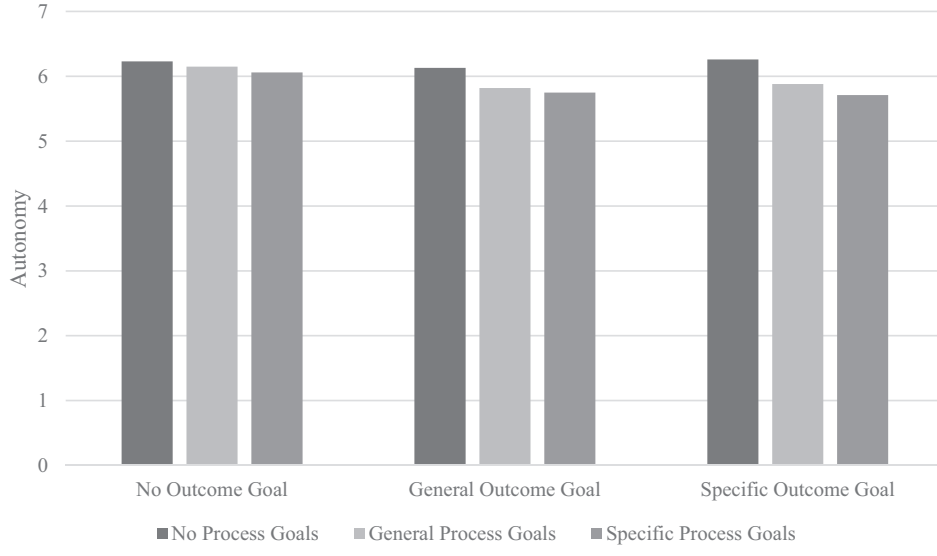


FIGURE 3. Group means for autonomy.

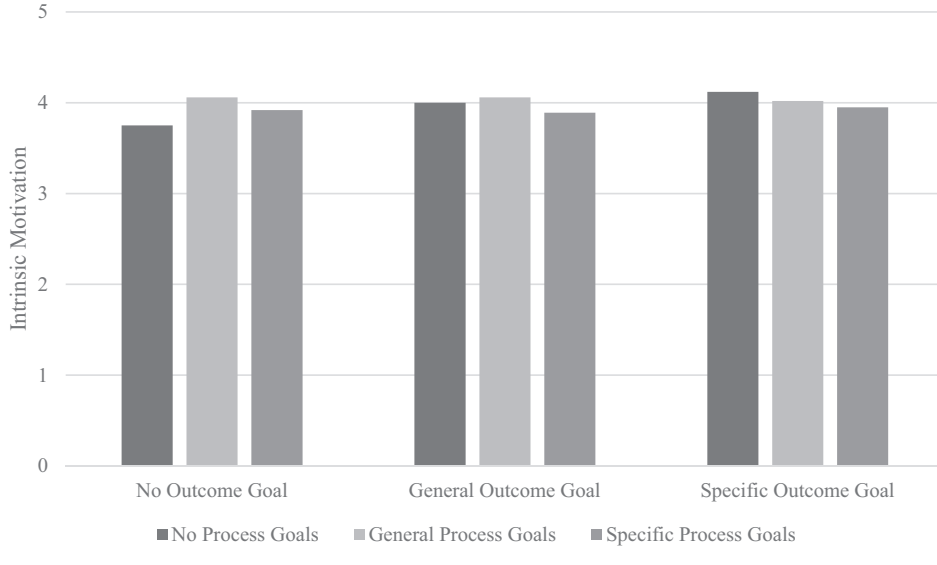


FIGURE 4. Group means for intrinsic motivation.

found for intrinsic motivation. Thus, Hypothesis 4a received support, but Hypothesis 4b did not. Please see Figures 3 and 4 for a depiction of sample means across conditions.

## HYPOTHESIS 5

Hypothesis 5 predicted that the relationship between specific process goals and creativity would be serially mediated by autonomy and intrinsic motivation. This hypothesis was tested using the Process macro v.3.4 for SPSS (Hayes, 2018; Model 6). We requested 10,000 bootstrapped samples. A process goals contrast

TABLE 5. Effect of Specific Process Goals, and Autonomy and Intrinsic Motivation on Creative Performance

| Outcome | Direct effect of process goals[a] | Direct effect of autonomy | Direct effect of intrinsic motivation | Serial indirect effect |
|---|---|---|---|---|
| Autonomy | **−.18 [−.2824, −.0835]** | — | — | — |
| Intrinsic motivation | .03 [−.1014, .1574] | **.25 [.1400, .3544]** | — | — |
| Creativity | .08 [−.2724, .4312] | .28 [−.0218, .5717] | **.60 [.3709, .8246]** | **−.027 [−.0529, −.0097]** |

[a]Process goal contrast comparing specific process goals to no process goals; Creativity = Novelty × Usefulness; all confidence intervals represent 95% confidence intervals; bolded numbers represent significant results; values represent unstandardized coefficients.

comparing the specific process goal condition to the no process goal condition was included as the independent variable, autonomy and intrinsic motivation as serial mediators, and creativity as the dependent variable. Control variables included two orthogonal contrasts to represent the outcome goal conditions and one contrast for the process goal conditions comparing the general condition to the specific and no process goal conditions. Results revealed that specific process goals had a negative effect on autonomy ($b = -.18$, $p < .001$) and that autonomy positively predicted intrinsic motivation ($b = .25$, $p < .001$). Additionally, intrinsic motivation positively predicted creativity ($b = .60$, $p < .001$). Finally, the relationship between specific process goals and creativity was serially mediated by autonomy and intrinsic motivation (effect = −.027, 95% CI [−.0529, −.0097]). These results support Hypothesis 5 and suggest that specific process goals may negatively impact creativity by reducing perceptions of autonomy which in turn results in lower levels of intrinsic motivation and ultimately less outcome creativity. Notably, these effects are small and should be interpreted with this in mind. The results of this analysis are summarized in Table 5.

## DISCUSSION

Although a great deal of research has been conducted on setting goals for productivity, much less research has been conducted on setting goals for qualitative outcomes such as creativity (Locke & Latham, 2002). The current research responds to calls for more research on goals in the creativity context (e.g., Litchfield, 2008; Shalley & Koseoglu, 2013). Specifically, we expand upon previous research by examining the role of goal specificity in both goals directed at the creative process and goals directed at creative outcomes. Moreover, we examine the possibility that specific process goals reduce creativity by negatively impacting perceptions of autonomy and intrinsic motivation. To our knowledge, this was the first investigation to examine how process and outcome goal specificity impacts these mediating psychological mechanisms and creativity.

### THEORETICAL AND PRACTICAL IMPLICATIONS

The results of this research reveal that specific outcome goals resulted in higher levels of creative performance compared to being assigned a general outcome goal or no creative outcome goal. In addition, in the absence of a process goal, specific outcome goals also resulted in higher levels of creative process engagement compared to general outcome goals or no outcome goals. These findings suggest that goal specificity is beneficial when assigning outcome goals in a creative performance context. In contrast to creative outcome goals, no direct effect on creativity was found for general or specific process goals. Process goals (general and specific) did, however, have a significant indirect positive effect on creativity through creative process engagement. The finding supports the notion that goals may *indirectly* influence performance by encouraging effective task strategy (Locke, 1996). Although not hypothesized, it was also the case that specific outcomes goals had a significant indirect effect on creativity through creative process engagement.

The interaction of the process and outcome goals in the analysis of creative process engagement was not predicted. It was interesting to find that the different types of goals did not demonstrate a synergistic effect. Instead, the specific outcome goal manipulation led to no significant differences as a function of the process

goals. Similarly, when a general or specific process goal was given, there were no significant effects of the outcome goal manipulation on creative process engagement.

Notably, our study indicated that creative process engagement can be increased by either assigning general or specific process goals *or* specific creative outcome goals. This is an interesting finding and highlights the often-automatic nature of engaging in problem definition, idea generation, and idea evaluation when solving a creative problem. When given a specific creative outcome goal, individuals report higher levels of creative process engagement even when not given explicit process goals to do so. Overall, the findings suggest that specific creative outcome goals may be more instrumental than process goals for promoting *both* creative process engagement and creative performance. Although process goals may increase creative process engagement, they do not directly increase outcome creativity. Specific outcome goals, however, increase both creative process engagement and outcome creativity. In addition, when a specific outcome goal was given, participants reported high levels of creative process engagement regardless of their process goal condition. Although more research is warranted, these findings suggest that setting specific creative outcome goals may increase both creative process engagement and creativity.

Notably, we did not find meaningful differences between general and specific process goals. Past research has suggested that the creative process may not be linear, and people may need to have the freedom to engage in the creative process in a less structured way (Mumford et al., 1991). In the current study, specific process goals constrained the order in which participants could engage in the different stages of the creative process, whereas general process goals allowed participants to engage in the strategies in any order or even return to different stages. Other research (Rietzschel et al., 2007) has found that adding structure to a creative task by having participants follow a step-by-step plan does not lead to higher levels of creative performance. The present research suggests that even when allowing participants to engage in the creative process in a less structured way, perceptions of autonomy are reduced, and participants do not produce outcomes that are more creative compared to those given specific process goals or no process goals. One possible explanation may be that the creative process should be viewed more as descriptive than as prescriptive. In other words, it is possible that although people often engage in the creative process in predictably similar patterns on average, prescribing everyone to do so may not be an effective way to enhance creativity unless process goals result in higher levels of creative process engagement. Additionally, researchers have suggested the stages of the creative process may be more or less important for different tasks (Mumford & McIntosh, 2017). For example, a problem that is more complex may require more extensive problem definition to evaluate the different goals of the task. Alternatively, providing more structure to the creative process may be more necessary when people have less domain knowledge (Beghetto, 2019). In the present study, participants were tasked with coming up with solutions for improving campus involvement in community service—something familiar and personally relevant. As noted by Beghetto (2019), at least a base level of understanding of the concepts, skills, and procedures is required for uncertainty to be beneficial for creativity.

Finally, this research sheds light on how goals impact autonomy and intrinsic motivation in the creativity context. The importance of both of these psychological mechanisms has been argued throughout the creativity literature (Amabile, 1983; Amabile & Pratt, 2016; Liu et al., 2016), suggesting that goals may be less effective for creativity if they have a negative impact on autonomy and/or intrinsic motivation. Although this study suggests that both process goals and outcome goals (see Table 3) have a potentially negative impact on autonomy (particularly as specificity increases), autonomy still remained high on average ranging from 5.71 to 6.26 across conditions on a 7-point scale. As might be expected, participants felt the most autonomous in the control condition with no outcome goal and no process goals as well as in the specific outcome goal condition with no process goals; participants felt the least autonomous in the condition with a specific outcome goal and specific process goals (Table 3). Notably, participants also exhibited the lowest average levels of creativity in the control condition ($M = 5.90$; Table 3). Moreover, intrinsic motivation was not negatively (i.e., no significant group differences in intrinsic motivation) impacted except indirectly via autonomy perceptions. This research indicates that one should use caution when attempting to set goals for the creative process, as such goals may be detrimental to creative performance when autonomy and intrinsic motivation are negatively impacted; however, the effect sizes in these analyses are small.

## LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Any implications or conclusions drawn from this study should be considered in light of potential limitations of this research. One limitation is the possibility of common method bias, as some of the variables

were measured using self-reports at one point in time. Although we attempted to reduce this potential limitation with experimental manipulations and external ratings of novelty and usefulness, analyses including multiple self-reported variables (e.g., autonomy and intrinsic motivation) should be interpreted with this limitation in mind.

Concerning our manipulations, there are other potential ways to manipulate goals for qualitative outcomes, particularly with respect to specificity. For example, a specific creative outcome goal may specify content areas that should be included in the final solution (e.g., include information about budget and incentives). Past research has suggested that setting specific creative outcome goals in this way may not be as effective because response option variability is constrained making the task less open ended (Shalley et al., 2004). Different goal-specificity manipulations may have distinct impacts on autonomy. Given the results of this study, researchers should examine how to most effectively assign creative process and outcome goals without thwarting autonomy.

Although not a limitation per se, *general* creative outcome goals or goals to "be creative" did not result in higher levels of creative performance compared to no creative outcome goal. This finding is contrary to previous research on general creativity goals (e.g., Carson & Carson, 1993; Litchfield et al., 2011; Madjar & Shalley, 2008). One explanation for this difference may be contextual or personal factors. Past research has found that general creative outcome goals may be effective only under certain conditions. For example, Shalley (1991) found that general creative outcome goals were not more effective than no creative outcome goal when personal discretion was low. Another possibility is that previous research has tended to focus on idea-generation tasks and has measured creativity as a unidimensional construct (i.e., creativity) rather than multidimensional constructs (i.e., a function of novelty and usefulness). Future research is needed to examine under what conditions general creative outcome goals are most effective.

The current research examined the specificity dimensions of process and outcome goals but did not manipulate goal difficulty. To our knowledge, there has been limited research on how goal difficulty impacts creative performance (cf., Espedido & Searle, 2018; Shalley, 1991). Although complexity is not synonymous with difficulty (Campbell, 1988), a number of studies have suggested that goal setting may be less effective for complex or novel tasks (Kanfer et al., 1994). Likewise, Amabile (1996) suggested that difficult goals may undermine intrinsic motivation. Difficulty may impact perceptions of competence resulting in lower levels of intrinsic motivation and thus creativity. Based on past research suggesting limitations of goal-setting theory in the context of complex or difficult tasks, goals high in difficulty may not be beneficial for creative tasks. Future research will be needed to tease apart the influence of both goal dimensions on creative performance.

## CONCLUSION

Past research has shown broad support for goals to enhance productivity by increasing effort, persistence, and attention toward goal areas; yet, research on goals and creative performance has received comparatively limited attention. The present study lends credence to the notion that goals can also benefit creativity. Goals for creativity, however, are by necessity different in content and function from productivity goals. This study extends the current understanding of how goals influence creative process engagement and outcome creativity, the role of specificity, and how goals influence psychological mechanisms such as autonomy and intrinsic motivation. The findings suggest that goals can be effective for enhancing both creative process engagement and outcome creativity; however, care should be taken to ensure that goals do not negatively impact autonomy.

## CONFLICTS OF INTEREST

We have no conflicts of interest, and no external funding was used to prepare this manuscript.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

## REFERENCES

Amabile, T.M. (1982). Social psychology of creativity: A consensual assessment technique. *Journal of Personality and Social Psychology*, *43*, 997–1013.

Amabile, T.M. (1983). The social psychology of creativity: A componential conceptualization. *Journal of Personality and Social Psychology*, *45*(2), 357–376.

Amabile, T.M. (1985). Motivation and creativity: Effects of motivational orientation on creative writers. *Journal of Personality and Social Psychology*, *48*(2), 393–399.

Amabile, T.M. (1988). A model of creativity and innovation and organizations. *Research in Organizational Behavior*, *10*, 123–167.

Amabile, T.M. (1996). *Creativity in context: Update to "The social psychology of creativity."*. Boulder, CO: Westview Press.

Amabile, T.M., & Pratt, M.G. (2016). The dynamic componential model of creativity and innovation in organizations: Making progress, making meaning. *Research in Organizational Behavior*, *36*, 157–183.

Amabile, T.M., Hennessey, B.A., & Grossman, B.S. (1986). Social influences on creativity: The effects of contracted-for reward. *Journal of Personality and Social Psychology*, *50*(1), 14–23.

Ashford, S.J., & De Stobbeleir, K.E.M. (2013). Feedback, goal setting, and task performance revisited. In E.A. Locke & G.P. Latham (Eds.), *New developments in goal setting and task performance* (pp. 51–64). New York: Routledge.

Austin, J.T., & Bobko, P. (1985). Goal-setting theory: Unexplored areas and future research needs. *Journal of Occupational Psychology*, *58*, 289–308.

Austin, J.T., & Vancouver, J.B. (1996). Goal constructs in psychology: Structure, process, and content. *Psychological Bulletin*, *120*(3), 338–375.

Batey, M., Chamorro-Premuzic, T., & Furnham, A. (2009). Intelligence and personality as predictors of divergent thinking: The role of general, fluid, and crystallised intelligence. *Thinking Skills and Creativity*, *4*(1), 60–69.

Beghetto, R.A. (2019). Structured uncertainty: How creativity thrives under constraints and uncertainty. In C.A. Mullen (Ed.), *Creativity under duress in education?* (pp. 27–40). Switzerland: Springer.

Beghetto, R.A. (2021). There is no creativity without uncertainty: Dubito Ergo Creo. *Journal of Creativity*, *31*, 100005.

Beghetto, R.A., Karwowski, M., & Reiter-Palmon, R. (2021). Intellectual risk taking: A moderating link between creative confidence and creative behavior? *Psychology of Aesthetics, Creativity, and the Arts*, *15*(4), 637–644.

Breaugh, J.A. (1989). The work autonomy scales: Additional validity evidence. *Human Relations*, *42*(11), 1033–1056; doi: 10.1177/001872678904201105.

Campbell, D.J. (1988). Task complexity: A review and analysis. *Academy of Management Review*, *13*(1), 40–52.

Caniëls, M.C.J., & Rietzschel, E.F. (2015). Organizing creativity: Creativity and innovation under constraints. *Creativity and Innovation Management*, *24*(2), 184–196.

Carson, P.P., & Carson, K.D. (1993). Managing creativity enhancement through goal-setting and feedback. *Journal of Creative Behavior*, *27*(1), 36–45.

Chang, G.S.-Y., & Lorenzi, P. (1983). The effects of participative versus assigned goal setting on intrinsic motivation. *Journal of Management*, *9*(1), 55–64.

Cumming, G. (2014). The new statistics: Why and how. *Psychological Science*, *25*(1), 7–29.

Dailey, L., & Mumford, M.D. (2006). Evaluative aspects of creative thought: Errors in appraising the implications of new ideas. *Creativity Research Journal*, *18*(3), 367–384.

Damadzic, A., Winchester, C., Medeiros, K.E., & Griffith, J.A. (2022). [Re]thinking outside the box: A meta-analysis of constraints and creative performance. *Journal of Organizational Behavior*, *43*, 1330–1357.

Deci, E.L. (1975). *Intrinsic motivation*. New York, NY: Plenum.

Deci, E.L., Olafsen, A.H., & Ryan, R.M. (2017). Self-determination theory in work organizations: The state of a science. *Annual Review of Organizational Psychology and Organizational Behavior*, *4*, 19–43.

Eisenberger, R., & Cameron, J. (1996). Detrimental effects of reward: Reality or myth. *American Psychologist*, *51*(11), 1153–1166.

Eisenberger, R., & Cameron, J. (1998). Reward, intrinsic interest, and creativity: New findings. *American Psychologist*, *53*(6), 676–679.

Eisenberger, R., & Selbst, M. (1994). Does reward increase or decrease creativity? *Journal of Personality and Social Psychology*, *66*(6), 1116–1127.

Eisenberger, R., Rhoades, L., & Cameron, J. (1999). Does pay for performance increase or decrease perceived self-determination and intrinsic motivation? *Journal of Personality and Social Psychology*, *77*(5), 1026–1040.

Espedido, A., & Searle, B.J. (2018). Goal difficulty and creative performance: The mediating role of stress appraisal. *Human Performance*, *31*(3), 179–196.

Finke, R.A., Ward, T.B., & Smith, S.M. (1992). *Creative cognition: Theory, research, and applications*. Cambridge, Massachusetts: The MIT Press.

Ford, C.M. (1996). A theory of individual creative action in multiple social domains. *Academy of Management Review*, *21*(4), 1112–1142.

Glăveanu, V.P., Gillespie, A., & Karwowski, M. (2019). Are people working together inclined towards practicality? A process analysis of creative ideation in individuals and dyads. *Psychology of Aesthetics, Creativity, and the Arts*, *13*(4), 388–401.

Harrington, D.M. (1975). Effects of explicit instructions to "be creative" on the psychological mean of divergent thinking test scores. *Journal of Personality*, *43*(3), 434–455.

Hayes, A.F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd edn). New York, NY: Guilford Press.

Henker, N., Sonnentag, S., & Unger, D. (2015). Transformational leadership and employee creativity: The mediating role of promotion focus and creative process engagement. *Journal of Business and Psychology*, *30*, 235–247.

Hennessey, B.A. (1989). The effects of extrinsic constraints on children's creativity while using a computer. *Creativity Research Journal*, *2*(3), 151–168.

Hennessey, B.A., & Amabile, T.M. (1998). Reward, intrinsic motivation, and creativity. *American Psychologist*, *53*(6), 674–675.

Kanfer, R., Ackerman, P.L., Murtha, T.C., Dugdale, B., & Nelson, L. (1994). Goal setting, conditions of practice, and task performance: A resource allocation perspective. *Journal of Applied Psychology*, *79*(6), 826–835.

Litchfield, R.C. (2008). Brainstorming reconsidered: A goal-based view. *Academy of Management Review*, *33*(3), 649–668.

Litchfield, R.C., Fan, J., & Brown, V.R. (2011). Directing idea generation using brainstorming with specific novelty goals. *Motivation and Emotion*, *35*, 135–143.

Liu, D., Jiang, K., Shalley, C.E., Keem, S., & Zhou, J. (2016). Motivational mechanisms of employee creativity: A meta-analytic examination and theoretical extension of the creativity literature. *Organizational Behavior and Human Decision Processes*, *137*, 236–263.

Locke, E.A. (1996). Motivation through conscious goal setting. *Applied & Preventive Psychology*, *5*, 117–124.

Locke, E.A., & Latham, G.P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice Hall College Division.

Locke, E.A., & Latham, G.P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist*, *57*(9), 705–717.

Lonergan, D.C., Scott, G.M., & Mumford, M.D. (2004). Evaluative aspects of reactive thought: Effects of appraisal and revision standards. *Creativity Research Journal*, *16*(2–3), 231–246.

Madjar, N., & Shalley, C.E. (2008). Multiple tasks' and multiple goals' effect on creativity: Forced incubation or just a distraction. *Journal of Management*, *34*(4), 786–805.

McIntosh, T., Mulhearn, T.J., & Mumford, M.D. (2021). Taking the god with the bad: The impact of forecasting timing and valence on idea evaluation and creativity. *Psychology of Aesthetics, Creativity, and the Arts*, *15*(1), 111–124.

Medeiros, K.E., Partlow, P.J., & Mumford, M.D. (2014). Not too much, not too little: The influence of constraints on creative problem solving. *Psychology of Aesthetics, Creativity, and the Arts*, *8*(2), 198–210.

Medeiros, K.E., Steele, L.M., Watts, L.L., & Mumford, M.D. (2018). Timing is everything: Examining the role of constraints throughout the creative process. *Psychology of Aesthetics, Creativity, and the Arts*, *12*(4), 471–488.

Mone, M.A., & Shalley, C.E. (1995). Effects of task complexity and goal specificity on change in strategy and performance over time. *Human Performance*, *8*(4), 243–262.

Montag, T., Maertz, C.P., & Baer, M. (2012). A critical analysis of the workplace creativity criterion space. *Journal of Management*, *38*(4), 1362–1386.

Mossholder, K.W. (1980). Effects of externally mediated goal setting on intrinsic motivation: A laboratory experiment. *Journal of Applied Psychology*, *65*, 211–218.

Mumford, M.D., & McIntosh, T. (2017). Creative thinking processes: The past and the future. *Journal of Creative Behavior*, *51*(4), 317–322.

Mumford, M.D., Mobley, M.I., Reiter-Palmon, R., Uhlman, C.E., & Doares, L.M. (1991). Process analytic models of creative capacities. *Creativity Research Journal*, *4*(2), 91–122.

Mumford, M.D., Baughman, W.A., Threlfall, V., Supinski, E.P., & Costanza, D.P. (1996a). Process-based measures of creative problem-solving skills: I. Problem construction. *Creativity Research Journal*, *9*(1), 63–76.

Mumford, M.D., Supinski, E.P., Threlfall, K.V., & Baughman, W.A. (1996b). Process-based measures of creative problem-solving skills: III. Category selection. *Creativity Research Journal*, *9*(4), 395–406.

Mumford, M.D., Supinski, E.P., Baughman, W.A., Costanza, D.P., & Threlfall, K.V. (1997). Process-based measures of creative problem-solving skills: V. Overall prediction. *Creativity Research Journal*, *10*(1), 73–85.

Ng, T.W.H., & Feldman, D.C. (2012). A comparison of self-ratings and non-self-report measures of employee creativity. *Human Relations*, *65*(8), 1021–1047.

O'Hara, L.A., & Sternberg, R.J. (2000–2001). It doesn't hurt to ask: Effects of instructions to be creative, practical, or analytical on essay-writing performance and their interaction with students' thinking styles. *Creativity Research Journal*, *13*(2), 197–210.

Osborn, A.F. (1953). *Applied imagination*. New York, NY: Scribner.

Reeve, J., Nix, G., & Hamm, D. (2003). Testing models of the experience of self-determination in intrinsic motivation and the conundrum of choice. *Journal of Educational Psychology*, *95*(2), 375–392.

Reiter-Palmon, R. (2017). The role of problem construction in creative production. *Journal of Creative Behavior*, *51*(4), 323–326.

Reiter-Palmon, R., & Arreola, N.J. (2015). Does generating multiple ideas lead to increased creativity? A comparison of generating one idea vs. many. *Creativity Research Journal*, *27*(4), 369–374.

Reiter-Palmon, R., & Robinson, E.J. (2009). Problem identification and construction: What do we know, what is the future? *Psychology of Aesthetics, Creativity, and the Arts*, *3*(1), 43–47.

Reiter-Palmon, R., Mumford, M.D., O'Connor-Boes, O.J., & Runco, M.A. (1997). Problem construction and creativity: The role of ability, cue consistency, and active processing. *Creativity Research Journal*, *10*, 9–24.

Reiter-Palmon, R., Robinson-Morral, E.J., Kaufman, J.C., & Santo, J.B. (2012). Evaluation of self-perceptions of creativity: Is it a useful criterion. *Creativity Research Journal*, *24*(2–3), 107–114.

Rietzschel, E.F., Nijstad, B.A., & Stroebe, W. (2006). Productivity is not enough: A comparison of interactive and nominal brainstorming groups on idea generation and selection. *Journal of Experimental Social Psychology*, *42*(2), 244–251.

Rietzschel, E.F., Nijstad, B.A., & Stroebe, W. (2007). Relative accessibility of domain knowledge and creativity: The effects of knowledge activation on the quantity and originality of generated ideas. *Journal of Experimental Social Psychology*, *43*(6), 933–946.

Rietzschel, E.F., Slijkhuis, J.M., & Van Yperen, N.W. (2014). Task structure, need for structure, and creativity. *European Journal of Social Psychology*, *44*, 386–399.

Sagiv, L., Arieli, S., Goldenberg, J., & Goldschmidt, A. (2010). Structure and feedom in creativity: The interplay between externally imposed structure and personal cognitive style. *Journal of Organizational Behavior*, *31*, 1086–1110.

Shalley, C.E. (1991). Effects of productivity goals, creativity goals, and personal discretion on individual creativity. *Journal of Applied Psychology*, *76*(2), 179–185.

Shalley, C.E. (1995). Effects of coaction, expected evaluation, and goal setting on creativity and productivity. *Academy of Management Journal*, *38*(2), 483–503.

Shalley, C.E., & Koseoglu, G. (2013). Goals and creativity. In E.A. Locke & G.P. Latham (Eds.), *New developments in goal setting and task performance* (pp. 343–356). New York: Routledge.

Shalley, C.E., Zhou, J., & Oldham, G.R. (2004). The effects of personal and contextual characteristics on creativity: Where should we go from here? *Journal of Management*, *30*(6), 933–958.

Shrout, P.E., & Fleiss, J.L. (1979). Intraclass correlations: Uses in assessing rater reliability. *Psychological Bulletin*, *86*(2), 420–428.

Sternberg, R.J., & Lubart, T.I. (1996). Investing in creativity. *The American Psychologist*, *51*(7), 677–688.

Tan, C.-C., Lau, X.-S., & Lee, L.-K. (2019). The mediating role of creative process engagement in the relationship between shyness and self-rated creativity. *Journal of Creative Behavior*, *53*(2), 222–231.

Wang, S., Zhang, X., & Martocchio, J. (2011). Thinking outside of the box when the box is missing: Role ambiguity and its linkage to creativity. *Creatvitiy Research Journal*, *23*(3), 211–221.

Ward, T.B. (1994). Structured imagination: The role of category structure in exemplar generation. *Cognitive Psychology*, *27*, 1–40.

Ward, T.B., Smith, S.M., & Finke, R.A. (1999). Creative cognition. In R.J. Sternberg (Ed.), *Handbook of creativity* (pp. 189–212). Cambridge, United Kingdom: Cambridge University Press.

Weisberg, R.W. (1993). *Creativity: Beyond the myth of genius*. New York, NY: W. H. Freeman.

Zhang, X., & Bartol, K.M. (2010a). Linking empowering leadership and employee creativity: The influence of psychological empowerment, intrinsic motivation, and creative process engagement. *Academy of Management Journal*, *53*(1), 107–128.

Zhang, X., & Bartol, K.M. (2010b). The influence of creative process engagement on employee creative performance and overall job performance: A curvilinear assessment. *Journal of Applied Psychology*, *95*(5), 862–873.

Zhou, J., & Hoever, I.J. (2014). Research on workplace creativity: A review and redirection. *Annual Review of Organizational Psychology and Organizational Behavior*, *1*, 333–359.

Zhou, J., & Oldham, G.R. (2001). Enhancing creative performance: Effects of expected developmental assessments, strategies, and creative personality. *Journal of Creative Behavior*, *135*, 151–167.

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