Journal of Public Administration Research and Theory Advance Access published August 6, 2015

Goal Clarity, Task Significance, and Performance: Evidence From a Laboratory Experiment

Derrick M. Anderson, Justin M. Stritch
Arizona State University

ABSTRACT

This article examines the relationships among task goal clarity, task significance, and individual-level task performance. While both goals and task significance are important in extant public-management research, a theoretical integration of the variables is needed. This study makes the theoretical contribution of explaining how these variables might work together in a public organization. In addition to examining the relationship between task goal clarity and performance, we consider how task significance might condition the relationship. There are theoretical reasons to suggest both a positive and negative conditional effect. Utilizing a 3×2 factorial design, we conducted a laboratory experiment on 214 subjects participating in a task-performance exercise. This study provides experimental evidence that task goal clarity is positively related to performance. However, an interesting relationship emerges with respect to the conditional effect of task significance. When an individual is primed to believe their performance has a higher level of task significance, the evidence suggests that this will decrease their level of performance. The findings provide significant nuance to our understanding of both task goal clarity and performance, as well as our understanding of the relationship between task significance and performance.

INTRODUCTION

The central premise of Goal Setting Theory (GST) is that encouraging individuals to pursue clear and difficult goals yields greater performance benefits than encouraging them to pursue vague and easy goals, or to simply do their best (Locke et al. 1990). In the context of public organizations, where organization-level goals are often asserted to be more ambiguous and sometimes observed to be more multifaceted and dynamic than those of private-sector organizations (see Rainey 2014, 162–65), researchers have used GST to address important gaps in the literature (Chun and Rainey 2005a, 2005b; Jung 2012, 2014b; Lee et al. 2009; Rainey 1993). Specifically, GST has shed

Address correspondence to the author at derrick.anderson@asu.edu. We thank Barry Bozeman, Hal Rainey, Rob Christensen, Andrew Whitford, Ed Kellough, and the anonymous reviewers at JPART for their constructive feedback.

doi:10.1093/jopart/muv019

light on the organizational origins (Rainey 1993), consequences (Jung 2014a, 2014b; Stazyk and Goerdel 2011), and dimensions (Chun and Rainey 2005a, 2005b; Jung 2012, 2014b) of goal ambiguity, and the relationship between organizational and task-level goal clarity (Pandey and Wright 2006; Wright 2004). We have learned from the general management literature that goals might interact with other variables to affect performance. For example, we know that the effects of goal setting on performance outcomes are strongest when workers have high levels of goal commitment (Klein et al. 1999) and that the benefits of goal commitment increase with the level of goal difficulty (Klein et al. 1999). We also know that feedback can benefit performance (Bandura and Cervone 1983). The literature also indicates that some factors are of little consequence to goal achievement. For example, there is evidence that goal achievement does not change when the goal is assigned by others, one's self or jointly with a team (Latham, Erez, and Locke 1988: Locke and Latham 1990). Despite decades of robust inquiry, important questions pertaining to goals remain unexamined, especially concerning the role of goals in the context of public management.

One area not well understood is the conditional relationship between goal clarity and the general social significance of a task. In this regard, task significance is the notion that one's performance on a task will lead to a positive impact on other people (Hackman and Oldham 1976). Task significance and perceptions of social importance have drawn attention in both general management (Grant 2008a, 2008b) and public-management scholarship (Bellé 2013, 2014; Moynihan, Pandey, and Wright 2012; Pedersen 2015; Stritch and Christensen, 2014).

In much of this literature, scholars tend to examine these constructs as being related to performance within the context of public service motivation (Bellé 2013, 2014; Pedersen 2015). In the context of public employment, task significance is seen as a tool through which employers might activate public service motives in individuals to increase performance. For public and nonprofit managers, who often lack the ability to reward performance with material incentives, understanding the role of task significance is particularly important since it might be a tool managers could use to motivate higher levels of performance (see Bellé 2013, 2014; Grant 2008a, 2008b; Pedersen 2015). This study examines the joint effects of goal clarity and general task significance on the performance of routine tasks.

The present study contributes to public administration in a number of direct and indirect ways. First, most of the studies in public administration that explore the relationship between organizational goals and performance have relied on cross-sectional survey data (Chun and Rainey 2005a, Chun and Rainey 2005b; Jung 2014a, 2014b; Pandey and Wright 2006; Stazyk and Goerdel 2011; Wright 2004). To build on and complement the previous public administration scholarship, we use an experimental design to examine whether task significance affects the relationship between goal clarity and performance.

Second, we add contextual information to the current findings on the relationship among task significance, perception of social impact, and performance (Bellé 2014; Pedersen 2015). Our findings give additional nuance to our understanding of how task significance is related to performance in different work contexts. In a previous study, Grant (2008) examined the social importance related to fundraising among a group of student employees soliciting donations for the school. In public-sector organizations,

there are a number of employees who are not front-line workers and whose jobs might not be directly related to the provision of a particular good or specific service. Rather, these workers perform work that supports the broader socially important mission of the agency generally.

Third, we examine performance in three ways: (a) quantity transcribed; (b) quantity transcribed accurately; and (c) fraction accurate. The study examines how the effects might differ across different dimensions and conceptualizations of performance, and we will discuss the findings with respect to each of these measures to help understand and interpret the causal mechanism linking the experimental treatments to performance. This is particularly important if different dimensions of performance might be at odds with one another. For instance, it is possible that increases in speed and the quantity of tasks performed increases, but the accuracy decreases, or vice versa.

GOAL CLARITY AND PERFORMANCE

Classic studies in the field and laboratory provide evidence that individuals working toward well-specified goals performed better than those working with no goals or those who were encouraged to "do their best" (Dossett, Latham, and Mitchell 1979; Ivancevich 1976; Latham, Mitchell, and Dossett 1978). While more contemporary research (Seijts and Latham 2001) has revealed some aspects of goal clarity that may lead to underperformance (i.e. tunnel vision), the insights from early studies remains powerful. Terborg (1976) observed that individuals working to achieve very specific goals tended to allocate more work time toward the specific micro-tasks related to their goals. Similarly, clearly specified goals help managers evaluate performance and then render feedback (Sawyer 1992), and help employees self-regulate effort (Latham and Locke 1991). These causal mechanisms add to the general GST theory (Locke and Latham 2002), which posits that clear, difficult goals may lead to greater performance than no goals or imperatives to "do your best" through directing action (Locke, Cartledge, and Knerr 1970), enhancing effort (Kahneman 1973; Latham and Locke 1975), enhancing persistence (LaPorte and Nath 1976), and stimulating strategy development and learning (Kolb and Boyatzis 1970). Following classic GST, we will test the following hypothesis of the relationship between goal clarity and performance:

H1: Increases in goal clarity are associated with increases in performance.

Organizational perspectives on goal clarity in the public-management literature echo the individual-level assertions of GST. For example, evidence supports the claim that ambiguity in organizational goals is sometimes associated with performance disadvantages (Chun and Rainey 2005a).

TASK SIGNIFICANCE AND PERFORMANCE

In the context of GST, task significance is viewed primarily as a determinant of goal commitment (Locke and Latham 2002) and not as an independent moderator in goal achievement. Theory and research on the role of task significance in goal achievement are generally limited to considerations of a small range of managerial approaches

thought to increase goal commitment. Empirical evidence indicates that managerial behaviors such as having workers publicly commit to a goal (Hollenbeck et al. 1989) and implementation of performance-contingent financial incentive mechanisms (Latham and Kinne 1974; Lee et al. 1997) contribute to increases in goal achievement.

Hackman and Oldham (1976, 161) defined task significance as "the degree to which the job has a significant impact on the lives or work of other people—whether in the immediate organization or in the external environment." According to Grant (2008a), task significance has played an important role in both social information processing (Salancik and Pfeffer 1978) and job design research (Hackman and Oldham 1976). On one hand, social information processing theorists consider task significance as a characteristic of a job that is socially constructed through interpersonal interactions, through which managers can reframe employees' view of task significance through the use of social cues. On the other hand, job design researchers view task significance as a characteristic of the task that a manager can manipulate through job redesign (Grant 2008a, 108). Despite their differences, Grant (2008a, 109) concludes that job design theorists and social information processing theorists both have shared the notion that, "once perceptions of task significance are cultivated, employees are more likely to perform effectively." Grant (2007, 406) argues that employees "are motivated to experience their actions and identities as meaningfully connected to other people."

Thus, for public-sector managers, who often are limited in material incentives, understanding how to emphasize task significance—appealing to the prosocial or helping aspects of the job—is particularly important. Accordingly, we will test the following hypothesis.

H2: Individuals primed to believe they are working on significant tasks will have higher levels of performance.

Scholars have started to examine the relationship between task significance and performance of public workers (Bellé 2013; Grant 2007, 2008a; Pedersen 2015). Beneficiary contact is one mechanism that scholars have used to emphasize the significance of a task. In one set of studies, student fundraisers working to raise scholarship money who read how the work was beneficial (Grant 2008a, 113) or who met a beneficiary of the work (Grant 2008b, 55) experienced performance benefits that as much as doubled that of peers not exposed to those treatments. In some modes of public service, beneficiary contact is not easily facilitated, and in others the beneficiary is not easily distinguished from the general public. Accordingly, the question we examine is whether managers might be able to use low-intensity interventions emphasizing the social significance of a task to induce higher levels of employee performance.

GOAL CLARITY, TASK SIGNIFICANCE, AND PERFORMANCE

While scholars have argued that both goal setting and task significance are tools that managers might use to motivate employees, there is the need to examine further how the two variables might operate in conjunction with one another. On one hand, in the context of clearly stated goals, we might expect that managers can emphasize the social significance of a task to enhance performance. Even when task goals are already

set, employees might channel and direct their effort to achieve higher levels of performance as a consequence of the feeling that their effort will have a meaningful impact on the lives of others. Task significance might increase effort and conscientiousness, and thus increase individual performance. In other words, they might be *driven* to perform and aim to achieve above and beyond a specified performance target. Thus, we will examine the following hypothesis:

H3a: There will be a positive association between goal clarity and performance when individuals are primed to believe they are working on significant tasks.

On the other hand, there is a body of literature developed in psychology that examines anxiety and cognitive performance, which suggests an increase in task significance relative to a specific goal might be detrimental to performance. While we know that some pressure and difficulty can be positively related to performance (Baumeister 1984), we also know that too much can be detrimental (Eysenck 1992). It is possible that emphasizing the social importance of a task invokes a pressure to perform in the context of a clearly established goal, resulting in lower levels of individual task performance (Baumeister 1984). Baumeister (1984, 610–11) described the cognitive process through which pressure might degrade performance:

"Under pressure, a person realizes consciously that it is important to execute the behavior correctly. Consciousness attempts to ensure the correctness of this execution by monitoring the process of performance… but consciousness does not contain the knowledge of these skills, so that it ironically reduces the reliability and success of the performance when it attempts to control it."

Studies have been fairly consistent in the finding that anxiety negatively affects test performance, especially when the task performed is complex and attention-demanding (Derakshan and Eysenck 2009). When setting a clear performance target for an individual, that individual might view their performance as either "succeeding" or "failing," and that alone might affect the state anxiety of the individual.[1] In the context of clear goals, task significance might raise the stakes of performance even further. The level of state anxiety might be heightened when they are told that their own individual performance will affect other people or society in a meaningful way. This heightened attention might have the ironic effect of degrading performance.

Drawing from both of this logic, we will test the following hypothesis.

H3b: There will be a negative association between goal clarity and performance when individuals are primed to believe they are working on significant tasks.

It is possible that the interaction among goal clarity and task significance simultaneously explains both increases and decreases in different performance metrics. The task significance treatment may increase attention to the task at hand and a greater conscientiousness about the work the individual is performing. As a consequence, the

1 State anxiety describes a non-permanent, or temporary, level of anxiety experienced by an individual. This construct stands in stark contrast to trait anxiety—an enduring personality trait commonly captured in the "Big Five" personality traits measure of neuroticism. We assign no normative value to state anxiety—it could very well be that some aspects of performance will decrease as a function of an increase in an individual's conscientiousness or paying increased attention to certain aspects of work.

individual slows down work in order to pay more careful attention to their own performance due to their belief that the work will help others in important and meaningful ways. Decreases in the performance indicated by the total quantity could simply be the result of being more careful and paying a bit closer attention to the task—which could result in higher levels of performance accuracy. On the other hand, individuals who speed up performance as a consequence of the task significance could increase the overall quantity they produce, but at the same time decrease their accuracy.

METHOD AND DATA

We employed a 3 × 2 between group factorial design experiment to test H1, H2, and H3. Experimental treatments include goal clarity (no stated goal, goal with low clarity, and goal with high clarity) and task significance (no or yes). Subjects (n = 214) were randomly assigned to one of six experimental treatment groups as outlined in Table 1.

The central feature of the experiment is a task-completion exercise.[2] The dependent variable, performance, is measured through multiple approaches so as to capture both quantity and quality dimensions of performance.

Experimental Treatments

The two experimental treatments are goal clarity (no goal, low goal clarity, and high goal clarity) and task significance (no or yes). Before performing the task, subjects were required to read a set of instructions that contained a statement about the project's objective, a set of precise instructions relative to performing the task, and a statement about the subject's goal (unless the subject was randomly assigned to a treatment group that did not have a goal). Only the instruction set was held constant for all subjects.

Task Significance

The task significance experimental treatment was implemented in the opening sentence of the instructions specifying the project's objectives. Subjects in treatment groups with no significance received the following statement about the study: "About this study: Your participation is helping a group of [university] researchers assess their

Table 1
Experimental Treatment Conditions and Treatment Groups (number of subjects (n) below in parentheses)

	Task Significance Treatments	
Goal Clarity Treatments	Not Significant	Significant
No goal	Group 1 (control) (37)	Group 2 (37)
Low clarity	Group 3 (35)	Group 4 (34)
High clarity	Group 5 (36)	Group 6 (34)

2 In addition to laboratory experiments, field and survey experiments are becoming increasingly common in leading public administration journals. For a review of recent examples, see Anderson and Edwards (2014).

labor needs for an upcoming project."[3] Subjects assigned to treatment groups primed to believe their work has a higher level of task significance received the following statement: "About this study: Your participation is helping a group of [university] researchers assess their labor needs for an upcoming project *related to relief from natural disasters*."[4] These statements were included in bold in italicized text to set them off from the rest of the instructions and gather subjects' attention.

This natural-disaster prompt was chosen to induce task significance because natural disasters are relatively random and can affect people indiscriminately. We were concerned that individuals' responses to certain content domains (such as healthcare, social welfare, or homelessness) could be influenced by feelings of desert or deservingness toward the beneficiaries. The study was implemented in the months following Hurricane Sandy, thus adding to the realism of the project's pretense.[5]

Goal Clarity

The management and applied psychology literatures generally define goal clarity as "the extent to which the outcome goals and objectives of the job are clearly stated and well defined" (Sawyer 1992, 2). This definition provides considerable leeway for the operationalization of goal clarity in both laboratory and field settings. Accordingly, the present study considers both the management and public administration perspectives in the construction of its goal clarity treatment. Many public administration studies tend to approach goal clarity through the lens of its opposite, goal ambiguity (Chun and Rainey 2005a, Chun and Rainey 2005b; Jung 2012, 2014b; Lee et al. 2009; Rainey 1983). A challenge for developing a laboratory operationalization of goal clarity is that it is seen as a multidimensional construct. This is true whether working from the mainstream management treatments of goal clarity or the prevailing public administration treatments of goal ambiguity. For example, in the management literature, the frequently used measure of goal clarity developed by Sawyer (1992) examines goal clarity as it pertains to one's duties and responsibilities, job goals and objectives, relations between individual work and the objectives of the overall unit, expected work results, and aspects of work that lead to positive evaluations. The empirical examinations of goal ambiguity in the public administration literature have identified directive goal ambiguity, evaluative goal ambiguity, priority goal ambiguity (Lee et al. 2009, 4) as well as target and time ambiguity (Jung 2012, 5) as dimensions of the construct. Although the two-multidimensional perspectives have emerged from slightly different methodological and theoretical backgrounds, they are not altogether incompatible. Accordingly, the goal clarity treatment adopted here builds upon an aspect of goal clarity reflected in both perspectives: the evaluative specification of the goal.

3 The actual name of the university was included in the brackets.

4 An anonymous reviewer correctly pointed out that since all students were asked to help a group of university researchers, one could say that we are priming the *extent* of "task significance," rather than "no task significance", and "task significance." We recognize this point, but in order to avoid confusion, we use the task significance/no task significance terminology to describe the treatment.

5 A manipulation check ensures that the experimental treatment here was effective. We measured subjects' attitudes after reading the instructions. Subjects were asked to indicate on a 7-point Likert scale the extent to which they agreed or disagreed with the following statement: "This task addressed a critical issue." The difference of means between task significance (4.19) and no task significance (3.59) was statistically significant ($p < .01$, one-tailed).

The experimental treatment for goal clarity consists of instructions that include three different evaluative specifications for subjects' goals. The first condition includes no reference to a goal and serves as a control group. In this case, subjects were given only instructions relative to performing the task. The second condition, termed "low clarity," follows the convention in goal-setting experiments (Locke and Latham 1990) by providing subjects with a goal to "do your best." Specifically, the following statement was included in the instructions that were otherwise identical to those provided to the control group: "Your Goal: You will be given 10 min to work. Your goal is to do your best working as quickly and accurately as possible."

Finally, subjects assigned to the high-clarity treatment group were provided the same instructions as all other subjects, however, as a goal they were given a clear set of criteria along which they would be evaluated, including a statement that provides a suggestion of what will lead to a positive evaluation. Specifically, they were provided the following instructions: "Your Goal: You will be given 10 min to work. Your goal is to accurately transcribe as much information as possible. Your performance will be evaluated based on the number of individual form fields you are able to accurately transcribe. On average, previous workers have been able to accurately transcribe four full forms. We encourage you to aim for this." Specification of the goal clarity treatment as such complies with Sawyer's (1992) frequently used dimensions of goal clarity pertaining to the expected results of work and the aspects of work that will lead to positive evaluations. It also reduces what Chun and Rainey (2005a) refer to as "evaluative goal ambiguity" or the degree of difficulty through which achievement of a goal can be determined objectively. This operationalization also provides a laboratory compliment to Jung's (2012, 2014b) recent examination of the target specifications of goal clarity.[6]

Experimental Task

Subjects were required to complete computer-enabled data-transcription tasks. Each subject worked independently in 1 of 12 identical private workstations within the laboratory. The task involved transcribing information from digital images of forms that had been filled out by hand. There were a total of 7 forms, each including 10 fields. Each form was formatted identically, but the information in the fields varied across forms. Each subject received the same set of forms in the same order. The subjects had 10 min to transcribe as much information as possible.[7]

6 To enhance experimental realism of the evaluative specification and the mundane realism of the work setting, we reference the performance of previous workers. We anticipate that the signal that previous workers have completed the task and have been successfully evaluated will improve the believability of the evaluative specification treatment within the context of the broader work setting in which subjects believed the task was being performed. As one anonymous reviewer indicated, this could also set up a social comparison. While this is outside the scope of this experiment, we recognize it could be an interesting opportunity for future research.

7 A computer program displayed all seven images on the screen with fields below each image corresponding to the various portions of the form to be transcribed. Pilot tests indicated that the most productive workers might be able to transcribe as many as six full forms but that the average person would transcribe fewer than four. Form fields included alphanumeric number sets, phone numbers, partial addresses, names, and claim amounts. All the information used for populating the form fields was generated randomly using number, letter, name, city, and phone number generators. For most fields, subjects were required to transcribe information as it appeared on the image. Two fields (requested amount and approved amount) required subjects to add a set of values together and report their sum.

Participants

The subject pool for this study is comprised of 214 undergraduate college students at a large, flagship state institution in the United States. While it is common for academic social science laboratory experiments to rely on student subjects (Davis and Holt 1993), the practice has endured important criticism (Dobbins, Lane, and Steiner 1988). Accordingly, we recognize that student subjects are not always appropriate, but are justified in this case given the focus on non-managerial, routine work, of which Druckman and Leeper (2012, 878) observed, "an increasing amount of evidence suggests results from [undergraduate] samples widely generalize".[8]

The mean age of the subjects was 20.3 years and ranged from 18 to 36, though only two subjects were over the age of 23. Forty-three subjects (approximately 20%) reported majoring in engineering or the sciences. Those remaining reported majors in business, social sciences, or humanities. The number of years in college ranges from less than one-half to five. Seventy-four of the subjects (34.6%) were male. A large majority of subjects spoke English as their native language (86.5%) and reported their race or ethnicity as white or Caucasian (65.9%). The majority of non-white students were Asian (20.1%). Approximately thirty-nine percent of the subjects were employed at least part-time. Table 2 provides the subjects' demographics.[9]

Table 3 provides an overview of the effects of randomization on subjects' demographic traits across all six treatment conditions. According to Table 3, samples are balanced with respect to race and ethnicity, hours worked per week, science major, age, and years of college, as determined through analysis of variance (ANOVA) tests for each trait. The same tests indicate an imbalance across samples of employment status, native English speaking, and gender ($p < .05$ for each). While randomization is a powerful tool for minimizing the probability of attaining imbalanced samples, it does not guarantee against their attainment. Accordingly, we take the potential threat

8 Anderson and Edwards (2014) provide an overview of sampling in public administration laboratory experiments and notes that issues of generalizability are dependent upon the extent to which the social or psychological mechanisms of causality are consistent across pools of subjects and field workers. To this end, there is at least some recent evidence that such differences between student and non-student subject pools are sometimes trivial (Alm et al. 2015). This suggests that the benefits of this approach (cost and recruitment efficiency) may outweigh the costs (external validity). Moreover, since many laboratory experiments in management research use task performance as a dependent variable, there may be some benefit in drawing samples from student populations where variations in ability (a predictor of performance) are often constrained by college admissions requirements. Such is the case in the present study where undergraduate admissions standards are relatively high.

9 Subjects were recruited by email under the pretense that they would be helping university researchers "assess their labor needs for an upcoming project." This deception was approved by the university institutional review board (IRB), and subjects were debriefed as to the true nature of the study upon completion of the task. Subjects were provided the opportunity to opt-out of the study upon being debriefed. No subjects selected to do so. Subjects were offered $15 as payment for their work. The study was conducted on four consecutive days in March 2013. Subjects scheduled appointment times to participate in the project. Upon arriving at the lab, subjects were escorted to their respective workstations where a computer displayed a set of instructions. Subjects were told by the researchers that the instructions provided complete information relative to their work and that the researchers managing the project had no additional information to provide. Under these conditions no subjects asked for further clarification on the nature of the task, its significance, or the details of their assigned goals. Thus, there was little likelihood of contamination effects associated with unintended information asymmetries associated with interaction communication with the researchers.

Table 2
Subject Demographic Characteristics

Variable	Count	Mean	SD	Min	Max
Employed	83	0.39	0.49	0	1
Hours worked per week	—	2.23	42.52	0	55
Native English	184	0.86	0.34	0	1
Male	74	0.35	0.48	0	1
Years in college	—	2.58	1.14	0.5	5
Age (years)	—	20.30	1.86	18	36
White	141	0.66	0.48	0	1
Asian	43	0.20	0.40	0	1
Hispanic	14	0.07	0.25	0	1
African American	23	0.11	0.31	0	1
Science major	43	0.20	0.40	0	1

Note: Race and ethnicity variables may add up to more than 214 since some subjects. (n = 9) self identified as both white and Hispanic.

Table 3
Subject Demographic Characteristics Across Treatment Groups

	Treatment Group (1–6)							
Variable	1	2	3	4	5	6	F	Prob. > F
Employed	0.51	0.41	0.41	0.53	0.25	0.20	2.73	0.02
	0.51	0.50	0.50	0.51	0.44	0.41		
Hours Worked/Week	4.11	−1.62	0.26	5.47	7.74	−3.71	0.37	0.86
	38.04	45.08	48.96	40.11	40.50	45.54		
Native English	1.00	0.89	0.88	0.74	0.86	0.83	2.39	0.04
	0.00	0.31	0.33	0.45	0.36	0.38		
Male	0.43	0.41	0.12	0.26	0.43	0.40	2.51	0.03
	0.50	0.50	0.33	0.45	0.50	0.50		
Years in college	2.86	2.45	2.50	2.46	2.73	2.36	1.06	0.38
	1.04	1.09	1.19	1.22	1.26	0.95		
Age	20.27	20.14	20.09	20.24	21.11	19.91	1.83	0.11
	1.24	1.29	1.29	1.39	3.51	1.17		
White	0.81	0.68	0.62	0.62	0.66	0.57	1.11	0.36
	0.39	0.47	0.49	0.49	0.48	0.50		
Asian	0.16	0.22	0.18	0.26	0.11	0.26	0.74	0.59
	0.37	0.41	0.39	0.45	0.32	0.44		
Hispanic	0.03	0.08	0.09	0.01	0.06	0.03	0.72	0.61
	0.16	0.28	0.29	0.33	0.24	0.16		
African American	0.03	0.11	0.15	0.12	0.11	0.14	0.70	0.63
	0.16	0.31	0.36	0.33	0.32	0.36		
Science major	0.19	0.16	0.18	0.15	0.31	0.17	0.82	0.53
	0.40	0.37	0.39	0.36	0.47	0.38		

to internal validity posed by imbalance into consideration with our formal hypothesis testing by supplementing our analysis with regression controls. Testing cause-effect relationships with regression controls is common in the practice of randomized control trials (seeEnglish et al. 2011; Rosenblum and van der Laan 2009).

Performance Measurement

Quantity transcribed is the number of items the subject attempted to transcribe. Each form has a total of 10 items. There are 7 forms in all, so there is a maximum of 70 items to transcribe. A subject is given credit for each item that is completed, irrespective of accuracy. *Quantity transcribed accurately* is the number of items transcribed accurately. There is an important reason to look at both the total performance quantity and the performance accuracy. It is possible that an individual could complete a high number of items but provide responses with a number of errors. Finally, we examine performance *fraction accurate*. This is the number of items transcribed correctly, divided by the total number of items described.

RESULTS

The observed values of *quantity transcribed* range from 18 to 68 and have a mean of 36.18 (SD = 8.8). Observed scores for *quantity transcribed accurately* range from 11 to 64 and have a mean of 32.56 (SD = 9.0).[10] The observed scores for *fraction accurate* range from 0.54 to 1.00 and have a mean of 0.895 with a SD of 0.08. Table 4 provides the mean values of performance for all three measures across each treatment group.

The results displayed in Table 5 indicate that performance increases with greater levels of goal clarity. The highest levels of performance are associated with the highest levels of goal clarity. A two-way ANOVA indicates the treatment effect of goal clarity is statistically significant for quantity transcribed (F (2, 212) = 5.89, p = 0.00) and quantity transcribed accurately (F (2, 212) = 4.15, p = 0.02) but there is no statistically significant effect of task significance or the interaction of clarity and significance. The results of the two-way ANOVA for performance quantity and accuracy are provided in Table 5.

Two of the three models provide evidence that supports H1, which states that goal clarity is associated with higher levels of performance. While the ANOVA results

Table 4
Performance Quantity and Performance Accuracy Means by Treatment Group (SD in parentheses)

	Quantity Transcribed		Quantity Transcribed Accurately		Fraction Accurate	
	Task Significance Treatments		Task Significance Treatments		Task Significance Treatments	
Goal Clarity Treatments	Not Significant	Significant	Not Significant	Significant	Not Significant	Significant
No goal	33.9 (6.8)	33.8 (6.7)	31.1 (6.7)	30.2 (6.2)	0.91 (0.08)	0.90 (0.06)
Low clarity	35.7 (9.8)	36.3 (8.6)	32.2 (9.9)	32.3 (9.4)	0.90 (0.08)	0.90 (0.11)
High clarity	40.7 (11.0)	36.8 (7.9)	37.0 (12.0)	32.7 (7.6)	0.90 (0.09)	0.89 (0. 07)

10 Two subjects have performance scores that are more than 3SDs above the mean. We conduct all of our hypothesis tests with and without outliers and find that removal of these outliers has no effect on our findings relative to H1 through H3. The only observed difference is a small reduction in the statistical significance of the difference in the performance means between treatment groups 5 and 6.

Table 5
Two-way ANOVA of Performance Quantity and Accuracy in Goal Clarity and Task Significance Treatment Groups (F-statistics)

	Quantity Transcribed (Prob. > F)	Quantity Transcribed Accurately (Prob. > F)	Fraction Accurate (Prob. > F)
Test of goal clarity treatment	5.89*** (0.003)	4.15** (0.017)	0. 86 (0.426)
Test of task significance treatment	0.91 (0.3401)	1.90 (0.1691)	1.73 (0.190)
Test of treatment interaction	1.36 (0.2595)	1.24 (0.2922)	0.06 (0.942)
R-squared	0.0695	0.0581	0.0169

*$p < .10$, **$p < .05$, ***$p < 0.01$.

fail to provide evidence of an effect associated with task significance, we cannot altogether dismiss the potential for one. The ANOVA fails to account for the fact that while there is little or no effect of task significance in the "no goal" and "low clarity" treatments, there appears to be an effect in the "high clarity" treatments (groups 5 and 6). Figures 1–3 provide plots of the performances observed for each treatment group. All show a drop in the median or overall distribution of observed performance from groups 5 to 6, which is consistent with H3b.

To further examine the effects of task significance, a series of two-sample *t*-tests are conducted to look for differences in performance within goal clarity treatment groups but across task significance treatment groups. These results, provided in Table 6, indicate that there is no statistically significant effect of task significance in treatment groups with no goal and low levels of goal clarity. In the case of items transcribed and items transcribed accurately, there is a statistically significant difference in treatment groups with high levels of goal clarity. The direction of this difference is negative, meaning that when goal clarity is high, task significance is associated with lower levels of task performance.

Ordinary least squares (OLS) predictions of performance help further examine the effects of task significance in the case of treatment groups 5 and 6. Results are presented in Table 7. Models 1, 2, and 3 provide predictions that use treatment groups 2–6 as regressors. The control group (treatment group 1) is excluded as a regressor. The value of the constant is the same as the mean value of the dependent variable for group 1 in each model. The beta-coefficients in this case are the average difference between the mean performances of the control group (group 1) and the performances in each respective treatment group. Accordingly, Models 1, 2, and 3 replicate the findings and the mathematics of each ANOVA provided in Table 5. Models 4, 5, and 6 extend the analysis by including additional controls for subject traits imbalanced across samples (see Table 3) including employment status (a dummy variable set to 1 if currently employed), English fluency (a dummy variable set to 1 for native English speakers), and gender (a dummy variable set to 1 if male).[11] The results indicate only a modest change among the coefficients.

11 Of course, randomization of subjects to treatment and control groups reduces but does not remove entirely the threat of imbalanced samples. This technique utilizes the control variables to remove variation from the model and provide more precise coefficient estimates. ANOVA results reveal no differences across treatment groups at the 0.05 level for employment status, gender, and native English speaking. Statistical controls help adjust for the bias of this imbalance.

Figure 1
Quantity transcribed across goal clarity and task significance treatments (treatment groups in parentheses).

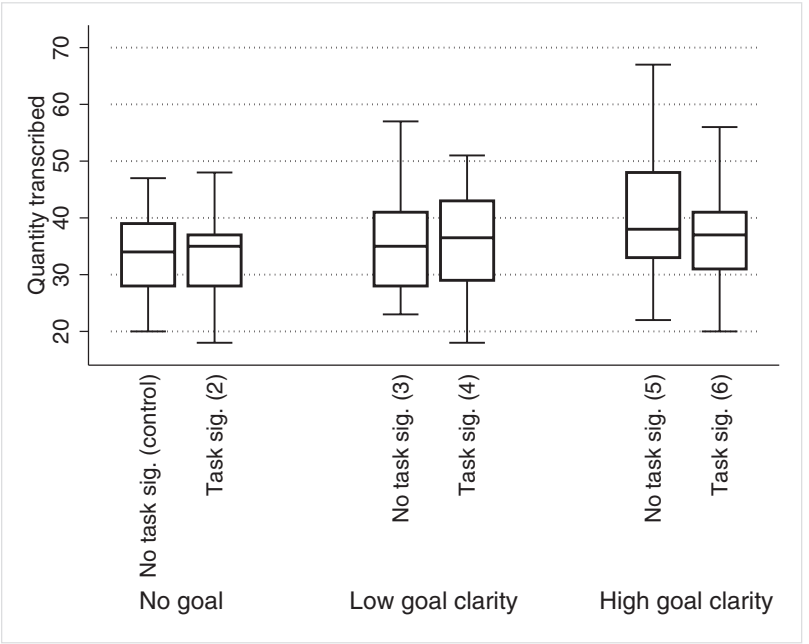


Figure 2
Quantity transcribed accurately across goal clarity and task significance treatments (treatment groups in parentheses).

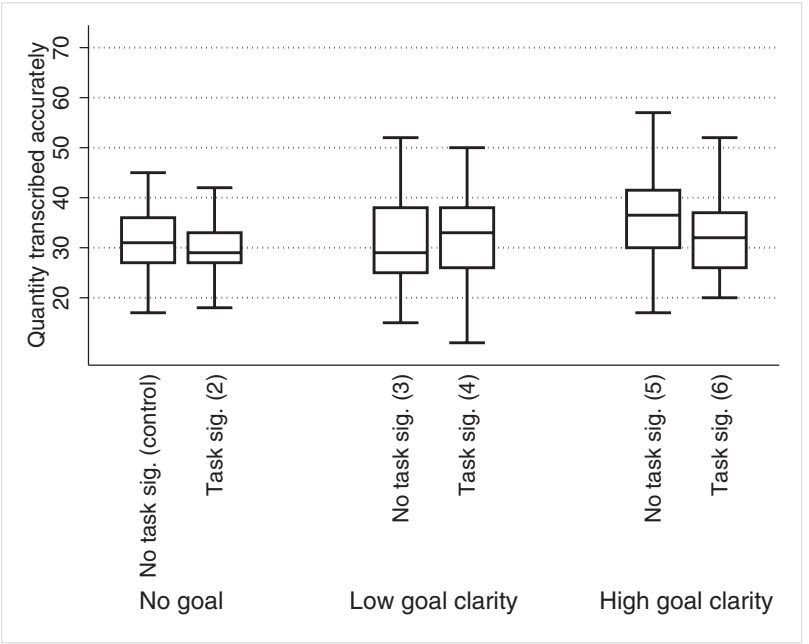
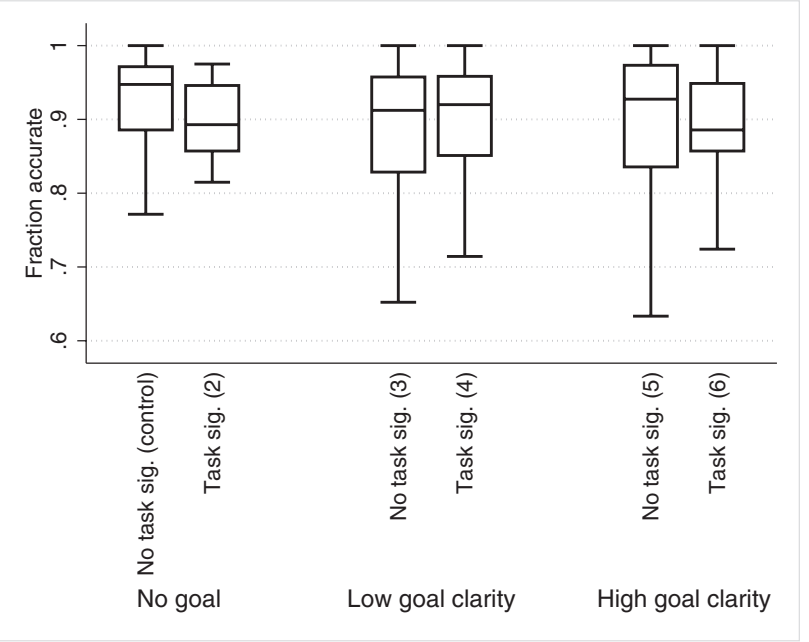


Figure 3
Fraction accurate across goal clarity and task significance treatments (treatment groups in parentheses).



Models 7, 8, and 9 add experience as a student (count of the number of years in college), English fluency (a dummy variable set to 1 for native English speakers), race or ethnicity (dummy variables set to 1 for white and Asian students), employment status (a dummy variable set to 1 if currently employed), and likelihood that schoolwork requires routine technical work on computers (a dummy variable set to 1 if majoring in the sciences or engineering). According to Locke and Latham (2002, 707), "when confronted with task goals, people automatically use the knowledge and skills they have already acquired that are relevant to goal attainment." As a consequence, we use these variables to remove possible variation that is confounding the results of the treatment.

The results of the regression-controlled predictions of performance are not directly interpretable for purposes of testing our hypotheses because the model structures the beta coefficients for each treatment group in a fixed-effects manner with reference to the omitted treatment group (in this case, treatment group 1). Accordingly, we adopt a post-estimation strategy to conduct between group comparisons of the regression-controlled predictions of performance. Consider first differences in the predicted number of items transcribed reported in Model 7. Treatment group 5 (high goal clarity, no task significance) is statistically significantly greater than group 1 (represented by the constant), group 2 ($F(1,201) = 13.83$; $p = .000$), group 3 ($F(1,201) = 7.46$; $p = .001$), and group 4 ($F(1,201) = 13.83$; $p = .011$). For this same measure of performance, we find that the average predicted total number of items transcribed for group 6 is greater than group 1 and group 2 ($F(1,201; 3.93$; $p = .049$). The finding supports

Table 6
Difference in Means Across Task Significance Treatment Groups

	Quantity Transcribed			Quantity Transcribed Accurately			Fraction Accurate		
	Task Significance Treatments			Task Significance Treatments			Task Significance Treatments		
Goal Clarity Treatments	Not Significant	Significant	*t*-test (*p* diff > 0)	Not Significant	Significant	*t*-test (*p*. diff > 0)	Not Significant	Significant	*T* test (*p*. diff > 0)
No goal	33.9	33.8	***t* = 0.069**	31.1	30.2	***t* = 0.54**	0.90	0.89	***t* = 0.63**
	(6.8)	(6.7)	(0.473)	(6.7)	(6.2)	(0.296)	(0.01)	(0.01)	(0.2 65)
Low clarity	35.7	36.3	***t* = −0.261**	32.2	32.3	***t* = −0.053**	0.89	0.88	***t* = 0.55**
	(9.8)	(8.6)	(0.603)	(9.9)	(9.4)	(0.521)	(0.01)	(0.02)	(0.29)
High clarity	40.7	36.8	***t* = 1.690****	37	32.7	***t* = 1.808****	0.92	0.90	***t* = 1.21**
	(11)	(7.9)	(0.048)	(12)	(7.6)	(0.038)	(0.01)	(0.01)	(0.12)

*$p < .10$, **$p < .05$, ***$p < .01$.

Table 7.
OLS Predictions of Performance Quantity and Accuracy

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
	Quantity Transcribed	Quantity Transcribed Accurately	Fraction Accurate	Quantity Transcribed	Quantity Transcribed Accurately	Fraction Accurate	Quantity Transcribed	Quantity Transcribed Accurately	Fraction Accurate
	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta
	SE	SE	SE	SE	SE	SE	SE	SE	SE
No goal, task significant (Group 2)	−0.108	−0.811	−0.021	0.163	−0.558	−0.020	0.805	0.161	−0.017
	(1.995)	(2.054)	(0.020)	(1.963)	(2.036)	(0.020)	(1.890)	(1.986)	(0.020)
Low goal clarity, no task significance (Group 3)	1.795	1.117	−0.021	2.011	1.419	−0.017	2.600	2.065	−0.014
	(2.023)	(2.083)	(0.020)	(2.031)	(2.108)	(0.020)	(1.961)	(2.060)	(0.020)
Low goal clarity, task significance (Group 4)	2.375	1.240	−0.034	1.923	0.902	−0.031	2.827	1.836	−0.028
	(2.038)	(2.099)	(0.020)	(2.051)	(2.128)	(−0.021)	(1.976)	(2.076)	(0.020)
High goal clarity, no task significance (Group 5)	6.748***	5.946***	−0.018	7.476***	6.594***	−0.017	7.990***	6.938***	−0.019
	(2.009)	(2.068)	(0.020)	(2.000)	(2.075)	(0.020)	(1.955)	(2.053)	(0.020)
High goal clarity, task significance (Group 6)	2.910	1.632	−0.030	3.917*	2.543	−0.030	4.601**	3.354	−0.023
	(2.023)	(2.083)	(0.020)	(2.038)	(2.115)	(0.021)	(1.972)	(2.071)	(0.021)
Employed				4.096***	3.640***	−0.000	3.706***	3.195**	−0.001
				(1.214)	(1.259)	(0.012)	(1.246)	(1.309)	(0.013)
English				−1.677	−1.460	0.010	1.641	0.850	−0.008
				(1.727)	(1.792)	(0.013)	(1.921)	(2.018)	(0.020)
Male				0.338	0.632	0.010	−0.233	0.028	0.009
				(1.244)	(1.291)	(0.013)	(1.205)	(1.266)	(0.013)
Years in college							1.214**	1.231**	0.001
							(0.530)	(0.557)	(0.006)
White							0.845	1.685	0.026*
							(1.460)	(1.533)	(0.015)
Asian							6.452***	5.410***	−0.003
							(1.813)	(1.905)	(0.019)

Continued

Table 7 *(continued)*
OLS Predictions of Performance Quantity and Accuracy

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
	Quantity Transcribed	Quantity Transcribed Accurately	Fraction Accurate	Quantity Transcribed	Quantity Transcribed Accurately	Fraction Accurate	Quantity Transcribed	Quantity Transcribed Accurately	Fraction Accurate
	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta
	SE	SE	SE	SE	SE	SE	SE	SE	SE
Science major							2.789**	3.387**	0.024
							(1.405)	(1.476)	(0.015)
Constant	33.919***	31.054***	0.916***	33.346***	30.371***	0.910	24.737***	22.141***	0.893***
	(1.411)	(1.452)	(0.012)	(2.378)	(2.468)	(0.024)	(3.056)	(3.210)	(0.032)
Obs	214	214		214	214		214	214	214
R-squared	0.070	0.058	0.017	0.125	0.101	0.021	0.215	0.173	0.052

*$p < .10$, **$p < .05$, ***$p < .01$.

previous results that suggest that goal clarity does in fact enhance performance. In Model 7, however, subsequent tests indicate that group 6 does not demonstrate an effect on performance accuracy relative to group 3 ($F(1,201) = 1.03$; $p = .311$) or group 4 ($F(1, 201) = .80$; $p = .373$).

In Model 8, the dependent variable is the quantity transcribed accurately. In addition to having higher levels of performance than group 1 (control group), we see that TG5 is greater than group 2 ($F(1,201) = 11.15$; $p = .001$), group 3 ($F(1,201) = 5.52$; $p = .020$), and group 4 ($F(1,201) = 5.85$; $p = .012$)). In this model, group 6 has an effect on performance that is not distinguishable from that found in either group 1 (shown in model), group 2 ($F(1, 201) = .43$; $p = .514$), group 3 ($F(1, 201) = .03$; $p = .864$), or group 4 (F(1, 201) = .53; $p = .467$).

In Model 9, the dependent variable is fraction accurate. We see that none of the treatment groups are statistically different from the control group, a finding which is consistent with both the ANOVA and the differences.

In order to see if the OLS models predicting both the quantity transcribed and the quantity transcribed accurately provide support for H3a, we test to see if the coefficients of dummy variables for groups 5 and 6 are, in fact, different from one another. An F test demonstrates that the coefficients of groups 5 and 6 in Model 7 estimating performance quantity are in fact statistically different from one another at the 0.10-level ($F(1,201) = 3.04$; $p = .083$). An F-test among the coefficients in Model 8 estimating performance-accuracy reveals that the coefficients for groups 5 and 6 are in fact statistically different from one another at the 0.10-level ($F(1, 201) = 3.08$; $p = .081$). Thus, even after controlling for potentially confounding variables, we still have statistical support for H3b.

DISCUSSION

We are careful to pay close attention to the limitations of the present study. First, the present study suffers from the same important threats to external validity (Anderson and Edwards, 2014) seen in other laboratory studies (Brewer and Brewer 2011; Nutt 2006). The realism of the laboratory, even under ideal circumstances, is suspect. In particular, we are extremely limited in our ability to examine how public managers might react and respond to non-routine work in a laboratory setting. Replicating work tasks that arise unexpectedly or are contingent on engaging coworkers or outside collaborators might be impossible in a laboratory setting. Adding the evaluation of individual performance in these more complex, interdependent and collaborative work tasks adds even further complexity.

Our sample consists of undergraduate students, not public employees. Students performing this activity for the first time might have been more cautious than an employee who routinely performs this task when task significance is introduced. On the other hand, it is also possible that even well trained employees become more cautious and careful when faced with a routine task they are told is of a high level of social importance.

While we would have preferred to conduct such a study on public employees, there are practical limitations related to the resources required for their recruitment and participation in a laboratory study. Recently, a number of public administration

researchers have been successful in conducting experiments in the field (Bellé 2013, 2014; James and Moseley 2014; James 2011). Replication of this study in the field with different groups of public employees could add additional meaning and nuance, not just to this study and public administration scholarship, but to extant goal-setting literature more broadly. Despite this limitation, a laboratory experiment still provides us with an opportunity to examine how goal clarity and task significance might affect performance on routine work assignments.

A second concern we have is that our treatment of task significance was too subtle given the context. While our manipulation check shows a significant difference between those who did and did not receive the task-significant treatment, the effect was small and might be considered to be low-intensity (see Pedersen 2015). It is plausible that the low intensity of the treatments was not enough to induce either a direct effect or an interactive effect with goal clarity that achieved statistical significance at the level we described as "low-clarity." However, it is also possible that by making a treatment "too intense" we might lose certain levels of believability or contextual realism. We also have some concerns relative to the exposure of human subjects to high-intensity treatments through laboratory deception.

A third and very important limitation to small-sample laboratory studies is with respect to sample size. One constraint posed by the design of the study was the number of participants who could take part, given the resource constraints including laboratory space, participant compensation, and the cost associated with having graduate students run the experiment. The first obvious implication is that small samples do not have the statistical power to find small but significant effects. While power analyses are important in determining the size of a study, it is not always feasible to obtain the resources necessary to find small but statistically significant effects. A larger sample would increase the probability that our groups are balanced. After adopting a conventional regression-controlled strategy to compensate for threats to balance, we find that the coefficients among these groups are statistically significant at the 0.10 level. Given the small size of the study, we take this as confirmation of an effect.

Despite these limitations, the study makes several important contributions. The central premise of GST is that workers provided with clear task goals perform better than workers simply asked to do their best (Locke and Latham 1990). In an attempt to examine GST in light of a topic centrally relevant to current public-management scholarship, we consider the effects of goal clarity when tasks are described as socially significant to the individuals performing them. The present focus on task significance represents an effort to extend a well-validated and applied general management theory to the domain of public administration. In thinking about how task significance might moderate goal clarity, we develop and test competing theoretical perspectives. One suggests that when goals are clear, an increase in task significance will enhance performance (H3a). The second perspective suggests that task significance might be detrimental to performance (H3b).

Our findings indicate that increases in performance are associated with increases in goal clarity. However, presenting the task as socially significant might undermine the degree to which performance is enhanced. This finding counters the hypothesis that the benefits of goal clarity might be enhanced by perceptions of task significance (see hypothesis 3a). However, this finding is consistent with hypothesis 3b, and

the logic of performance anxiety—or performance pressure—that suggests increased significance may spur worker anxiety that, in turn, may reduce performance in the context of clear performance goals (Baumeister 1984; Derakshan and Eysenck 2009; Eysenck 1992). A second interpretation suggests that a more deliberate effort on the part of the worker to proceed cautiously might slow performance when indicated as raw quantity. It may be the case that the significance primer in conjunction with the clear goal may stimulate the workers' intent to confirm the precision of his or her work or engage in some other intentional behavior that slows the overall rate of work. Thus, the decrease in performance as measured by quantity transcribed and quantity transcribed accurately might actually be the result of increased worker conscientiousness. Our finding that task significance only affects both the quantities transcribed—not the fraction accurate—in the context of clear goals suggests that while the work slows, the quality of the work does not. Nor does the quality increase as we might have expected given the potential tradeoff between speed and accuracy. Future research might consider presenting participants with more difficult or complex tasks to better differentiate performance on the dimension of performance accuracy.

The finding adds considerable nuance to our contextual understanding of the conditions under which task significance might be enhanced by managers to motivate higher levels of employee performance (Bellé 2013, 2014; Grant 2008a, 2008b; Pedersen 2015). Furthermore, since interactions can be interpreted symmetrically, we might also consider that goal clarity could moderate the effect of task significance. For instance, when a person is told that what they are doing has a high level of social significance, the effect could be mitigated by a clear goal.

Moreover, by adjudicating competing theoretical perspectives, we provide theoretical depth with respect to the relationships among goal clarity, task significance, and performance, and pave the way for additional research on the subject. Future studies might examine how task significance affects performance when goals are set at the group level as well as when employees participate in the setting of the goals. Drawing on Grant's (2008a, 2008b) and Bellé's (2013, 2014) studies, future research should examine beneficiary contact in the context of clearly established goals in order to see if there might also be contextual limits to beneficiary contact, in addition to low-intensity interventions designed to raise employee perceptions of task significance.

Scholars should also investigate how the task difficulty of the goal might relate to the goal clarity-task significance-performance relationship. Although creating treatment conditions to manipulate task difficulty was beyond the scope of the current project, we see that this could be an interesting line of inquiry. GST suggests that low or moderate goals would be less effective than challenging—or difficult—goals. However, we might expect that more difficult goals, when placed in the context of a task that is significant, would invoke higher levels of pressure on workers than would routine tasks. Taking into account the difficulty of the goal relative to the individual is an important next step, and is an opportunity to enhance and extend this line of inquiry.

Future research should continue to advance public administration perspectives on goal clarity. Clarity in organizational and work goals is a topic of central importance to public administration research, as evidenced in part by extensive empirical and theoretical treatment over several decades (Chun and Rainey 2005a, 2005b; Jung

2012, 2014a, 2014b; Rainey 1983, 1993; Wright 2004). Such studies have until now relied on field evidence for testing important hypotheses and developing public administration perspectives on this classic management topic. Submission of this topic to laboratory examination represents an important next step for theory development, especially as it pertains to the extended consideration of subdimensions of goal clarity that have been developed in recent years.

In addition to the present study's theoretical implications and paving the way to new research opportunities, many managerial implications may be drawn. First, this study reinforces the notion that setting clear goals and objectives for employees is a key function of management and helps to ensure high levels of performance. Even in the context of ambiguous macro-level organizational goals that are subject to changes of political principals, many tasks can be broken into smaller, more clearly defined tasks. For managers of entry-level, administrative, and clerical staff, communicating specific goals remains a clear mechanism through which managers can enhance performance. Second, the findings suggest that there are times when raising the social significance of routine tasks can hinder individual task performance in the context of goals. The finding suggests that telling people that the task is of high social value in the context of a specified performance objective (goal) might heighten worker conscientiousness, thereby reducing performance along dimensions associated with speed, but not a measure that might be an indicator of performance quality (fraction accurate).

REFERENCES

Alm, James, Kim Bloomquist, and Michael McKee. 2015. One the external validity of laboratory tax compliance experiments. *Economic Inquiry*. 53:1170–1186.

Anderson, Derrick M., and Barry C. Edwards. 2014. Unfulfilled Promise: Laboratory Experiments in Public Management Research. Public Management Review, Advanced online publication. doi:10.1080/14719037.2014.943272.

Bandura, Albert, and Daniel Cervone. 1983. Self-evaluative and self-efficacy mechanisms governing the motivational effects of goal systems. *Journal of Personality and Social Psychology* 45:1017–28.

Baumeister, Roy F. 1984. Choking under pressure: Self-consciousness and paradoxical effects of incentives on skillful performance. *Journal of Personality and Social Psychology* 46:610.

Bellé, Nicola. 2013. Experimental evidence on the relationship between public service motivation and job performance. *Public Administration Review* 73:143–53.

Bellé, Nicola. 2014. Leading to make a difference: A field experiment on the performance effects of transformational leadership, perceived social impact, and public service motivation. *Journal of Public Administration Research and Theory* 24:109–36.

Brewer, Gene A., and Gene A. Brewer, Jr. 2011. Parsing public/private differences in work motivation and performance: An experimental study. *Journal of Public Administration Research and Theory* 21 (Suppl 3):i347.

Chun, Young Han, and Hal G. Rainey. 2005a. Goal ambiguity in U.S. federal agencies. *Journal of Public Administration Research and Theory* 15:1–30.

Chun, Young Han, and Hal G. Rainey. 2005b. Goal ambiguity and organizational performance in U.S. federal agencies. *Journal of Public Administration Research and Theory* 15:529–57.

Davis, Douglas D., and Charles A. Holt. 1993. *Experimental economics*. Princeton, NJ: Princeton University Press.

Derakshan, Nazanin, and Michael W. Eysenck. 2009. Anxiety, processing efficiency, and cognitive performance. *European Psychologist* 14:168–76.
Dobbins, Gregory H., Irving M. Lane, and Dirk D. Steiner. 1988. A note on the role of laboratory methodologies in applied behavioural research: Don't throw out the baby with the bath water. *Journal of Organizational Behavior* 9:281–86.
Dossett, Dennis L., Gary P. Latham, and Terence R. Mitchell. 1979.Effects of assigned versus participatively set goals, knowledge of results, and individual differences on employee behavior when goal difficulty is held constant. *Journal of Applied Psychology* 64:291.
Druckman, James N., and Thomas J. Leeper. 2012. Learning more from political communication experiments: pretreatment and its effects. *American Journal of Political Science* 56:875–96.
English, Mike, Joanna Schellenberg, and Jim Todd. 2011. Assessing health system interventions: key points when considering the value of randomization. *Bulletin of the World Health Organization* 89:907–12.
Eysenck, Michael W. 1992. *Anxiety: the cognitive perspective*. Hove, England: Erlbaum.
Grant, Adam M. 2007. Relational job design and the motivation to make a prosocial difference. *Academy of Management Review* 32:393–417.
Grant, Adam M. 2008a. Does intrinsic motivation fuel the prosocial fire? Motivational synergy in predicting persistence, performance, and productivity. *Journal of Applied Psychology* 93:48–58.
Grant, Adam M. 2008b. The significance of task significance: job performance effects, relational mechanisms, and boundary conditions. *Journal of Applied Psychology* 93:108.
Hackman, J. Richard, and Greg R. Oldham. 1976. Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance* 16:250–79.
Hollenbeck, John R., Charles R. Williams, and Howard J. Klein. 1989. An empirical examination of the antecedents of commitment to difficult goals. *Journal of Applied Psychology* 74:18–23.
Ivancevich, John M. 1976. Effects of goal setting on performance and job satisfaction. *Journal of Applied Psychology* 61: 605–12.
James, Oliver. 2011. Performance measures and democracy: information effects on citizens in field and laboratory experiments. *Journal of Public Administration Research and Theory* 21:399–418.
James, Oliver, and Alice Moseley. 2014. Does performance information about public services affect citizens' perceptions, satisfaction, and voice behaviour? Field experiments with absolute and relative performance information. *Public Administration* 92:493–511.
Jung, Chan Su. 2012. Developing and validating new concepts and measures of program goal ambiguity in the US federal government. *Administration & Society* 44:675–701.
Jung, Chan Su. 2014a. Organizational goal ambiguity and job satisfaction in the public sector. *Journal of Public Administration Research and Theory* 24:209–234.
Jung, Chan Su. 2014b. Why are goals important in the public sector? Exploring the benefits of goal clarity for reducing turnover intention. *Journal of Public Administration Research and Theory* 24:209–34.
Kahneman, Daniel. 1973. *Attention and effort*. Englewood Cliffs, NJ: Prentice-Hall.
Klein, Howard J., Michael J. Wesson, John R. Hollenbeck, and Bradley J. Alge. 1999. Goal commitment and the goal-setting process: Conceptual clarification and empirical synthesis. *Journal of Applied Psychology* 84:885–96.
Kolb, David A., and Richard E. Boyatzis. 1970. Goal-setting and self-directed behavior change. *Human Relations* 23:439–57.
LaPorte, Ronald E., and Raghu Nath. 1976. Role of performance goals in prose learning. *Journal of Educational Psychology* 68:260–4.
Latham, Gary P., and Sydney B. Kinne. 1974. Improving job performance through training in goal setting. *Journal of Applied Psychology* 59:187.
Latham, Gary P., and Edwin A. Locke. 1975. Increasing productivity and decreasing time limits: A field replication of Parkinson's law. *Journal of Applied Psychology* 60:524.
Latham, Gary P., and Edwin A. Locke. 1991. Self-regulation through goal setting. *Organizational Behavior and Human Decision Processes* 50:212–47.

Latham, Gary P., Terence R. Mitchell, and Dennis L. Dossett. 1978. Importance of participative goal setting and anticipated rewards on goal difficulty and job performance. *Journal of Applied Psychology* 63:163.

Latham, Gary P., Miriam Erez, and Edwin A. Locke (1988). Resolving scientific disputes by the joint design of crucial experiments by the antagonists: application of the Erez-Latham dispute regarding participation in goal setting. *Journal of Applied Psychology* 73:753–72.

Lee, Thomas W., Edwin A. Locke, and Soo H. Phan. 1997. Explaining the assigned goal-incentive interaction: the role of self-efficacy and personal goals. *Journal of Management*, 23:541–59.

Lee, Jung W., Hal G. Rainey, and Young Han Chun. 2009. Of politics and purpose: Political salience and goal ambiguity of US federal agencies. *Public Administration* 87:457–84.

Locke, Edwin A., and Gary P. Latham. 1990. *A theory of goal setting & task performance*. Englewood Cliffs, NJ: Prentice-Hall, Inc.

Locke, Edwin A., Norman Cartledge, and Claramae S. Knerr. 1970. Studies of the relationship between satisfaction, goal-setting, and performance. *Organizational Behavior and Human Performance* 5:135–58.

Locke, Edwin A., and Gary P. Latham. 2002. Building a practically useful theory of goal setting and task motivation on November 9th, 2011 in business models, business theories. *American Psychologist* 57:705–17.

Locke, Edwin A., Gary P. Latham, Ken J. Smith, Robert E. Wood, and Albert Bandura. 1990. *A theory of goal setting & task performance*, vol. 21. Englewood Cliffs, NJ: Prentice Hall.

Moynihan, Donald P., Sanjay K. Pandey, and Bradley E. Wright. 2012. Prosocial values and performance management theory: linking perceived social impact and performance information use. *Governance* 25:463–83.

Nutt, Paul C. 2006. Comparing public and private sector decision-making practices. *Journal of Public Administration Research and Theory* 16:289.

Pandey, Sanjay K., and Bradley E. Wright. 2006. Connecting the dots in public management: political environment, organizational goal ambiguity, and the public manager's role ambiguity. *Journal of Public Administration Research and Theory* 16:511–32.

Pedersen, Mogens Jin. 2015. Activating the forces of public service motivation: evidence from a low-intensity randomized survey experiment. *Public Administration Review.* doi: 10.1111/puar.12325.

Rainey, Hal G. 1983. Public agencies and private firms incentive structures, goals, and individual roles. *Administration & Society*, 15:207–42.

Rainey, Hal G. 1993. Toward a theory of goal ambiguity in public organizations. *Research in Public Administration* 2:121–66.

Rainey, Hal G. 2014. *Understanding and managing public organizations*, 5th edn. San Francisco, CA: Jossey-Bass.

Rosenblum, Michael, and Mark J. van der Laan. 2009. Using regression models to analyze randomized trials: Asymptotically valid hypothesis tests despite incorrectly specified models. *Biometrics* 65:937–45.

Salancik, Gerald R., and Jeffrey Pfeffer. 1978. A social information processing approach to job attitudes and task design. *Administrative Science Quarterly* 23:224–53.

Sawyer, John E. 1992. Goal and process clarity: specification of multiple constructs of role ambiguity and a structural equation model of their antecedents and consequences. *Journal of Applied Psychology* 77:130–42.

Seijts Gerard H., and Gary P. Latham (2001). The effect of learning, outcome, and proximal goals on a moderately complex task. *Journal of Organizational Behavior* 22:291–307.

Stazyk, Edmund C., and Holly T. Goerdel. 2011. The benefits of bureaucracy: Public managers' perceptions of political support, goal ambiguity, and organizational effectiveness. *Journal of Public Administration Research and Theory* 21:645–72.

Stritch, Justin M., and Robert K. Christensen. 2014. "Looking at a Job's Social Impact Through PSM-Tinted Lenses: Probing the Motivation–Perception Relationship." *Public Administration* 92.4:826-842.

Terborg, James R. 1976. The motivational components of goal setting. *Journal of Applied Psychology* 61:613–21.

Wright, Bradley E. 2004. The role of work context in work motivation: A public sector application of goal and social cognitive theories. *Journal of Public Administration Research and Theory* 14:59–78.