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Performance-Related Pay and the Crowding Out of Motivation in the Public Sector: A Randomized Field Experiment

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Abstract: *This article advances our understanding of the effects of monetary rewards on public employee performance and of the contingencies that may moderate these effects. In a randomized control-group experiment with nurses working at a local health authority in Italy, performance-related pay (PRP) had a larger effect on task performance when the rewards were kept secret than when they were disclosed. The negative interaction between PRP and visibility was stronger among participants who were exposed to direct contact with a beneficiary of their efforts, which heightened their perception of making a positive difference in other people's lives. These results are consistent with theoretical predictions that monetary incentives for activities with a prosocial impact may crowd out employee image motivation. There were no crowding-out effects when a symbolic reward was substituted for the monetary incentive.*

Practitioner Points

- For activities with a prosocial impact, monetary incentives tend to have a larger performance effect when they are secret rather than disclosed.
- Nonmonetary rewards may be immune—or at least less prone—to some of the motivational drawbacks encountered when using monetary incentives for activities with a prosocial impact.
- Public organizations and their managers should take full advantage of nonmonetary incentive options in this time of budget restraints, which make it impossible to offer bonuses that are large enough to be effective.

“More pay for better performance” has long been the mantra behind the public sector personnel reforms inspired by New Public Management. Since the late 1970s, the vast majority of countries in the Organisation for Economic Co-operation and Development have adopted performance-related pay (PRP) provisions for government employees (Lah and Perry 2008; OECD 2005). The use of monetary incentives in the public sector does not seem to be declining; on the contrary, it seems to have enjoyed a recent resurgence in interest and popularity (Bellé and Cantarelli 2014; Bellé and Ongaro 2014; Perry, Engbers, and Jun 2009).

PRP continues to be adopted by public jurisdictions, although research on its effectiveness in the public sector is inconclusive (Bellé 2010; Ingraham 1993; Kellough and Lu 1993; Milkovich and Wigdor 1991; Perry 1986). In fact, the most recent comprehensive review of studies on this topic reports mixed results and suggests that “a variety of contextual factors appear to

moderate the effectiveness of performance-related pay systems” (Perry, Engbers, and Jun 2009, 44), and this review identifies only occasional PRP successes, which appear to be associated with particular types of public service industries and certain organizational levels. In particular, the few positive studies tend to be concentrated in the medical context and involve lower organizational levels.

Unfortunately, the literature on the effectiveness of contingent pay plans in the public sector is sparse and relies primarily on correlational designs, which are well suited for testing theoretical predictions in a broad range of populations but do not perform particularly well with respect to their internal validity (McGrath 1981). The absence of sound experimental research has precluded rigorous causal inferences about the effects of monetary rewards on public employee motivation and performance and about the contingencies that may moderate these effects. Filling this gap in the literature seems particularly important because of the

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widespread and ever-increasing diffusion of PRP schemes in public organizations.

Both policy makers and scholars have recently urged the study of the performance effects of PRP in the context of public administration using stronger research methods—particularly field experiments—to illuminate causal paths that have long remained unclear (Bellé 2010; Perry, Engbers, and Yun 2009). We answered this call by conducting a randomized field experiment that investigated the effects of monetary incentives on the performance of a group of nurses working for public hospitals in Italy. We examined how these effects depend on two conditions that play important roles in the public sector: (1) the transparency or observability of individual rewards (Ariely, Bracha, and Meier 2009; Perry, Engbers, and Yun 2009) and (2) employee perceptions of making a positive difference in other people's lives (Grant 2007, 2008a, 2008b; Grant et al. 2007).

The emphasis on PRP and the tendency to lump all incentives into a common category have long combined to obscure the differences between the effects of monetary and nonmonetary rewards. Responding to recent calls to investigate this neglected issue through advanced research designs (Grant and Shin 2012), we replicated our experiment, substituting a symbolic reward for the monetary incentive. This enabled us to observe whether and how symbolic rewards differ from financial incentives in terms of their interaction with reward visibility and employee perception of prosocial impact. We believe this comparison may significantly contribute to the extant literature on the use of different incentive options in the public sector (Perry, Mesch, and Paarlberg 2006; Perry and Porter 1982).

In the following sections, we first situate our research in the relevant literature and illustrate our hypotheses. We then describe the experiment we conducted to test these hypotheses and conclude with a discussion of our findings and their implications for theory and practice.

Theoretical Background, Research Questions, and Hypotheses

In a research synthesis of 57 empirical studies set in the public sector and conducted between 1977 and 2008, Perry, Engbers, and Yun argue that “performance-related pay continues to be adopted but persistently fails to deliver on its promise” (2009, 46). Scholars have provided three main types of explanations for this persistent failure of PRP plans in the public sector, which contrasts with successful outcomes in private industry. A first group of studies points to the poor technical design of contingent pay plans and the inadequacy of the performance management practices that support the incentive systems. According to this view, PRP provisions might be effective if they were better designed and supported by better performance management practices (e.g., better performance appraisal systems), which are often inadequate in public organizations (Egger-Peitler, Hammerschmid, and Meyer 2007; Kessler and Purcell 1992; Marsden and Richardson 1994).

A second type of explanation for the frequent failure of PRP in the public sector involves the fundamental institutional characteristics of public organizations, which cannot be attenuated by simply improving performance management practices. Public organizations

are held to strict transparency requirements regarding their compensation policies, whereas private companies that use monetary incentives most successfully tend to rely heavily on pay secrecy (Colella et al. 2007). Furthermore, public institutions face budget constraints and public expectations about the responsible stewardship of resources that make it either legally or politically impossible to offer bonuses that are large enough to be effective (Miller and Whitford 2007)—as required by reinforcement theory (Skinner 1969) and expectancy theory (Vroom 1964) and as suggested by experimental research (Gneezy and Rustichini 2000). The institutional perspective of this second group of studies is shared by a strand of literature that draws on transaction cost economics to explain the uneven introduction of incentives that may be observed across public jurisdictions. Building on previous work by Miller and Falaschetti (2001), Dahlström and Lapuente (2010) argue that PRP provisions are more likely to be implemented successfully in countries with a clear separation of interests among politicians and senior civil servants. As with owners of private firms, the argument goes, politicians may be tempted to renege *ex post* on promises of incentives and divert resources to ends that better serve their political goals. If the careers of senior civil servants (i.e., those who actually manage the incentive system) directly depend on politicians, senior civil servants will derive direct benefits from complying with politicians' wishes and their temptations for opportunistic defection. As a result, without a clear separation between politicians (i.e., “owners”) and senior civil servants (i.e., “managers”), employees will not believe that promises about incentives are credible and will make only minimum efforts to achieve incentivized goals.

A third group of studies on the shortcomings of PRP in the public sector points to the motivational differences between public sector and private sector employees. The strand of literature on the unintended motivational effects of extrinsic rewards falls into this third group. These studies provide two distinct explanations for why PRP may undermine the efforts and performance of public employees. A first explanation points to a crowding-out effect related to intrinsic motivation (Frey and Jegen 2001; Frey and Oberholzer-Gee 1997). Using factorial survey data from 186 master of business administration students, Weibel, Rost, and Osterloh (2010) show that financial incentives produce two opposing effects: they increase extrinsic motivation (price effect) and crowd out individuals' intrinsic motivations by threatening their feelings of autonomy, competence, and/or relatedness (Ryan and Deci 2000). According to Weibel and colleagues (2010), the overall performance impact of PRP—which depends on the relative strength of the price effect and the crowding-out effect—is likely to be weaker in the public sector than in the private sector, for two main reasons. First, incentives are typically smaller in the public sector; therefore, the price effect tends to be smaller. Second, an abundant literature has shown that public sector employees tend to be more intrinsically motivated compared with private sector workers (e.g., Buelens and Van den Broeck 2007; Cacioppe and Mock 1984; Crewson 1997; DiIulio 1994; Georgellis, Iossa, and Tabvuma 2011; Houston 2000; Jurkiewicz and Massey 1997; Perry 1997); therefore, all other things being equal, financial incentives are more likely to crowd out intrinsic motivation in public organizations compared with private companies because there is more intrinsic motivation in the public sector, and more of it may be destroyed (Weibel, Rost, and Osterloh 2010).

It is important to note here that research on differences in attitudes and values between public and private workers is inconclusive. For instance, a cross-sectional study of 549 knowledge workers employed in large Canadian organizations found no sectoral differences in general values, although participants working in public organization tended to value work that contributes to society more than their private sector counterparts (Lyons, Duxbury, and Higgins 2006). In a research synthesis of 14 empirical studies on value differences between public and private managers, Boyne argues that “there seems to be strong evidence of the existence of a public service ethos” (2002, 112–13) but cautions that this statistical evidence is limited, and its validity is threatened by serious methodological limitations.

A second explanation for why monetary incentives may undermine the motivations of public employees focuses on crowding out image motivation, that is, an individual’s tendency to be motivated by “the desire to be liked and respected by others and by one’s self” (Ariely, Bracha, and Meier 2009, 544). Using longitudinal survey data from the British Household Panel Survey, Georgellis, Iossa, and Tabvuma (2011) conclude that higher extrinsic rewards (i.e., higher wages, more job security and fewer working hours) tend to reduce the propensity of British workers to move from the private to the public sector. The authors trace this effect to reputational concerns: incentives based on more power and other extrinsic rewards may harm the appeal of the prosocial image of public sector jobs, making them less attractive to individuals who want to appear prosocial. This conclusion is supported by the results of a study on volunteer firefighters by Carpenter and Myers (2010). Using a multisource observational research design that included a survey of 205 volunteer firefighters in Vermont, the authors found that those who were paid small stipends were more likely to respond to emergency calls than those who were not offered any monetary rewards, but the positive association between financial incentives and turnout was weaker for those who had greater image concerns. These two studies, by Georgellis and colleagues (2011) and Carpenter and Myers (2010), provide joint support for theoretical predictions that monetary rewards can crowd out image motivation among public employees. However, the lack of true experimental evidence has so far precluded rigorous causal inferences. Our work aims to take a step toward filling this gap in literature.

PRP and Image Motivation

The construct of image motivation falls under the larger umbrella concept of extrinsic motivation, which Ryan and Deci (2000) define as a continuum with four degrees that workers experience as being progressively less controlled by others and more self-determined (Grant and Shin 2012): (1) external, which is triggered by outside rewards and punishments; (2) introjected, which is based on internal rewards and punishments, such as guilt and self-esteem; (3) identified, which is based on consistency with a person’s system of values; and (4) integrated, which is based on assimilation into a person’s value system. The image motivation construct proposed by Ariely, Bracha, and Meier (2009) taps into the external and the introjected degrees of extrinsic motivation because it is triggered by

the desires to be liked by others (external image motivation) and to respect oneself (introjected image motivation).

In an attempt to maximize their image value, individuals are motivated to engage in behavior that appears prosocial and to refrain from behavior that may be perceived as greedy.

An individual’s image is affected by how prosocial or greedy he or she is considered to be by other people and how greedy the individual considers himself or herself. In an attempt to maximize their image value, individuals are motivated to engage in behavior that appears prosocial and to refrain from behavior that may be perceived as greedy (Bénabou and Tirole 2006). Therefore,

financial rewards for activities with a prosocial impact are likely to elicit two opposing effects on public employees’ extrinsic motivation: individuals are incentivized to work harder to obtain the monetary reward (price effect), but they may refrain from doing so because they are concerned about being considered greedy, which would spoil their social image (crowding-out effect related to external image) or because they are afraid of feeling guilty and losing self-esteem (crowding-out effect related to introjected image motivation).

The contradictory effects of price and the crowding out of image motivation effects, which occur contemporaneously when prosocial activities are financially incentivized, are apparent in a laboratory experiment conducted by Ariely, Bracha, and Meier (2009) on 161 Princeton University undergraduates with respect to performing a task with a prosocial impact. The students had to repeatedly click two keys on a computer keyboard for up to five minutes, and the researchers donated funds to charity according to the number of clicks. A random subgroup of participants who were offered a performance-contingent monetary reward outperformed those who were not offered a financial incentive. Among the students who received a bonus, a random subsample whose performance and pay were kept secret tended to outperform those whose performance and pay were publicly observable. In other words, visibility negatively moderated the performance effect of the monetary reward. The results of this “click for charity” experiment were replicated in a similarly designed quasi-experiment with 151 Massachusetts Institute of Technology students cycling on a stationary bike for up to 10 minutes, with researchers donating \$1 per mile (Ariely, Bracha, and Meier 2009). Both experiments suggest that financial incentives and reward transparency or observability interact negatively with respect to activities with a prosocial impact, which supports the hypothesis that image motivation is subject to being crowded out.

This experimental evidence has potential implications for the motivational effects of PRP in the public sector because many public sector jobs have a significant prosocial impact (Grant 2008b). However, to our knowledge, research has yet to investigate whether and to what extent the results of the lab experiments by Ariely, Bracha, and Meier (2009) apply to public sector work environments in the real world. To help fill this gap, we formulated and tested the following hypothesis using a randomized true field experiment.

Hypothesis 1: The visibility of rewards will moderate the effect of monetary rewards on job performance such that monetary rewards will have a stronger effect when they are secret and a weaker effect when they are visible.

The negative interaction between financial incentives and reward visibility found by Ariely, Bracha, and Meier (2009) was not replicated in a similar laboratory experiment conducted by Bamberger and Belogolovsky (2010) with 139 undergraduate students at an Israeli university. The main difference between the two studies lies in the lack of prosocial impact of the experimental task in Bamberger and Belogolovsky. This suggests the need for an investigation into whether the negative two-way interaction between financial incentives and reward visibility is stronger for activities that have a higher perception of prosocial impact. Because external image motivations may be crowded out when there are concerns about being suspected of being motivated by a financial reward for a prosocial activity rather than a sincere desire to do good, it seems reasonable to expect that this effect would be stronger for activities that have a higher perception of a prosocial impact. Although Ariely and colleagues (2009) did not test for a three-way interaction of financial incentives, reward visibility, and perceived prosocial impact, the graphs included in their article seem to suggest that the two-way interaction between monetary rewards and visibility is stronger when the receiving charity has an unquestionably positive image than when the receiving charity has a more controversial reputation. We formulated and tested the following hypothesis to shed more light on this issue.

Hypothesis 2: A perceived prosocial impact will moderate the interaction between monetary rewards and reward visibility such that there will be a stronger (negative) interaction for activities with a higher perception of prosocial impact. Thus, there will be a three-way interaction between monetary rewards, reward visibility, and perceived prosocial impact.

The Effects of Nonmonetary Rewards on Public Employee Performance

Scholars have long recognized that money and closely related tangible rewards affect an individual's motivation differently than intangible or symbolic rewards, such as positive feedback or other manifestations of social approval (for a review, see Deci, Koestner, and Ryan, 1999). Unfortunately, the emphasis on PRP and the tendency to lump all incentives into a common category have long obscured the importance of intangible rewards among practitioners and academics (Grant and Shin 2012). This is particularly evident in the public administration literature, in which the study of the effects of different types of incentives on employee behavior has received only scant attention (e.g., Perry, Mesch, and Paarlberg 2006; Perry and Porter 1982). As a step toward filling this gap, we replicated the experimental design that we used to test hypotheses 1 and 2 by substituting a symbolic reward for the monetary incentive. Bénabou and Tirole argue that "esteem-based incentives can adequately replace material rewards and punishments in spheres in which gaining distinction is the dominant reputational concern" (2006, 1672). Compared with financial incentives, which might have a negative reputation associated with greed and money-oriented behavior, symbolic rewards are less prone to the "overjustification effect," in which extrinsic incentives crowd out prosocial behavior (Lepper, Greene, and Nisbett 1973; Pearce 1983; Titmuss 1970; Upton 1973). Therefore, we expect that the crowding-out effects will be smaller for nonmonetary incentives compared with monetary rewards.

Method

In this section, we describe the experiment we conducted to test our hypotheses. We begin by explaining the experiment's participants,

design, and procedures. We then describe the measures we used for our statistical analyses.

Participants, Design, and Procedures

We conducted our experiment with 300 nurses attending a mandatory training program at a Local Healthcare Authority (LHA) in Italy. LHAs are part of Italy's National Health Service (Servizio Sanitario Nazionale or SSN), a publicly funded national health care system originally modeled after Britain's National Health Service. As of 2012, public health expenditures accounted for 78.2 percent of total health expenditures in Italy (World Bank 2014). As of February 2014, the SSN comprised 140 LHAs (Ministero della Salute 2014). Every LHA is responsible for providing health care in a specific area of the country. Nurses working at LHAs are hired through open competitions and have the status of public employees.

At the beginning of 2011, the LHA where we conducted our experiment joined an international cooperation project aimed at strengthening the capacity of the health care system in a former war zone currently facing a humanitarian emergency. The LHA contributes to the project by collecting surgical tools and drugs donated by various organizations (e.g., pharmaceutical companies, public and private hospitals, and nongovernmental organizations), entering them into an inventory, controlling the quality of the products, and assembling surgical kits ready for shipment to health care practitioners operating in the target area.

Using a random number generator, the participants were randomly assigned to one of 12 balanced groups, each consisting of 25 units (see table 1). We experimentally manipulated the three independent variables.

Reward. The participants were randomly assigned to one of three types of rewards: fixed pay (100 nurses), fixed pay plus a performance-contingent monetary reward (100 nurses), or fixed pay plus a symbolic reward (100 nurses). The nurses in the fixed-pay group were informed that the four hours spent on the project would be paid according to their normal hourly wage. The participants in the PRP group were promised an incentive in addition to their fixed pay according to a decreasing payment format: 1 euro for each of the first 25 surgical kits, 50 cents for each of the next 25 surgical kits, and 25 cents for each surgical kit above 50. We designed this decreasing payment schedule based on Ariely, Bracha, and Meier (2009). The participants were informed that the monetary rewards would be given in the form of gift cards. The participants in the symbolic reward group were informed that in addition to their fixed pay, the top five performers in their group would be awarded a certificate of outstanding contribution by the director of the LHA in a ceremony attended by top management. We designed the symbolic reward manipulation based on Mickel and Barron (2008), who suggest that rewards for high performance and accomplishments are more likely to increase motivation when they are awarded in a public ceremony by high-profile figures of authority.

Visibility. The participants were randomly assigned to either a disclosed (150 nurses) or a secret (150 nurses) condition. Nurses in the open condition were told that the individual performance of each participant would be displayed on a bulletin board located in

Table 1 Experimental Interventions, Controls, and Performance by Group

Group	A		B		C		D		E		F		G		H		I		J		K		L	
Obs.	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	
Condition																								
Monetary reward (PRP)					X						X													
Symbolic reward													X									X		
Observable reward							X				X											X		
Beneficiary contact					X		X				X											X		
Pre-test controls																								
Age	44.16	10.92	43.52	11.38	43.16	10.37	43.96	10.62	41.76	10.66	44.08	10.69	43.36	11.09	42.72	11.50	42.96	11.85	44.20	11.91	44.76	11.23	45.16	11.29
Proportion female	0.72	—	0.68	—	0.72	—	0.84	—	0.80	—	0.72	—	0.84	—	0.76	—	0.80	—	0.76	—	0.72	—	0.68	—
Job experience	21.84	11.61	20.68	11.87	19.92	11.86	17.96	11.64	19.44	11.06	18.48	11.46	19.28	11.03	18.64	11.67	20.12	11.29	20.80	10.91	19.80	10.50	20.40	10.10
PSM	4.68	0.68	4.48	0.73	4.72	0.69	4.52	0.73	4.64	0.86	4.58	0.65	4.68	0.81	4.48	0.74	4.64	0.72	4.76	0.69	4.72	0.77	4.76	0.67
Self-efficacy	5.04	1.10	4.96	0.98	5.12	1.04	5.00	1.01	4.98	0.99	4.94	1.00	4.96	1.10	5.04	1.08	5.08	1.14	4.96	1.04	4.88	0.97	5.04	1.06
Conscientiousness	4.72	0.69	4.68	0.66	4.76	0.60	4.84	0.63	4.76	0.59	4.68	0.68	4.80	0.62	4.76	0.68	4.68	0.71	4.72	0.80	4.56	0.69	4.60	0.70
Intrinsic motivation	4.64	1.10	4.84	0.98	4.72	1.01	4.68	1.04	4.76	1.00	4.72	1.08	4.80	1.12	4.72	1.08	4.68	0.98	4.76	0.99	4.84	1.04	4.64	1.14
Equity sensitivity	3.88	1.01	4.04	1.08	3.72	0.98	4.00	1.07	4.08	1.12	3.92	1.03	4.04	1.04	3.76	1.00	3.96	0.97	4.00	1.24	4.08	1.13	3.88	1.05
Post-test controls																								
Extrinsic reward	2.36	1.08	2.12	1.15	2.52	1.10	2.24	1.08	4.04	1.26	3.72	1.38	4.12	1.17	3.96	1.48	3.36	1.39	3.88	1.51	3.92	1.25	3.44	1.10
Reputational concern	3.12	1.39	4.96	1.51	2.96	1.25	5.12	1.48	3.20	1.10	4.88	1.10	2.92	1.26	5.00	1.14	3.00	1.08	4.92	1.15	3.04	1.17	5.16	1.25
Perceived social impact	4.04	1.26	4.20	1.51	4.96	1.16	5.20	1.18	3.96	1.27	4.08	1.39	5.04	1.15	4.92	1.17	3.92	1.10	4.00	1.15	5.00	1.14	5.12	1.12
Performance																								
# Surgical kits	38.84	10.22	53.80	8.22	45.20	11.60	60.80	11.30	64.92	9.12	69.48	11.08	61.88	13.02	53.36	11.38	46.36	15.27	61.28	12.14	54.64	10.46	65.64	12.18

the nurses' staff room. Participants in the secret condition were told that they would be notified of their own level of individual performance but that this information would be anonymous and not publicly disclosed.

Beneficiary contact. Recent experimental research on relational job design has shown that public employees who meet the beneficiaries of their efforts may have a greatly heightened awareness of making a positive difference in other people's lives (Bellé 2013, 2014; Grant 2007, 2008a, 2012; Grant et al. 2007). The participants were randomly assigned to either a beneficiary-contact (150 nurses) or no-beneficiary-contact (150 nurses) condition. Participants in the beneficiary-contact condition had the opportunity to meet a person from the target area who had benefited from the surgical kits after being injured in the past by an antipersonnel mine and who had later joined the project staff. During the beneficiary's visits, which lasted approximately 15 minutes, he explained how his life was saved by surgical tools similar to those the participants would assemble. The participants in the no-beneficiary-contact condition did not meet the patient from the target area.

Our experimental manipulations resulted in a between-subjects 3 (reward: none, financial, symbolic) x 2 (visibility: yes, no) x 2 (beneficiary contact: yes, no) design.

Each of the 12 groups attended its own separate session: four sessions in February 2011 for the groups in the fixed-pay condition, four sessions in November 2011 for the groups in the symbolic reward condition, and four sessions in August 2012 for the groups in the PRP condition. All sessions were led by the same training coordinator and an assistant, who were blind to the specific research hypotheses. The 12 sessions were identical except for the specific experimental manipulations. In particular, in all sessions, the nurses watched a short video that provided basic information about the project's aims and instructions on how to assemble the surgical kits. The nurses had exactly the same amount of time (three hours) to actually perform the assigned task. Participants in all groups answered two short questionnaires: a pre-experiment questionnaire at the beginning of their shift—after the training coordinator had distributed consent forms and reassured them that their responses would be handled confidentially and would only be disclosed in aggregate form without any identifying personal information—and a post-experiment questionnaire at the end of their shift. The pre-test survey featured questions to measure the participants' standard demographics and baseline attitudes that were relevant to our research question. The post-test questionnaire featured items to test whether our experimental manipulations had produced the intended effects.

Measures

The appendix reports the variables and the measures we used in the study.

Performance. We measured performance as the number of surgical kits that each participant assembled correctly during his or her three-hour shift. This metric was meant to capture the participants' effort and persistence (e.g., Blumberg and Pringle 1982; Gneezy and Rustichini 2000; Grant 2008a; Grant et al. 2007; Schmidt and Hunter 1983) and their ability to maintain their attention and accuracy while performing their job (e.g., Brewer and Brewer 2011).

Controls. In addition to questions regarding age, gender, and job experience, the pre-experiment questionnaire featured a widely used, five-item version of Perry's (1996) original scale to measure motivations for public service (Alonso and Lewis 2001; Brewer and Selden 2000; Kim 2005; Pandey, Wright and Moynihan 2008; Wright, Moynihan, and Pandey 2012; Wright and Pandey 2008); three items taken from a scale of effort-performance expectancy to measure self-efficacy (Sims, Szilagyi, and McKemey 1976; Wright 2007); four items developed by Donnellan et al. (2006) to measure conscientiousness; three items adapted from self-regulation scales developed by Ryan and Connell (1989) to measure the intrinsic motivation of participants with respect to their jobs; and two items taken from a scale of equity sensitivity (Sauley and Bedeian 2000). We included the last control in light of experimental evidence showing that the performance effects of pay secrecy may be moderated by individual tolerance for inequity (Bamberger and Belogolovsky 2010).

The post-experiment questionnaire featured six questions intended to assess the effects of our experimental manipulations (see appendix). It might have been more logical to measure the effect of our interventions not after the intervention but before performing the task. Unfortunately, this was not feasible because of logistical and practical constraints. Moreover, although we controlled for reputational concern, we did not measure image motivation, nor did we use a manipulation check of visibility. All of these represent potential limitations of our study.

We adapted two items from Wright (2007) to ascertain whether participants in the PRP condition had higher perceptions that better performance was rewarded compared with their colleagues in the fixed-pay condition. We used two items adapted from the public self-consciousness scale originally developed by Fenigstein, Scheier, and Buss (1975) to assess whether participants in the open condition were more concerned about what their colleagues might think about their performance while performing the experimental task compared with nurses in the private condition. Finally, we used two items adapted from Grant (2008a) to measure whether nurses who had the opportunity to meet the patient from the target area understood that their efforts would have a greater prosocial impact than those who did not meet the beneficiary.

Results

The means and standard deviations for the key variables by condition are displayed in table 1. As a result of randomization, the 12 groups did not differ at the .05 level with respect to the participants' age, gender, years of nursing experience, public service motivation, self-efficacy, conscientiousness, intrinsic motivation, and tolerance for inequity. A series of two-sample t-tests indicated that the perception that higher performance was rewarded was lower ($p < .001$) among participants in the fixed-pay condition ($M = 2.31$, $SD = 1.10$) compared with their colleagues who were offered the monetary reward ($M = 3.96$, $SD = 1.32$) or the symbolic award ($M = 3.65$, $SD = 1.31$) in addition to their normal hourly wage. The difference between nurses in the PRP and in the symbolic reward conditions was not significant at the .05 level. The participants in the open condition reported that they were more concerned about what their colleagues might think about their performance while performing the experimental task ($M = 5.01$, $SD = 1.27$) compared

Table 2a Three-Way ANOVA for Groups A–H

Source	Partial SS	df	MS	F	p
Model	18544.915	7	2649.274	22.56	.000
PRP	8128.125	1	8128.125	69.23	.000***
Beneficiary contact	105.125	1	105.125	0.90	.345
Visibility	2211.125	1	2211.125	18.83	.000***
PRP * Beneficiary	3304.845	1	3304.845	28.15	.000***
PRP * Visibility	3723.845	1	3723.845	31.72	.000***
Beneficiary * Visibility	483.605	1	483.605	4.12	.044*
PRP * Beneficiary * Visibility	588.245	1	588.245	5.01	.026*
Residual	22543.840	192	117.416		
Total	41088.755	199	206.476		

Root MSE 10.84
N = 200
R² = 0.4513
Adjusted R² = 0.4313

*p < .05; **p < .01; ***p < .001.

Table 2b OLS Regression Underlying the Three-Way ANOVA for Groups A–H

IVs	Coef.	SE	t	p	β
PRP	26.08	2.74	9.52	.000	0.91***
Beneficiary contact	6.36	3.09	2.06	.041	0.22*
Visibility	14.96	2.62	5.70	.000	0.52***
PRP * Beneficiary	-9.40	4.44	-2.12	.035	-0.28*
PRP * Visibility	-10.40	3.89	-2.67	.008	-0.31**
Beneficiary * Visibility	0.64	4.17	0.15	.878	0.02
PRP * Beneficiary * Visibility	-13.72	6.13	-2.24	.026	-0.32*
Constant	38.84	2.04	19.01	.000	

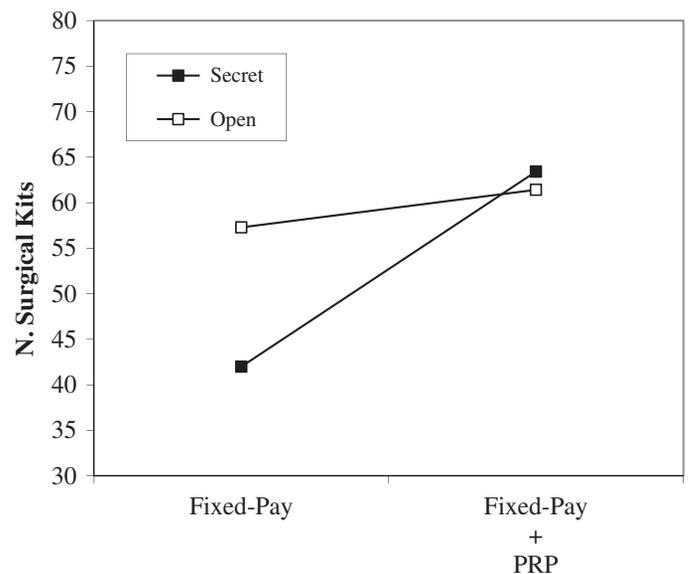
F(7,192) = 23.69, p < .0001
Root MSE = 10.84
N = 200
R² = 0.4513

*p < .05; **p < .01; ***p < .001.

with nurses in the private condition (M = 3.04, SD = 1.21, p < .001). Nurses who had the opportunity to meet the patient from the target area perceived a greater prosocial impact of their efforts (M = 5.04, SD = 1.15) than those who did not meet the beneficiary (M = 4.03, SD = 1.28, p < .001). These results indicate that our interventions produced their intended effects.

To explore how monetary rewards, visibility, and beneficiary contact interacted in determining the nurses' performance, we conducted a three-way analysis of variance (ANOVA) on data from groups A–H (i.e., those in the fixed-pay and PRP conditions). The results of the three-way ANOVA and coefficient estimates of the underlying ordinary least squares (OLS) regression model are displayed in tables 2a and 2b, respectively. The significant interaction of PRP and visibility in tables 2a and 2b indicates that, averaging across the two levels of beneficiary contact (yes/no), monetary rewards were less effective among participants whose performance and pay were observable by their colleagues compared with nurses in the secret condition, F(1,199) = 31.72, p < .001. This finding supports hypothesis 1. The overall negative interaction between PRP and visibility appears as the crossing of the two lines in figure 1.

Figure 1 shows that disclosing performance and pay information had a surprisingly strong effect on nurses in the fixed-pay condition (+15.28 surgical kits, p < .001) but no significant effect on those in the monetary reward condition (p = .433). Although PRP greatly enhanced performance in the secret condition (+21.38 surgical kits, p < .001), monetary rewards were only marginally effective for

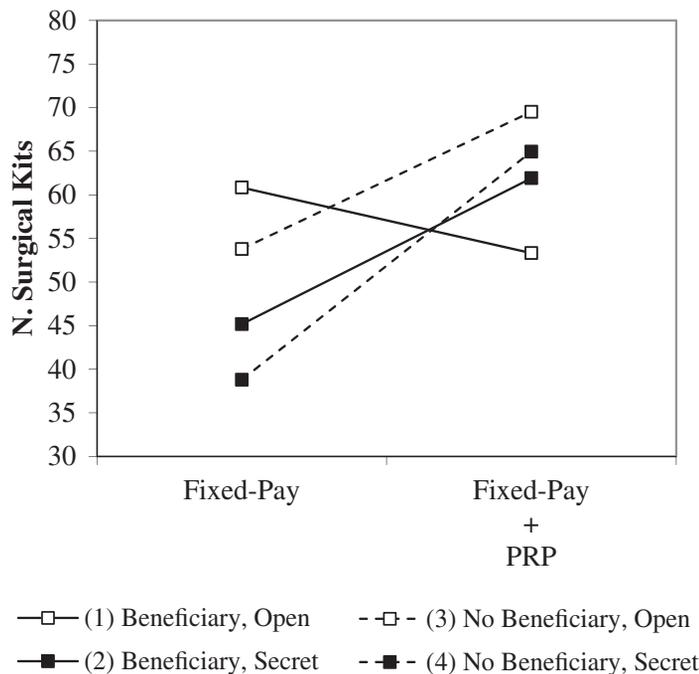
**Figure 1** Two-Way Interaction of Monetary Reward (PRP) and Reward Visibility on Job Performance

nurses in the open condition (+4.12 surgical kits, p = .095). Thus, introducing PRP nullified the performance effect of visibility that appeared in the fixed-pay condition.

The significant three-way interaction terms in tables 2a and 2b indicate that the negative interaction between PRP and visibility was stronger for participants who were exposed to contact with the project beneficiary compared with nurses who did not meet the patient from the target area (p = .026). Our data suggest that the perceived prosocial impact moderated the interaction between monetary rewards and reward visibility such that there was a stronger (negative) interaction for activities with a higher perception of prosocial impact, which supports hypothesis 2. Figure 2 depicts the three-way interaction of PRP, visibility, and beneficiary contact on job performance. The two solid lines represent participants who were introduced to the beneficiary (higher perceived prosocial impact), whereas the two dotted lines represent participants who did not meet the patient from the target area (lower perceived prosocial impact). We note that the divergence between the line indicating participants in the open condition (hollow markers) and the line representing nurses in the secret condition (solid markers) is greater for participants who met the beneficiary.

In addition to the results that are directly related to our hypotheses, the ANOVA analyses reported in tables 2a and 2b indicate an overall negative interaction of PRP and beneficiary contact, F(1,199) = 28.15, p < .001. Thus, averaging the two levels of visibility (open/secret), the performance effect of incentive pay decreased as perceived prosocial impact increased. Because of the negative interaction between PRP and beneficiary contact, meeting the beneficiary of their efforts caused a positive performance effect for nurses in the fixed-pay condition (+6.68 surgical kits, p = .011) but had a detrimental effect when there were monetary rewards (-9.58 surgical kits, p < .001).

Table 2b shows that the interaction between PRP and beneficiary contact was negative for both levels of visibility. Although the



Note: All the slopes of the lines are significant at the .001 level.

Figure 2 Three-Way Interaction of Monetary Reward (PRP), Reward Visibility, and Beneficiary Contact on Job Performance

negative interaction between PRP and beneficiary contact in the open condition may be caused by the crowding out of both external and introjected image motivation, only the latter can be affected when rewards are kept secret (lines with solid markers in figure 2). Although this explanation seems consistent with our theoretical predictions, our data do not allow any causality claim because we did not directly measure image motivation.

The significant three-way interaction terms in tables 2a and 2b indicate that the interaction of PRP and beneficiary contact was stronger in the open condition than in the secret condition. This is represented graphically in figure 2, in which divergence between the solid line indicating beneficiary contact and the dotted line representing no beneficiary contact is greater for participants in the open condition (hollow markers) than for participants in the secret condition (solid markers).

Table 2a also reports the significant main effects of PRP, $F(1,199) = 69.23, p < .001$, and visibility, $F(1,199) = 18.83, p < .001$, which indicates that both interventions were associated with an increase in performance when the levels of the other conditions that were experimentally manipulated were averaged.

There was no significant main effect of beneficiary contact, $F(1,199) = 0.90, p = .345$. Moreover, table 2a shows a significant interaction between beneficiary contact and visibility when the two levels of monetary reward were averaged, $F(1,199) = 4.12, p = .044$.

To investigate whether and how the effects we observed in the monetary reward manipulation changed when a symbolic reward was offered, we repeated our three-way ANOVA

The negative interaction between monetary rewards and visibility was more pronounced among participants who had been introduced to a beneficiary of their efforts.

Table 3a Three-Way ANOVA for Groups A–D and I–N

Source	Partial SS	df	MS	F	p
Model	14927.840	7	2132.549	15.910	.000
Symbolic reward	2679.120	1	2679.120	19.980	.000***
Beneficiary contact	2112.500	1	2112.500	15.760	.000***
Visibility	9968.720	1	9968.720	74.350	.000***
Symbolic * Beneficiary	1.620	1	1.620	0.010	.913
Symbolic * Visibility	67.280	1	67.280	0.500	.480
Beneficiary * Visibility	33.620	1	33.620	0.250	.617
Symbolic * Beneficiary * Visibility	64.980	1	64.980	0.480	.487
Residual	25741.680	192	134.071		
Total	40669.520	199	204.369		

Root MSE = 11.5789
N = 200
 $R^2 = 0.3671$
Adjusted $R^2 = 0.3440$

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

Table 3b OLS Regression Underlying the Three-Way ANOVA for Groups A–D and I–N

IVs	Coef.	SE	t	p	β
Symbolic reward	7.52	3.67	2.05	.042	0.26*
Beneficiary contact	6.36	3.09	2.06	.041	0.22*
Visibility	14.96	2.62	5.70	.000	0.52***
Symbolic * Beneficiary	1.92	4.82	0.40	.691	0.06
Symbolic * Visibility	-0.04	4.70	-0.01	.993	0.00
Beneficiary * Visibility	0.64	4.17	0.15	.878	0.02
Symbolic * Beneficiary * Visibility	-4.56	6.55	-0.70	.487	-0.11
Constant	38.84	2.04	19.01	.000	.

$F(7,192) = 16.48, p < .0001$

Root MSE = 11.579

N = 200

$R^2 = 0.3671$

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

analysis on data from nurses belonging only to groups A–D and I–N, the groups that were offered either fixed pay or fixed pay plus a symbolic award. Table 3a shows the results of this three-way ANOVA, and table 3b reports the coefficient estimates of the underlying OLS regression model. Unlike the PRP manipulation, there was no overall interaction between the symbolic award and visibility on job performance, $F(1,199) = 0.500, p = .480$. The interaction between the symbolic reward manipulation and visibility was similarly insignificant at both levels of perceived prosocial impact. Unlike the PRP manipulation, no overall interaction was detected between the symbolic award and beneficiary contact, $F(1,199) = 0.010, p = .913$. The interaction between the symbolic reward and beneficiary contact was similarly insignificant at both levels of visibility.

Discussion

This article extends knowledge about the performance effects of PRP plans in public institutions and the factors that may moderate these effects. In a field experiment with nurses working at public hospitals in Italy, PRP had a larger effect on task performance when the rewards were secret than when they were observable. The negative interaction between

monetary rewards and visibility was more pronounced among participants who had been introduced to a beneficiary of their efforts

to heighten their awareness that their work made a positive difference in other people's lives. No such interaction was observed when we replicated the experiment using a symbolic reward instead of monetary incentives.

Contributions

The main contribution of this article consists of developing experimental evidence with respect to the ongoing debate about the effects of PRP on the motivation and performance of public employees. Although there is abundant circumstantial evidence that PRP has generally fallen short of expectations for improved performance with respect to public sector employees (e.g., Ingraham 1993; Kellough and Lu 1993; Milkovich and Wigdor 1991; Pearce, Stevenson, and Perry 1985; Perry 1986), reliance on correlational designs has thus far precluded rigorous causal inferences about the reasons for this poor performance. Explanations for the potential drawbacks of monetary incentives in the public sector (Perry, Engbers, and Jun 2009) include the findings of previous research that indicate a crowding-out effect on both the intrinsic motivation (e.g., Weibel, Rost, and Osterloh 2010) and the image motivation (e.g., Carpenter and Myers 2010; Georgellis, Iossa, and Tabvuma 2011) of public employees. We have contributed to this strand of research by adding novel experimental evidence that monetary rewards may crowd out employees' motivation for prosocial behavior (Bénabou and Tirole 2006). Our findings are particularly valuable because they replicate the results of previous laboratory experiments by Ariely, Bracha, and Meier (2009) internationally and with real public employees performing a task that was part of their ordinary job.

A second contribution of our article is to the still limited scholarly research on the effects of pay secrecy on employee performance and behavior (Bamberger and Belogolovsky 2010; Colella et al. 2007; Hartmann and Slapničar 2012). Our contribution to this nascent strand of literature is twofold. First, to our knowledge, we provide for the first time field experimental evidence that financial incentives tend to be less effective when they are disclosed rather than secret. Second, our data show that the negative interaction between PRP and visibility is more pronounced in the case of activities with higher perceived prosocial impact. These findings suggest caution in the use of PRP provisions in public organizations, which are held to strict transparency requirements regarding their compensation policies and often engage in activities with relevant prosocial impact. Our results seem to corroborate previous research that traces the persistent failure of PRP in the public sector, which contrasts with successful outcomes in private industry (Colella et al. 2007), back to fundamental institutional characteristics of public organizations that cannot be attenuated by simply improving performance management practices (Perry, Engbers, and Yun 2009).

Another contribution of our article is that it sheds light on the differences between monetary and nonmonetary rewards in terms of their effects on the motivation and performance of public employees. Responding to a recent call to address this long-neglected issue (Grant and Shin 2012), we explored whether and how the experimental effects changed when a symbolic award was substituted for financial incentives. Our data suggest that nonmonetary rewards

Our data suggest that non-monetary rewards may be immune—or at least less prone—to some of the motivational drawbacks encountered when using financial incentives for activities with a prosocial impact.

may be immune—or at least less prone—to some of the motivational drawbacks encountered when using financial incentives for activities with a prosocial impact. This result encourages both academics and practitioners to reevaluate the importance of nonmonetary rewards, which has been obscured by the emphasis on PRP. Understanding how public organizations and their managers can take full advantage of nonmonetary incentive options seems imperative in this time of budget

restraints, which makes impossible offering bonuses that are large enough to be effective (Miller and Whitford 2007)—as required by reinforcement theory (Skinner 1969) and expectancy theory (Vroom 1964).

Our article also contributes to the literature on relational job design (Grant 2007) and, more specifically, to the research on the effects of contact with beneficiaries on employee performance (Grant 2008a, 2008b; Grant et al. 2007). Our contribution to this strand of literature lies in identifying a boundary condition of the beneficiary effect. In fact, our findings suggest that beneficiary contact has a positive impact on employee performance in the absence of PRP provisions, but not when pay-for-performance schemes are in place.

Limitations

Our findings should be interpreted in light of several limitations. In particular, the unique professional nature of nursing and the use of a convenience sample reduce the external validity of our results. One might think that nurses are more inclined to do good than the average public employee, such that the crowding-out effects we observed in our experiment would have been weaker or absent in other categories of public sector employees who are less prosocially oriented. As noted by an anonymous reviewer, our findings may be valid for any helping profession irrespective of its public or private nature. External validity is not a strength of our research design, which aimed to maximize internal validity through random assignment. The lack of random sampling is an inherent limitation of most small-scale field experiments such as ours, whose strength lies in their suitability for establishing causality. On this point, we must agree with Wright and Grant, who observe that “the choice of research design reflects inherent trade-offs between the ability to make causal statements, the ability to generalize those statements to other settings, and the ability of a broader audience to accept and apply them (McGrath 1981). While each attribute is desirable, at best, any single research design can only maximize two of these criteria while falling short on the third” (2010, 692).

Regarding external validity, the use of temporary and experimentally induced manipulations of the conditions under study does not permit the automatic generalization of our results to more enduring and naturally occurring variations in these conditions. Future research might triangulate our findings using nonexperimental designs, such as longitudinal studies and case studies. Although inferior to other experiments in terms of internal validity (Shadish, Cook, and Campbell, 2002), observational designs may be superior in terms of external validity because they deal “with intact groups and thus [do] not disrupt the existing research setting” (Dimitrov and Rumrill 2003, 160).

Future Directions

Our experimental results point toward promising directions for future research. In particular, our data suggest deeper investigations of the positive effects of individual performance visibility and beneficiary contact on the performance of participants in the fixed-pay condition. Exploring further how organizations and their managers can use these interventions to enhance their employees' motivation may be both theoretically and practically relevant. Finding solutions to compensate for the absence of PRP seems particularly important for public institutions because they often face budget constraints and public expectations about the responsible stewardship of resources that make it impossible to offer financial incentives that are large enough as theoretically required (Gneezy and Rustichini 2000; Skinner 1969; Vroom 1964) to be effective (Miller and Whitford 2007).

Future research should also explore the motivational mechanisms that mediate and/or moderate the performance effects of visibility or transparency and contact with beneficiaries. With respect to the latter, a recently published study has shown that employees' public service motivation may act as both a moderator and a mediator. In a randomized control-group experiment with nurses, meeting the beneficiary of their efforts had a stronger positive effect on those participants who entered the experiment with a stronger baseline motivation for public service. Moreover, beneficiary contact caused an increase in the public service motivation that partially mediated the positive effects on job performance (Bellé 2013). Future studies should investigate how employee motivations mediate and/or moderate the performance effects of visibility/transparency using a similar research design. In general, substantive work is required that contributes additional empirical evidence to this nascent and highly promising stream of research.

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Appendix

Table A1 Variables and Measurements

Variable (Source)	Measurements
Performance	Number of surgical kits assembled correctly
Extrinsic reward (Wright 2007)	Likert-type item (0 = disagree strongly, 6 = agree strongly); Cronbach's $\alpha = .86$ Working hard was recognized. Hard work was adequately rewarded.
Reputational concern (Fenigstein, Scheier, and Buss 1975)	Likert-type item (0 = disagree strongly, 6 = agree strongly); Cronbach's $\alpha = .81$ I worried about making a good impression and proving myself to my coworkers. I was concerned about what my coworkers might think about my performance.
Perceived prosocial impact (Grant 2008a)	Likert-type scale (0 = disagree strongly, 6 = agree strongly); Cronbach's $\alpha = .83$ I am very aware of the ways in which the job I performed will benefit others. I can have a positive impact on others through the effort I put in the project.
Public service motivation (Perry 1996)	Likert-type scale (0 = disagree strongly, 6 = agree strongly); Cronbach's $\alpha = .77$ Meaningful public service is very important to me. I am often reminded by daily events about how dependent we are on one another. Making a difference in society means more to me than personal achievements. I am prepared to make enormous sacrifices for the good of society. I am not afraid to go to bat for the rights of others even if it means I will be ridiculed.
Self-efficacy (Wright 2007)	Likert-type scale (0 = disagree strongly, 6 = agree strongly); Cronbach's $\alpha = .77$ I am confident that I can successfully perform any tasks assigned to me in my current job. I can complete the work that is expected of me. I am not as well prepared as I could be to meet all the demands of my job.
Conscientiousness (Donnellan et al. 2006)	Likert-type scale (0 = disagree strongly, 6 = agree strongly); Cronbach's $\alpha = .85$ I get chores done right away. I often forget to put things back in their proper place. (R) I like order. I make a mess of things. (R)
Intrinsic motivation (Ryan and Connell 1989)	Likert-type scale (0 = disagree strongly, 6 = agree strongly); Cronbach's $\alpha = .88$ My job is fun. I find my job engaging. I enjoy my work.
Equity sensitivity (Sauley and Bedeian 2000)	Likert-type scale (0 = disagree strongly, 6 = agree strongly); Cronbach's $\alpha = .90$ It is really satisfying to me when I can get something for nothing at work. (R) It is the smart employee who gets as much as he/she can, while giving as little as possible in return. (R)
Age	Years of age
Gender	0 = male, 1 = female
Job experience	Years of experience in the field of nursing

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