*EFFECTS OF AND PREFERENCE FOR PAY FOR PERFORMANCE:
AN ANALOGUE ANALYSIS*

ROBERT D. LONG, III, DAVID A. WILDER, ALISON BETZ, AND AMI DUTTA

FLORIDA INSTITUTE OF TECHNOLOGY

We examined the effects of 2 payment systems on the rate of check processing and time spent on task by participants in a simulated work setting. Three participants experienced individual pay-for-performance (PFP) without base pay and pay-for-time (PFT) conditions. In the last phase, we asked participants to choose which system they preferred. For all participants, the PFP condition produced higher rates of check processing and more time spent on task than did the PFT condition, but choice of payment system varied both within and across participants.

Key words: compensation systems, incentives, pay for performance, performance management, salaries

Pay-for-performance (PFP) and pay-for-time (PFT) systems represent two different approaches to employee compensation. In a PFP or response-based pay system, employees either earn all of their pay based on their own performance or have the opportunity to earn a bonus for above average performance; pay and bonuses are contingent on the amount or quality of the employee's work. In contrast, in PFT or time-based pay systems (i.e., hourly and salary systems), employees typically are paid for the amount of time they work; pay and bonuses are contingent on attendance and completion of basic responsibilities.

Although PFT systems are more common today, PFP systems have a long history in practice. For example, in the early 20th century, PFP systems were an important feature of Frederick Taylor's "scientific management" (Peach & Wren, 1991). A number of companies have used and continue to use PFP systems; perhaps the best known is Lincoln Electric, at which all employees receive compensation on a PFP system (Handlin, 1991). Surveys suggest that about 35% of U.S. companies employ some form of individual

monetary incentive, and 15% of companies pay incentives to groups of employees (Gross, 1995). In addition, research has demonstrated that PFP improves productivity relative to PFT in both analogue (Farr, 1976) and field-based (George & Hopkins, 1989) settings. Most recently, Oah and Lee (2011) permitted participants to access the Internet and socialize (similar to conditions in some real-world work settings) and compared these two pay systems; they found that PFP increased both productivity and on-task behavior. In a review of research on PFP, Bucklin and Dickinson (2001) concluded that PFP results in improved productivity. Key to this improvement appears to be the relation between payment and the number of work units completed, whereas other parameters, such as the percentage of total pay devoted to incentive pay versus base pay and the per piece incentive amount, appear to be of less importance.

Despite the relative abundance of research on the effects of PFP on productivity, few studies exist on pay system preference, and no study has measured under which system participants elect to work. PFP systems may be demanding; it is possible that many employees prefer PFT systems and will opt to work under these systems when given a choice. Thus, the purpose of this study was to replicate previous comparisons of productivity and on-task behavior under PFT and PFP. In addition, in the last

Correspondence concerning this article should be addressed to David A. Wilder, School of Psychology, Florida Institute of Technology, 150 W. University Blvd., Melbourne, Florida 32901 (e-mail: dawilder@fit.edu).

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phase of the study, we evaluated participants' preference by allowing them to choose between these pay systems.

METHOD

Participants and Setting

Participants were three 18- to 20-year-old undergraduate students (Alex, Mike, and Sara) recruited from a university. We recruited via announcements in undergraduate courses; participants did not earn course credit. Any undergraduate student older than 17 years was eligible to participate, but we selected the first three volunteers. We conducted two to three sessions per day, 2 to 3 days per week, in a simulated office. At least 30 min separated sessions conducted on the same day. We provided participants with a laptop computer, a numeric pad, a mouse, a chair, and a table.

The experimental task was computerized data entry modeled after the job of a check processor in a bank. The software program presented simulated bank checks with values ranging from \$10.00 to \$999.99 on the screen. The participant entered the displayed values in a box at the bottom of the screen using the computer mouse and numeric keyboard. After the participant entered the value, he or she pressed or clicked on the enter key to proceed to the next check, regardless of accuracy. In addition to the experimental task, participants could access computer games, the Internet, and personal cellular phones at any time. All sessions lasted 15 min.

Dependent Variables and Measurement System

The dependent variables were the rate of checks processed correctly and the amount of time spent on the check-processing program (i.e., seconds on task). *On-task behavior* was defined as interacting with the check-processing program (i.e., typing in values, clicking the next button or hitting the enter key). Microsoft Access collected data automatically. The program recorded start and stop times (i.e., duration), number of checks processed, number processed correctly, and "no-activity seconds,"

which was time spent off task following 10 s of no activity. That is, no-activity seconds were recorded if the participant did not press a key for at least 10 s.

Design and Procedure

We used a multielement design to examine the effects of type of payment system on the rate of correct check processing and time spent on task. To maintain experimental integrity, we informed participants that they were participating in a study on check writing; at the end of the study, we told each participant the true purpose of the experiment. The university institutional review board approved all procedures. Before the study began, each participant experienced a no-reinforcement baseline session to determine his or her pay in the PFT condition (see below). Participants were not paid during the baseline phase and were not told that this phase would be used to determine later pay; they were told simply to process as many checks as they wanted during each 15-min session.

Before each PFP and PFT session, the experimenter read one of two scripts (PFP or PFT) that described the task the participants were to perform and how pay would be earned. After the experimenter read the instructional script, participants sat in front of a computer to work on the task. The experimenter then left the room and returned 15 min later to inform the participant that the session had ended. For the final choice phase, the experimenter asked the participant to choose between the two pay systems. After the participant indicated his or her choice, the experimenter read the script for the condition, as indicated above.

We implemented two pay systems in a quasirandom sequence (i.e., no more than two consecutive conditions of the same type were conducted). Participants worked in either the PFP or the PFT condition. In the PFP condition, the participant had the opportunity to earn \$0.02 for every check he or she processed correctly. Sessions in this condition ended after clear differences in performance

between the two pay conditions emerged; at least 10 data points were collected for each condition. In the PFT condition, the participants was paid based on the mean number of checks he or she completed correctly in the baseline phase (before a decreasing trend was observed) multiplied by \$0.02. We gave participants this same amount of money for each PFT condition regardless of how they performed. Alex's pay in the PFT condition was \$3.25 per session (based on his first nine data points in baseline, he completed a mean of 212 checks), Mike's pay in the PFT condition was \$6.22 per session (based on his first seven data points), and Sara's pay in the PFT condition was \$5.83 per session (based on her first nine data points). The final phase consisted of sessions in which the participant had the opportunity to choose which pay system under which he or she preferred to work. The study ended when the participant chose to work under the same condition for at least two consecutive sessions.

Each participant received a receipt after each session that indicated how many checks he or she processed correctly and how much money he or she earned. Before each PFP session, the participants were told that they would earn \$0.02 for each check processed correctly and would be given a receipt at the end of the session. Before each PFT session, the experimenter read a script that indicated how much money the participant would earn for the upcoming session and that he or she would receive a receipt at the end of the session. We gave the total amount of money earned to each participant in the form of cash after his or her last session. Alex earned a total of \$28.98 and \$78.80 in the PFT and PFP conditions, respectively. Mike earned a total of \$49.76 and \$87.60 in the PFT and PFP conditions, respectively. Sara earned a total of \$116.60 and \$116.66 in the PFT and PFP conditions, respectively. The minimum wage in Florida at the time of the study was \$7.67 per hour; all

participants earned considerably more than the minimum wage in the PFT condition.

RESULTS AND DISCUSSION

Rates of correctly completed checks are shown in Figure 1, and time on task is shown in Figure 2 for all participants. Alex's mean rates of checks completed correctly during the baseline, PFP, and PFT conditions were 13.7, 26.3 (range, 24.5 to 27.6; $SD = 0.8$), and 19.1 (range, 8.4 to 24.2; $SD = 5.4$), respectively. Alex spent an average of 588 s on task during baseline, 890 s on task (range, 840 to 900; $SD = 19.3$) during the PFP condition, and an average of 798 s on task (range, 410 to 860; $SD = 147.3$) during the PFT condition. During the choice phase, he chose to work under the PFP condition for three consecutive sessions.

Mike's mean rates of checks completed correctly during baseline, PFP, and PFT conditions were 18.8, 29.1 (range, 26.6 to 31.1; $SD = 1.476$), and 16.5 (range, 8.4 to 23; $SD = 5.9$), respectively. He spent an average of 745 s on task during baseline, 887 s on task (range, 800 to 900; $SD = 252.1$) during the PFP condition, and 601.3 s on task (range, 340 to 790; $SD = 202.1$) during the PFT condition. During the choice phase, he chose to work under the PFT condition for three of four sessions.

Sara's mean rates of checks completed were 17.8, 20.5 (range, 15.1 to 23.6; $SD = 2.1$), and 12.8 (range, 0.6 to 21.1; $SD = 6.9$) under the baseline, PFP, and PFT conditions, respectively. Sara spent an average of 839.5 s on task during baseline, 849.4 s on task (range, 650 to 900; $SD = 75.9$) during the PFP condition, and 545 s on task (range, 40 to 900; $SD = 287.2$) during the PFT condition. During the choice phase, Sara chose to work under the PFT condition for three of five sessions.

The results of this study suggest that PFP systems produce higher rates of performance and more time on task than PFT systems. This finding replicates previous research that evalu-

Figure 1. Rate of checks processed correctly for Alex, Mike, and Sara across baseline, PFP versus PFT, and choice pay conditions.

Figure 2. Seconds on task for Alex, Mike, and Sara across baseline, PFP versus PFT, and choice pay conditions.

ated PFP systems (Oah & Lee, 2011). However, despite its greater productivity, the PFP system was not preferred by all participants. When given a choice of pay conditions under which to work, responding varied both within and between participants. Alex chose the PFP condition. In contrast, Mike and Sara most often chose the PFT condition. We also administered a social validity survey that was designed to determine preference for working under a PFP or PFT system. Although Alex and Sara (despite her behavior in the choice condition) indicated that they preferred working under the PFP system because they were "able to earn more money," Sara also said that the PFP system required more effort and was more stressful than the PFT system.

Employers who choose between pay systems may be faced with a conundrum. PFP systems result in greater productivity, but at least some employees may be less satisfied with their jobs when these systems are operative. Future research should continue to examine the social validity of payment systems and examine permutations of PFP systems that produce improved performance and high job satisfaction.

In the current study, the two most common off-task activities were using the Internet and texting on cellular phones. As discussed by Oah and Lee (2011), one of the reasons PFP may increase performance relative to PFT is that the opportunity to perform these tasks is more likely to compete with productivity under PFT. Future research should examine the effect of Internet and cellular phone access on productivity in real-world employment settings.

Limitations include the analogue nature of the study. The extent to which the task

(processing checks) is similar to real-world PFP tasks, the short duration of sessions, and the fact that poor performance in this study had no meaningful impact on participants limit the external validity of the findings. Performance by employees (as opposed to college students) in real-world PFP settings in which tasks are varied, longer in duration, and for which subpar performance may result in termination may not closely resemble these results. Future research should attempt to address these concerns.

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