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Theresa M. Welbourne and Claudia J. Ferrante

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To Monitor or Not to Monitor

A Study of Individual Outcomes From Monitoring One's Peers Under Gainsharing and Merit Pay

Theresa M. Welbourne
University of Michigan, Ann Arbor
Claudia J. Ferrante
U.S. Air Force Academy

An untested assumption in the gainsharing and group incentive literatures is that peer monitoring is an activity that employees will engage in, and this behavior will be supported by their managers. This study tests that assumption by examining how managers respond (via performance ratings of workers) to peer monitoring under two different pay conditions—traditional merit pay and merit pay with gainsharing. Data from 203 employees in a custom brokerage and freight-forwarding services firm suggest that observational monitoring (i.e., noticing coworkers' behavior) is positively associated with manager ratings of workers' performance under both pay conditions. However, advisory monitoring (i.e., reacting to coworkers' behavior) is positively related to manager ratings of workers' performance under gainsharing and negatively related to manager ratings of workers' performance under traditional merit pay. Implications of these findings for managers are discussed.

Keywords: *peer monitoring, gainsharing, agency theory, group incentives, team compensation, role-based performance*

Over the last three decades, agency theorists proposed peer monitoring, or coworkers overseeing the behavior and/or work of their peers, as one mechanism for managing the principal–agent problem (Alchian &

Authors' Note: This article was supported by The University of Michigan Business School and the Society for Human Resource Management Foundation. Correspondence concerning this article should be addressed to Theresa M. Welbourne, 905 W. Eisenhower Circle, Suite 110, Ann Arbor, MI 48103; e-mail: theresa@eepulse.com.

Demsetz, 1972; Arnott & Stiglitz, 1991; Fama, 1980; Fama & Jensen, 1983; Kandel & Lazear, 1992). Agency theorists characterize peer monitoring as something that results in positive outcomes, such as motivating workers to focus on and increase effort in important job tasks (Frink & Klimoski, 1998; Larson & Callahan, 1990) and assisting or encouraging poor performers (LePine & Van Dyne, 2001). Teamwork researchers found that peer monitoring decreased the level of moral hazard behavior by group members (Hermes, Lensink, & Mehrteab, 2005), enhanced feedback and coordination processes in teams (Marks & Panzer, 2004), and increased team performance when coupled with high individual autonomy of team members (Langfred, 2004). However, researchers have not fully explored the process that takes place when employees start to monitor their peers. According to Welbourne and Gomez-Mejia (1995), when monitoring occurs, "individuals involved play a dual role: They act as principals in monitoring others, but also serve in the role of agent to the same people they are monitoring because those others are also monitoring them" (p. 597). This suggests that employees are placed in an unfamiliar situation that may have either positive or negative consequences for their own performance.

In our study, we examine the effects of peer monitoring on the person doing the monitoring. The research is conducted under two different pay plan conditions (merit pay and gainsharing with merit pay), as the impact of peer monitoring on the monitor's performance might be complicated by the means in which the monitor is compensated.

For example, group-based incentive systems (such as gainsharing plans) that encourage employees to uncover hidden knowledge, share information with others, and alter their working habits—all of which might be outcomes of peer monitoring—can result in benefits to firms (Eisenhardt, 1989). There is some preliminary evidence that peer monitoring increases under gainsharing plans, as these compensation plans create an environment where peer monitoring is legitimized and expected to improve individual and group performance (Welbourne, Balkin, & Gomez-Mejia, 1995). However, in traditional, individual-based pay systems (such as those that use performance appraisal and merit pay), peer monitoring is not necessarily an activity supported by supervisors or peers. As a result, engaging in peer monitoring under traditional pay plans may have negative consequences for the monitors, as peer monitoring can take time away from other work-related activities. Further, although managers may perceive peer monitoring activity as a signal of higher potential, monitoring also may be viewed as overstepping employee boundaries or authority.

We found only two studies that examined the impact of peer monitoring on workers' performance appraisals. Using required 360 degree performance ratings from 2,000 employees of an insurance company, Beehr, Ivanitskaya, Hansen, Erofeev, & Gudanowski (2001) found that peers' evaluation of coworkers' facilitation of others and respect for diversity was positively correlated with supervisors' appraisal of workers' performance. Bamberger, Erev, Kimmel, and Oref-Chen (2005) used 141 peer assessments of team members' teamwork, professionalism, overall work attitudes, and efficiency in self-management to conclude that peers' assessments were positively correlated with managers' appraisal of employees' team-enhancing behaviors and overall work performance. Our study focuses on a specific niche in the performance management literature—focusing on the relationship between peer monitoring and supervisory performance ratings under compensation systems linking pay to individual versus group performance.

This article makes unique contributions to both the agency theory and gainsharing literatures. First, it extends agency theory by supplementing agency theory work with prior research on gainsharing to help understand some of the process issues that occur when group incentives, such as gainsharing, are implemented. The study also tests the moderating effect of the worker's pay plan (either merit pay[1] or merit pay with gainsharing) on personal outcomes such as performance appraisal.

Peer Monitoring and the Agency Problem

Researchers have used agency theory to explain how various forms of organizational control can be implemented to improve firm performance (Alchian & Demsetz, 1972; Fama, 1980; Fama & Jensen, 1983; Jensen & Meckling, 1976; Kim, 2005; Mangel & Useem, 2000). The theory addresses the general situation in which agents (employees) are hired by principals (owners) and assumes that both agents and principals will behave in ways that maximize their own self-interests, which may be in conflict. Principals often have incomplete information about agents' behaviors, resulting in information asymmetry between principals and agents. The conflict of interest between principals and agents under conditions of information asymmetry is commonly referred to as the "agency problem" (Eisenhardt, 1989; Fama & Jensen, 1983).

Agency theory suggests that principals can resolve the agency problem by gathering information about the agents' behavior and/or rewarding the agent based on measurable outcomes, such as profitability (Eisenhardt,

1989). In developing solutions, agency theory attempts to minimize agency costs (i.e., the costs of monitoring agents' behavior and motivating agents to act in the best interest of the principals) that result from information asymmetry (Postelwaite, 1989).

The Role of Peer Monitoring

Gathering information on agents' behavior via control systems can be quite costly if these surveillance systems include hiring more supervisors or using complex budgeting and cost accounting systems to monitor agents (Eisenhardt, 1989). One way to reduce the costs of monitoring agents' behavior is to encourage agents' peers to do the monitoring. Peer monitoring is more efficient than supervisor monitoring because peers have access to more and better information about work-related issues that is not available to a supervisor (Arnott & Stiglitz, 1991; Fama & Jensen, 1983; Murphy & Cleveland, 1995; Nalbantian & Schotter, 1997; Welbourne & Gomez-Mejia, 1995). Peers also have more frequent interactions with their coworkers. Peer monitoring reduces agency costs in two ways (Welbourne et al., 1995). First, peer monitoring can minimize direct expenses if less supervisor monitoring is required. Second, the increased interaction among workers can identify social loafers and may encourage the loafers to improve their performance.

Welbourne et al. (1995) conceptualized monitoring as an individual behavior that consists of two factors: noticing and acting. The measure developed for their study captured two processes, employees (a) noticing the behavior of their peers (observational monitoring) and (b) reacting to the behavior of others by either encouraging positive behaviors or discouraging poor performance (advisory monitoring). These two components are consistent with agency theory concepts, because, as stated earlier, agency theory suggests that financial gains (i.e., reduced agency costs) occur from both information gathering, which decreases costs associated with information asymmetry, and increased communication among peers regarding work methods, which reduces agency costs associated with supervisory and inefficient monitoring.

The Impact of Gainsharing Plans

Gainsharing plans are plantwide or site-specific bonus plans that include two components—a bonus that is divided among all employees at the site when some predetermined level of group output has been reached, and a suggestion system that allows employees to submit ideas to a committee of their peers. The plans encourage all employees in the plant or division to

work together to attain the objectives specified in the gainsharing plan. This interdependence encourages information-gathering and sharing activities. Gainsharing plans were first developed to help a company take advantage of the "hidden knowledge and abilities" of its workforce (Bullock & Lawler, 1984; Graham-Moore & Ross, 1990).

Since the early 1990s, gainsharing, and a number of variants based on gainsharing concepts, such as goal setting and customized group-based incentives, have become increasingly popular (Iberman, 1993; Kim, 2005; Markham, Scott, & Little, 1992; McClurg, 2001). These programs, which develop incentives for a plant, division, or department, have been hailed for their ability to increase productivity, reduce costs, enhance morale, improve quality, and complement new forms of organization design (Chenhall & Langfield-Smith, 2003; Lawler, Mohrman, & Ledford, 1995; Mangel & Useem, 2000; Schuster, 1984; Welbourne & Gomez-Mejia, 1995; White, 1979).

Three previous studies—one empirical and two theoretical—examined the impact of gainsharing on peer monitoring. Addressing the predictions of agency theory, Welbourne et al. (1995) studied peer monitoring before and after gainsharing implementation in two organizations. They concluded that workers monitor their peers more closely under gainsharing and do more monitoring when they perceive the presence of procedural and distributive justice in the gainsharing plan. In their theoretical article on the role of risk sharing in gainsharing, Gomez-Mejia, Welbourne, and Wiseman (2000) proposed that mutual monitoring by workers in gainsharing environments results from the provision of group performance information to workers, as workers may use this performance information to assess individual contributions and identify social loafing and shirkers in work groups. In a case study of gainsharing in the airline industry, Knez and Simester (2001) found that worker performance increased after gainsharing implementation despite the airline's concern about free-riders. The researchers proposed that free-riders were not a problem because the employees were organized into self-managing work groups that generated peer monitoring among workers in these groups.

Observational Monitoring Under Gainsharing and Traditional Pay

Although observational monitoring, with a focus on the person doing the monitoring versus the person being monitored, is not a construct that has been directly studied to date, empirical research on information sharing across several industries contributes to our knowledge in this area. Although not focusing on pay systems, the direct benefits of information sharing on

organizational, group, and individual performance have been determined by numerous researchers. For example, Kontoghiorghes, Awbrey, and Feurig (2005) concluded that information sharing increased organizational performance in the information technology division of an auto manufacturer, the case management division of a health care insurance organization, and two auto parts manufacturers. Lin and Chen (2006) found that information sharing increased performance in manufacturing firms in Taiwan, whereas Yee (2005) concluded that information sharing enhanced supply chain performance. Information sharing in MBA-student work groups led to enhanced group performance (Moye & Langfred, 2004). In a study of sharing financial information with workers, Ferrante (2006) determined that shared financial information increased workers' performance appraisals.

Researchers examining information sharing under gainsharing found similar results. Arthur and Aiman-Smith (2001) and Arthur and Kim (2005) concluded that gainsharing increased workers' submission of suggestions for increasing productivity, which ultimately resulted in enhanced organizational and group performance in manufacturing plants. Hatcher, Ross, and Collins (1989) concluded that employees shared information via suggestions submitted to management to improve organizational and personal performance. Hanlon and Taylor (1991) showed that increased information sharing as part of gainsharing led to more discussions among supervisors and peers about ways to improve employees' work methods to enhance performance.

We also expect observational monitoring to enhance performance in traditional pay settings. Under a traditional merit pay system, an individual is concerned with his or her personal performance and is indeed competing for a limited pool of resources (i.e., pay increases). However, it is this competition with peers that actually might encourage peer monitoring because of the "horizontal equity concern" (Baker, Jensen, & Murphy, 1988). Specifically, if a worker (the monitor) sees that his or her coworker is producing more than he or she (i.e., the monitor), this information may encourage the monitor to work harder and may increase the monitor's productivity/output, resulting in a higher supervisor rating of performance (especially if the merit pay system appraises performance via objective measures).

Thus, although not specifically called observational monitoring, employee efforts to obtain information have been linked to improvements in organizational, work group, and individual performance. Information gathering through observational monitoring, whether in gainsharing or traditional pay environments, should lead to improvements in individual performance.

Hypothesis 1: Observational monitoring will have a positive impact on the monitor's performance under both gainsharing and traditional pay plans.

Advisory Monitoring Under Gainsharing and Traditional Pay

Although observational monitoring is passive information acquisition and should result in positive outcomes for individuals, the same may not necessarily be expected from advisory monitoring, which entails actions targeted at one's peers. Advisory monitoring is not necessarily a sanctioned employee activity in traditional pay environments where supervisors are responsible for monitoring. Therefore, although agency theory assumes that somehow advisory monitoring increases group performance, it seems to dismiss the fact that employees may be discouraged from engaging in advisory monitoring if their immediate supervisors do not think this is a useful way for them to spend their time.

Several issues may lead to lower manager ratings on individuals' performance appraisals for workers who conduct high levels of advisory monitoring in traditional pay systems. First, employees who monitor their peers are not behaving in a way that is consistent with the formal organizational structure, and supervisors may perceive a threat to their own work because employees are performing supervisory duties. Second, peers may misinterpret supervisors' intentions or directions, causing coordination problems among workers. Third, advisory monitoring may take time away from required duties that are considered important by the supervisor. Finally, peers might object to being evaluated or told what to do by their peers, resulting in interpersonal conflicts that take time away from work tasks and cause extra work for the supervisors via their attempts to resolve interpersonal conflicts.

Alternatively, there are three reasons why gainsharing encourages advisory monitoring. Gainsharing aligns the interests and goals of workers with those of owners, and joint actions are needed to obtain a gainsharing bonus. In addition, in most gainsharing plans, employees and their immediate supervisors are included in the bonus plan. The gainsharing program legitimates advisory monitoring behavior among workers, as managers have an incentive to reward monitoring activity being conducted by their employees because employee monitoring should result in a bonus. Therefore, engaging in advisory monitoring should have a positive impact on manager evaluations of employee performance in a gainsharing environment.

Hypothesis 2: Pay plan will moderate the effect of advisory monitoring on supervisory ratings of employees' performance, such that the effect will be negative under traditional pay and positive under gainsharing.

Method

Sample

The participants in this 1996 study were employees in one of two divisions (one that implemented gainsharing 1½ years before the study and one that had a traditional, individual-based merit pay plan) of a Fortune 500 subsidiary firm that provided custom brokerage and freight-forwarding services. Because gainsharing payouts were done annually (although communication of performance appraisal was done quarterly), employees had "lived" with gainsharing for more than 1 year but experienced only one bonus check. Although employees in the two divisions were in different geographic areas, they performed similar work (i.e., had the same job titles, salaries, etc.), and similar measures of financial and nonfinancial performance were used to evaluate each division's performance.

The gainsharing division. The gainsharing plan that was put in place was done so as a pilot program. If it were successful, the company was planning to implement gainsharing in other divisions. The group chosen for study volunteered to participate, thinking that gainsharing would be welcomed by their employees. The company had recently implemented quality initiatives (employees met regularly to discuss quality control), and management thought gainsharing would be an asset for the team.

Four measures of firm performance (i.e., the rebill rate, three firm-specific quality measures, customer satisfaction, and net operating income) were used for the gainsharing payout, with each measure weighted equally. The organization used what is called a gainsharing "gate," which means that no gainsharing payout would be made until the division obtained a minimum level of net operating income. Thus, net operating income operated as a gate to any dollars that could be earned based on the other measures. Only if the net operating goal were met (the goal was based on actual compared to budget), would a payout be made, even if goals for quality and customer service were exceeded. This assured the company that they were not paying out gainsharing bonuses when the firm's financial performance was less than desired—a common problem with many gainsharing plans.

The total bonus amount was based on the firm's meeting or exceeding the net operating income goals (with some dollars allocated when the goal was exceeded, an amount predetermined by senior management) and meeting or exceeding other goals (i.e., those for the rebill rate, and quality and customer satisfaction). An individual's bonus was paid as a percentage of their pay (including overtime, pay for shift differential, and other add-ons). Many firms use the "percent of income" method of payment because it meets the Fair Labor Standards Act considerations (Mericle & Lund, 1995). The average bonus for the 1st year was reported by the company to be about $100 per employee.

The traditional, merit pay division. The merit pay plan required that employees receive a formal annual performance appraisal conducted by their supervisors. According to the firm, the employees' performance appraisal score was derived in the same way for both the gainsharing and traditional pay groups, and the performance appraisal process and forms were identical. A performance evaluation form was completed, and the associated percentage pay increase was communicated to the employee at the time of the evaluation interview.

Participants and Procedure

Surveys (including items that measured observational and advisory monitoring) were mailed to 884 employees (441 in the gainsharing division and 443 in the traditional, merit pay division). Identification codes corresponding to individual employees and their division were placed on each survey, so that the demographic and performance appraisal data obtained from the company's human resource information system could be matched to employees' survey responses. Completed surveys were returned directly to us. Of the 203 completed surveys (for an overall response rate of 23%), 104 were from employees in the gainsharing group (24% response rate) and 99 were from employees in the traditional pay group (22% response rate). The demographic and performance appraisal data were used to analyze the differences between respondents and nonrespondents. No significant differences were found for age, gender, salary, tenure, or performance appraisal.

In addition, an analysis of differences in demographic and performance appraisal data for respondents in the gainsharing and traditional pay groups was conducted. The results indicated no significant differences for age, salary, or tenure. However, there was a significant difference for gender, with those in the gainsharing group more likely to be female (M = .70 for

the gainsharing group and .50 for the traditional pay group; where, 0 = *male* and 1 = *female*). According to the human resource department representatives, the gender differences did not reflect any differences in work, structure, or pay between the two groups. They explained the differences as random and, if anything, a function of the labor availability.

The average participant was female (M = .60 for 203 participants), was 37 years old, and had worked for the company for 8 years. The average annual salary was $34,455. Based on self-report data in the survey, the occupational makeup of the sample consisted of 5 people in production positions, 27 in hourly technical jobs, 45 in administrative/clerical positions, 60 in supervisor/lead jobs, 48 in professional, technical/nontechnical positions, and 5 in sales.

Measures

Participants responded to the survey items using a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Responses to each variable's items were averaged to form a scale. High scores indicated a high level on the corresponding variable.

Observational monitoring. Five items from Welbourne et al.'s (1995) gainsharing study assessed respondents' level of observational monitoring (see the appendix for the items). The coefficient alpha for observational monitoring was .72. The reliability analysis indicated that the measure would not be substantially improved if any of the items were eliminated from the analysis.

Advisory monitoring. Four items from Welbourne et al.'s (1995) gainsharing study assessed respondents' level of advisory monitoring (see the appendix for the items). The items focus on the individual employee's monitoring activity rather than their success in changing a peer's behavior. The coefficient alpha for advisory monitoring was .72. The reliability analysis indicated that the measure would not be substantially improved if any of the items were eliminated from the analysis.

Given the limited research using the monitoring measures, we conducted a confirmatory factor analysis based on Jöreskog and Sörbom's (1988) Lisrel 7 program. The results showed that the two-factor model suggested by earlier research provided a significantly better fit than a one-factor model as indicated by the change in the chi-square fit statistic, $\Delta\chi^2(26, N = 203) = 33.81$, $p = .000$.

Performance appraisal. The company's managers annually appraised employees' performance; therefore, the performance appraisal score obtained from company records represented an overall assessment of employee performance during the prior 12 months (in all cases, it was made after gainsharing was implemented). Performance appraisal scores ranged from 1 (not meeting minimal standards) to 5 (far exceeding expectations), with a mean of 3.44 and a standard deviation of .56.

Control variables. Several control variables that were linked to performance in prior compensation and gainsharing studies were included in the analysis (Hatcher et al., 1989; Miceli & Lane, 1991). Demographic controls are important for studying gainsharing outcomes, because prior research suggested that demographic differences can impact gainsharing outcomes (Dreher, 1980; Goodman & Moore, 1976). The included variables were age, gender, tenure, most recent percentage pay increase (which captured prior performance appraisal and promotion status, as additional pay increases were provided to employees who were promoted), and current salary.

In addition, we included control variables for employees' occupations, as we anticipated that certain occupations would be expected to require more monitoring than others by the nature of their requirements (e.g., supervisors should conduct more monitoring). We created dummy variables indicating each of the seven occupational categories previously described.

Last, a dichotomous variable indicating whether an employee worked in the gainsharing (pay condition = 1) or traditional pay division (pay condition = 0) was used for the analyses.

Results

The means, standard deviations, and correlations of the variables used in the study are found in Table 1. Advisory and observational monitoring are positively correlated ($r = .44$, $p < .001$). Only observational monitoring is significantly correlated ($r = .20$, $p < .01$) with the performance appraisal measure.

Hypotheses 1 and 2 predicted that observational monitoring would positively impact employees' performance appraisal and that employees' pay plan would moderate the relationship between advisory monitoring and employees' performance appraisal. As suggested by Cohen, Cohen, West, and Aiken (2003), the hypotheses were tested using hierarchical linear regression analysis. The results are reported in Table 2. Only the control

Table 1
Means, Standard Deviations, and Correlations

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Pay condition[a]	.51	.50	—															
2. Age	37.44	9.64	–.16*	—														
3. Gender[b]	.60	.49	.20**	–.11	—													
4. Tenure	8.20	7.36	.23**	.43***	–.05	—												
5. Percentage increase	4.49	4.65	.08	–.15*	–.06	.00	—											
6. Salary	34,455	20,341	–.13	.31***	–.32***	.22**	.08	—										
7. Occupation—production	.02	.16	–.04	.10	.11	–.06	–.02	–.07	—									
8. Occupation—technical (hourly)	.13	.34	.06	–.13	.12	–.12	–.09	–.26***	–.06	—								
9. Occupation—administrative/clerical	.22	.42	.16*	–.07	.25**	.04	–.06	–.29***	–.08	–.21**	—							
10. Occupation—manager/supervisor	.30	.46	–.04	.13	–.20**	.24**	.07	.58***	–.10	–.25***	–.35***	—						
11. Occupation—professional, nonmanagerial, nontechnical	.10	.30	–.17*	–.01	–.03	–.12	.13	–.07	–.05	–.13	–.18*	–.21**	—					
12. Occupation—professional, nonmanagerial, technical	.14	.35	–.01	–.01	–.05	–.03	.00	–.01	–.06	–.16*	–.21**	–.26***	–.13	—				
13. Occupation—sales	.02	.16	–.04	.07	–.21**	–.05	.08	.06	–.02	–.06	–.08	–.10	–.05	–.06	—			
14. Observational monitoring	3.78	.54	–.18**	.06	–.05	.06	.03	.16*	–.20**	–.05	–.06	.31***	–.04	–.12	–.01	(.72)		
15. Advisory monitoring	3.62	.61	–.04	.18*	–.06	.15*	.03	.24**	–.12	–.16*	–.02	.41***	–.09	–.19**	–.01	.44***	(.72)	
16. Performance appraisal	3.44	.56	.03	–.07	.05	.12	.13	.19*	–.02	–.08	–.10	.20**	.07	–.08	–.13	.20**	.00	—

Note: $N = 203$. Numbers on diagonals are reliabilities.
a. 0 = traditional, 1 = gainsharing.
b. 0 = male, 1 = female.
*$p < .05$. **$p < .01$. ***$p < .001$.

Table 2
Hierarchical Regression Analysis for Variables Predicting Individual Performance Appraisal Scores

Variables	β[a]	β[a]	β[a]	R^2	ΔR^2
Step 1				.13*	
Pay condition[b]	–.05	–.02	–.85+		
Age	–.21*	–.19*	–.19*		
Gender[c]	.08	.08	.09		
Tenure	.15†	.15†	.14		
Percentage increase	.09	.08	.08		
Salary	.20*	.20*	.21*		
Occupation—technical (hourly)	–.05	–.08	–.07		
Occupation—administrative/clerical	–.16	–.17	–.17		
Occupation—manager/supervisor	–.05	–.05	–.05		
Occupation—professional, nonmanagerial, nontechnical	.00	.00	–.01		
Occupation—professional, nonmanagerial, technical	–.14	–.14	–.14		
Occupation—sales	–.16+	–.16†	–.16†		
Step 2				.17**	.03*
Advisory monitoring		–.16†	–.33**		
Observational monitoring		.18*	.19*		
Step 3				.19**	.02†
Advisory Monitoring × Pay Condition			.85†		

Note: $N = 203$.
a. Standardized beta coefficients.
b. 0 = traditional, 1 = gainsharing.
c. 0 = male, 1 = female.
†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

variables (the production category was treated as the omitted reference category) were included in Step 1 of the regression equation to predict performance appraisal scores. Employees' tenure (albeit marginally significant; $\beta = .15$, $p < .10$) and salary ($\beta = .20$, $p < .05$) positively impacted performance appraisal scores, whereas employees' age ($\beta = –.21$, $p < .05$) negatively impacted employees' performance appraisal. Employees in sales ($\beta = –.16$, $p < .10$) received lower performance appraisal scores. The overall R^2 at Step 1 was .13 ($p < .05$).

In Step 2, both the advisory and observational monitoring variables were added to the equation. The main effect of observational monitoring was positively and significantly related to employees' performance appraisal ($\beta = .18$, $p < .05$). Thus, Hypothesis 1 is supported, as individuals who

engaged in more observational monitoring received higher performance appraisal scores from their managers. Results for the control variables were similar to those found in Step 1. The overall R^2 at Step 2 was .17 ($p < .01$), and the change in R^2 was .03 ($p < .05$).

The interaction between pay plan and advisory monitoring, added in Step 3 (although marginally significant), was related to employees' performance appraisal ($\beta = .85$, $p < .10$). The overall R^2 at Step 3 was .19 ($p < .01$), and the change in R^2 was .02 ($p < .10$). Although the change in R^2 was marginally significant, the interaction term was clearly interpretable, as the proposed moderator (pay plan) and the independent (advisory monitoring) and dependent (performance appraisal scores) variables were uncorrelated ($r = -.04$ and .03, respectively; Baron & Kenny, 1986). The results for the control variables were similar to those found in Steps 1 and 2.

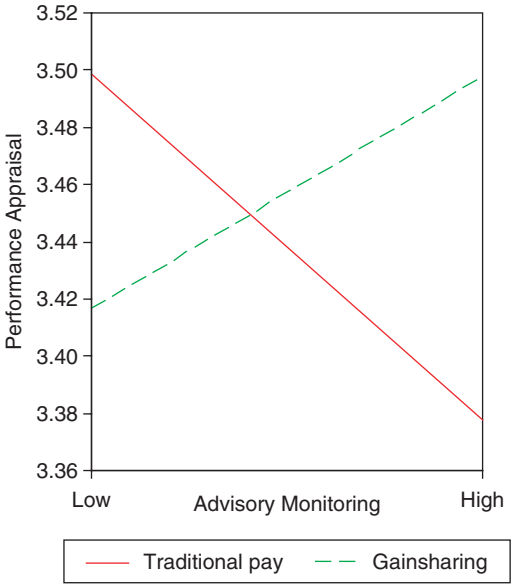
Using the techniques suggested by Cohen et al. (2003), we plotted the interaction of pay plan and advisory monitoring (see Figure 1). Predicted performance evaluations were calculated for gainsharing and traditional pay plans when advisory monitoring was low (1 standard deviation below the mean) and high (1 standard deviation above the mean). As hypothesized, employees in the gainsharing plan received higher performance appraisal ratings when they engaged in high levels of advisory monitoring, whereas employees in the traditional pay plan received lower performance appraisal ratings when they engaged in high levels of advisory monitoring. Thus, Hypothesis 2 was supported.

Discussion

The goal of this study was to examine the impact of peer monitoring behavior on supervisory performance ratings of the individual doing the monitoring. We examined the effect of "doing monitoring" on performance appraisal outcomes for employees in two pay conditions, traditional merit pay and merit pay with gainsharing.

As hypothesized, observational monitoring had a positive effect on performance appraisal outcomes. The results for advisory monitoring were more complex. Employees working in the traditional pay environment had lower performance ratings when they engaged in higher levels of advisory monitoring, whereas employees in the gainsharing group had higher performance ratings. This result is particularly interesting in light of the relative lack of success of the gainsharing plan. The gainsharing plan resulted in a low payout for employees (about $100 per year per employee), and

Figure 1
The Interaction Between Advisory Monitoring and Pay Condition on Performance Appraisal Scores



as is discussed in the next section, it was not viewed as a success by many participants. Even though the gainsharing plan was not successful, it appears to have created a condition that "legitimized" peer monitoring, particularly advisory peer monitoring.

Gainsharing Effects on Monitoring

To assist our interpretation of the study's findings, we further investigated the impact of pay condition on employees' monitoring. Although the direct effect of gainsharing on monitoring was not part of this study, it is interesting to note that the levels of monitoring in the traditional pay group were higher than those in the gainsharing group. We first conducted a multivariate analysis of variance for both advisory and observational monitoring, and the results indicated a significant effect for pay condition. The Pillai's, Hotelling's, and Wilks's tests all indicated differences at the $p < .01$

significance level. The follow-up univariate tests showed significant differences for observational monitoring in the traditional and gainsharing pay groups ($M = 3.89$ for the traditional pay group and 3.67 for the gainsharing group). The means for advisory monitoring ($M = 3.64$ for the traditional pay group and 3.60 for the gainsharing group), although not significant, followed the same pattern.

This finding is certainly inconsistent with what may be expected based on the gainsharing literature; however, the act of implementing gainsharing has never been said to guarantee positive changes in employee monitoring. In fact, prior research found that only when gainsharing was perceived to be fair did employees increase their levels of monitoring (Welbourne, Balkin & Gomez-Mejia, 1995).

To shed new light on our findings, we conducted further exploratory analyses of the data available to our team. First, we ran an analysis of variance on pay satisfaction for the gainsharing and traditional pay groups. Using Heneman and Schwab's (1985) measures of employees' satisfaction with their pay raise, pay level, benefits, and pay structure (note that these questions were part of the survey), the results indicated significant ($p < .01$) differences in only one component of pay satisfaction—pay structure. The average level of satisfaction with pay structure (on a 1 to 5 scale, with 5 as *very satisfied*) for the gainsharing group was 2.84, whereas the average for the traditional pay group was 3.13, indicating less satisfaction among employees in the gainsharing group.

A review of the open-ended comments in the survey provided some explanation of this result. In many cases where an employee filled out the open-ended question (which asked, What do you think about the gainsharing plan?), employees commented about the amount being too low, that they thought the gainsharing plan was unfair, and that they did not understand the program. Some sample comments follow:

> "The payout does not justify the effort."
> "I would like to better understand how it works."
> "The company is doing great financially, expanding, taking on more and more business and I think it's a gross insult to pay such a minimal amount as *incentive*."
> "The only thing I disagree with is the way the amount is calculated."
> "It is a 100% waste of time for all the effort all of the employees put into it and what little they get out of it at the end of the year."

The comments were classified by overall subject, and a count was then conducted. A total of 179 comments were received about the gainsharing

plan. Of those, 44 were considered positive (25%), and 135 were classified as negative (75%). It seems reasonable to conclude that employees at this particular company, overall, were not pleased with their gainsharing plan. This lack of enthusiasm for gainsharing may be the reason for the lower monitoring scores in the gainsharing group.

In fact, our research process was negatively affected by the fact that the management team did not consider the gainsharing program to be successful. We were granted access to this organization by executives in the firm's headquarters office; however, the local managers were not responsive to our study. Our original intention in research design was to conduct surveys in meetings with employees and to do interviews with managers and employees. However, the local managers were not as cooperative as those in headquarters. We continued with the study because we thought it important to study "less-than-successful" gainsharing plans, even under less-than-optimal research conditions and because there is little work published on gainsharing plans that are not successful.

The Problem of Performance

Our study focused on manager perceptions of performance, and we used the company's performance appraisal data as our dependent variable. However, the meaning of the study's results is dependent on knowing more about the performance measure. To supplement our study, we asked managers in the gainsharing and traditional pay plans to complete the role-based performance scale (Welbourne, Johnson, & Erez, 1998). The scale assessed performance within five work-related roles (job, career, team member, organizational member, and innovator). A total of 241 employees were assessed with this measure. To diagnose which work roles were being captured in the performance appraisal scores, we ran a regression analysis with the manager ratings of employees' performance as the dependent variable and the five work-related roles in the role-based performance scale as the independent variables.

The results are found in Table 3. The only significant work-related role predicting supervisory ratings of employees' performance is "job" ($\beta = .35$, $p < .001$). The overall R^2 is .14, and $F(5, 236) = 7.86$, $p < .001$. This result indicated that the performance measure we used primarily captured the job role (i.e., quantity of work, quality of work, accuracy of work, and internal and external customer service). None of the nonjob roles (i.e., the career role—improvement of skills and knowledge, the team member role—the degree to which employees are working as part of a team and helping their own team, the organization member role—above and beyond behaviors that help the

Table 3
Regression Analysis Predicting Performance Appraisal Scores With the Role-Based Performance Scale

Variables	B	β	R^2
Work-related roles			.14***
Job	.26	.35***	
Career	.06	.09	
Team member	.02	.03	
Organizational member	–.05	–.06	
Innovator	–.01	–.01	

Note: $N = 241$.
***$p < .001$.

firm but that are not part of one's job, and the innovator role—proposing new ideas and supporting others who are trying to implement new concepts) were significantly assessed by the performance measure.

The findings for the performance appraisal diagnostics were consistent with the hypotheses that doing advisory monitoring can negatively affect job-based behavior under conditions where managers see it as being inconsistent with the "job" of the employee. If managers viewed the job in a broader context, then advisory monitoring may be seen as positive. Unfortunately, we did not have enough matches between manager evaluations and employee surveys to conduct the analysis in Table 2 for each of the roles in question ($n = 73$). Future research may benefit from conducting an analysis such as ours with manager ratings of overall performance in addition to performance within each of the work roles.

Implications for Practitioners

Gainsharing is an incentive that encourages group or team behaviors, but there are many other types of interventions that are being used to persuade employees to engage in peer monitoring in the absence of gainsharing. Quality circles and work teams are two examples. If the pay system is not changed when these interventions are implemented, and employees who engage in peer monitoring receive negative feedback from their immediate supervisors/managers, this may have a negative effect on sustaining team-based behaviors such as monitoring. Therefore, it is important to examine any potential conflicts between individual rewards (such as merit pay based on performance appraisal scores) and the goals of group-based interventions.

The gainsharing plan studied was, unfortunately, not considered by the management team (or by the employees) to be very successful. Even under fairly negative conditions, however, it appears that managers "got the message." Employees who engaged in peer monitoring (advisory monitoring in particular) in the gainsharing group were rewarded by their managers for this activity. This is different from manager behavior for employees in a comparable unit doing the same type of work who did not have gainsharing. The results suggest that managers in the gainsharing unit learned that peer monitoring was now a behavior to be rewarded and that learning was associated with higher performance appraisal outcomes for employees who did advisory monitoring. This study suggests (although given the research design cannot confirm) that managers may have changed from punishing advisory monitoring to rewarding it as a result of the gainsharing plan. The results of this study also suggest that it is imperative for managers to understand the explicit and implicit messages being sent by all of the programs that they implement for employees.

The negative effect of advisory monitoring on performance appraisal outcomes for the merit pay condition should be an issue of concern for managers. Peer monitoring should be encouraged because, according to agency theory, peers have more and better information and are better able to help their peers (Arnott & Stiglitz, 1991) than are their managers. If peer monitoring is discouraged under merit pay, companies are no doubt increasing agency costs and incurring costs that they need not necessarily incur. The results of this study can be viewed as suggesting that gainsharing resulted in a changed view of monitoring. But there are alternative ways to change manager and employee perceptions of the importance of monitoring, and perhaps some of those are less costly (not only in dollars but in employee relations and trust). Additional work is still needed to understand the effects of monitoring on employee and firm performance.

It is also important to note that lessons learned from "not so successful" plans can be as important as lessons learned from "successful" plans. In this study, we explored a phenomenon that was never tested, and additional work, including detailed follow-up with employees and managers who were part of the plan, would have been useful to expand our understanding.

Limitations

Of course, the results of this study must be considered in light of its limitations. Although efforts were made to obtain a measure of performance from the firm that covered the most recent 12-month period, the design is cross-sectional in nature. Therefore, causality cannot be firmly established.

In addition, validity of the performance measure is difficult to assess. Conclusions can be made only about the effect of monitoring on managers' assessments of employee performance. However, because manager evaluations were the focus of the study, the manager ratings of employees' performance seem to be appropriate measures. We also acknowledge that in our efforts to minimize common method variance by collecting data from two sources (i.e., the company's performance management system and workers' responses to the survey), another potential problem entered—having some of the respondents' performance information collected prior to their completion of the survey.

In addition, the attempt to compare gainsharing with merit pay was confounded by the fact that the gainsharing plan had problems. Payout was low, and employees were not satisfied with the plan. Although not the best test of the gainsharing plan versus the traditional, merit pay plan, the insights gained from studying a "not so successful" gainsharing plan are useful in furthering our understanding of this particular type of incentive. At the same time, there may have been reasons underlying the need for the gainsharing plan that were not communicated to us. It is possible that the division had performance problems that were undisclosed to us. Without supplemental detail, we can only speculate regarding cause and effect. Additional research is needed to help untangle some of the issues that were examined in this study.

The study was further limited in that we did not have ample qualitative data to supplement the quantitative study. Ideally, we would have interviewed employees to further explore how and when they altered their monitoring behaviors. Given the "lower-than-expected" results from the gainsharing plan, the firm's interest in the study diminished, and we were unable to conduct follow-up meetings with employees.

The response rate for the survey was low (23% overall). Although the analysis of respondents versus nonrespondents showed no significant differences on a number of demographic variables, the generalizability of the results must still be questioned. In addition, we found that the gainsharing group contained more women than men, and although this was explained away by the human resource management group, we must consider this to be a limitation in the study. There may be some reason that women were more inclined to work in the jobs in the gainsharing group (or a reason management hired more women), but we could not uncover any specific reasons through our interviews.

Finally, the change in R^2 when the interaction between employees' advisory monitoring and pay condition was added to the analysis was modest (.02) and marginally significant. Although this is a limitation of the study,

the plot of the interaction effect in Figure 1 clearly shows the value of considering the varying impact of levels of advisory monitoring on manager ratings of employees' performance in the gainsharing and traditional pay conditions.

Conclusion

Despite its limitations, this work makes contributions toward furthering our understanding of monitoring in two different pay plans. Agency theory suggests that peer monitoring is an outcome of group incentives such as gainsharing; however, the results of this study suggest that monitoring does occur under traditional, individual-based pay conditions (Welbourne & Gomez-Mejia, 1995). Not only does it occur, but it appears that this behavior may be "punished" in such environments. This is a key finding that deserves additional research, because in our era of downsizing and fast-changing organizations, peer monitoring will be important for the success of many businesses.

Appendix
All items used a 1 to 5-response scale, *strongly disagree* to *strongly agree*

Observational Monitoring

1. I am aware of the overall performance of others in my work group.
2. It is easy to notice an employee in my work group whose work is outstanding.
3. I notice when someone in my work group does an extremely good job.
4. Within my work group, it is obvious when someone does a below average job.
5. I always know when a fellow worker is doing a below average job.

Advisory Monitoring

1. If I notice someone doing a poor job, I let that person know.
2. When I notice someone in my work group doing an outstanding job, I make sure that I mention it to the person.
3. When someone is working at an acceptable level, I somehow communicate that to the individual.
4. When someone does good work, I let that person know.

Notes

1. Merit pay is defined as individual pay for performance. Performance is usually evaluated on an annual basis (although it can be done at other time intervals) by one's immediate supervisor using a formal performance appraisal system (e.g. such as graphic rating scales, behaviorally anchored rating scales, etc.).

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