Effects of Computer Surveillance on Perceptions of Privacy and Procedural Justice

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Electronic workplace surveillance is raising concerns about privacy and fairness. Integrating research on electronic performance monitoring, procedural justice, and organizational privacy, the author proposes a framework for understanding reactions to technologies used to monitor and control employees. To test the framework’s plausibility, temporary workers performed computer/Web-based tasks under varying levels of computer surveillance. Results indicated that monitoring job-relevant activities (relevance) and affording those who were monitored input into the process (participation) reduced invasion of privacy and enhanced procedural justice. Moreover, invasion of privacy fully mediated the effect of relevance and partially mediated the effect of participation on procedural justice. The findings are encouraging for integrating theory and research on procedural justice and organizational privacy.

The adoption of sophisticated surveillance and monitoring technologies that enable employers to observe the activities of their employees like never before is fueling concerns about privacy and fairness in organizations. I collectively refer to these technologies as “electronic performance monitoring and control systems” (EPMCSs)—defined as systems in which electronic technologies are used to collect, store, analyze, and report the actions or performance of individuals or groups on the job (Nebeker & Tatum, 1993). Employers use EPMCSs to count keystrokes, read E-mail, track locations, monitor Web usage, videotape workstations or bathrooms, tap phone lines, and peer in on computer screens and files (Picard, 1994, p. 47).

Organizational use of EPMCSs is on the rise. A recent American Management Association (2001) survey of more than 1,000 human resources managers indicated that 78% of responding firms electronically monitored their employees in some respect; 47% monitored their employees’ E-mail, up from 15% in 1997; and 63% monitored employees’ Web use. It is estimated that 40 million U.S. employees are electronically monitored (Botan, 1996). In response to this rising trend, researchers have begun to systematically explore variations in EPMCSs, leading them to recognize that the way in which EPMCSs are designed and implemented determines their acceptability (Aiello & Kolb, 1995; George, 1996; Griffith, 1993; Stanton & Barnes-Parrell, 1996).

Despite claims suggesting that EPMCSs are invasive and unfair (e.g., Carey, 2000; Carley, 2000; U.S. Office of Technology Assessment, 1987), empirical research has virtually ignored the effects of EPMCSs on privacy or justice-related constructs. Two studies, however, have argued for a link between EPMCSs and organizational justice (Ambrose & Alder, 2000; Kidwell & Bennett, 1994a), suggesting that EPMCS procedures will influence procedural justice, that is, people’s perceptions of the fairness of the policies and procedures used in making decisions (Greenberg, 1990). These theorists suggest that EPMCSs will be viewed as procedurally just insofar as they adhere to certain design and implementation principles or procedural justice rules.

Notably absent from organizational justice research, including justice-based models of EPMCSs, is privacy, defined as the extent to which individuals believe they have control over their personal information and interactions with others (E. F. Stone & Stone, 1990). Thus, perceived loss of control can be seen as an invasion of privacy. Moreover, there are important theoretical and practical reasons for examining privacy and procedural justice together when it comes to collecting and using information gathered by observing employees on the job (Bies, 1993; Eddy, Stone, & Stone-Romero, 1999). In this regard, I designed the present investigation to test the differential effects of EPMCS procedures on privacy and procedural justice perceptions and the potential mediating role of privacy. These results could provide support for justice-based models of EPMCSs (e.g., Ambrose & Alder, 2000) and could extend them by recognizing the importance of privacy and its relationship to procedural justice. In this study, temporary workers performed computer-based tasks under varying conditions of electronic performance monitoring and control in what they perceived to be a satellite office of a real organization.

A Privacy–Procedural Justice Framework

Building on procedural justice (e.g., Leventhal, 1980), justice-based models of EPMCSs (Ambrose & Alder, 2000; Kidwell & Bennett, 1994a), and organizational privacy (Altman, 1975; E. F. Stone & Stone, 1990; Westin, 1967), I proposed a framework in which EPMCSs are defined in part by their procedural characteristics (see Figure 1). Ambrose and Alder recently identified several EPMCS characteristics that influence procedural justice: partici-
The inclusion of both privacy and procedural justice in the EPMCS framework (Figure 1) was based, in part, on the overlap in antecedent conditions that predict both (Bies, 1993). For example, the job relevance of what is being monitored has been posited to affect procedural justice (Ambrose & Alder, 2000) and privacy (D. L. Stone & Stone-Romero, 1998; E. F. Stone & Stone, 1990). Indeed, justification for integrating privacy and procedural justice is particularly compelling in light of recent empirical evidence demonstrating that invasion of privacy and procedural justice are distinct but negatively related constructs (Eddy et al., 1999; Racicot & Williams, 1993). Although this relationship has intuitive appeal, an underlying theory explaining this link, including the causal ordering between constructs, is lacking.

One promising theoretical avenue for justifying this relationship builds on identity-based notions of the self-concept (Turner, 1982; Turner & Onorato, 1999). One’s self-concept consists of personal identity—self-definitions in terms of unique, personal, idiosyncratic qualities—and social identity—self-definitions in terms of the groups to which one belongs. Social identity has played a prominent role in procedural justice theorizing. Because people desire to belong to valued groups, organizational procedures that symbolize one’s value to the group are deemed procedurally fair (Lind & Tyler, 1988; Tyler & Lind, 1992). Personal identity has received less emphasis in models of procedural justice. Yet, the distinction between personal and social identity is often blurred. Social identity can serve as a source of self-validation affecting one’s personal identity (Tyler, 1994). In a similar manner, I argue that personal identity may affect one’s social identity and, ultimately, procedural justice perceptions. Whereas procedural justice perceptions are an outcome of social identity (e.g., being accepted by the group), procedures that affect perceptions of control over personal information (i.e., privacy) are a key source of personal identity.

Personal identity can be decomposed into two components: one’s private estimation of oneself and how one wishes to publicly portray oneself. This distinction is similar to Goffman’s (1959) distinction between onstage and offstage selves. Insofar as one cannot control the public persona one wishes to convey (i.e., lack of privacy), one’s estimation of oneself, or one’s private persona, may suffer. Moreover, failure to control one’s public persona, one’s onstage self, can have negative implications on which groups one is valued by, thereby affecting one’s social identity. When procedures inhibit one’s ability to control personal information, one may be forced to alter the image that one portrays to others. That is, one may be unintentionally forced to reveal information that he or she would like to keep private, as part of his or her personal identity. In a similar manner, the public self that one wishes to reveal may be threatened when privacy is impinged. Privacy ensures control of self—other boundaries (Altman, 1975), and it is through this control that procedural justice is ultimately enhanced. Privacy becomes an important antecedent condition for maintaining a positive social identity—by controlling which groups and individuals one interacts with and how one is viewed by them. It follows that privacy, through its impact on the self-concept, is an important antecedent to procedural justice. This view is consistent with instrumental views of procedural justice that suggest that control mediates procedural justice perceptions. Furthermore, privacy has been recognized as an antecedent to procedural justice in such areas as ethics (Leventhal, 1980), information handling (Eddy, 1997), and employee selection (Gilliland, 1993).

**Hypothesis 1:** Invasion of privacy will be negatively related to procedural justice.
Procedural Antecedents to Privacy and Procedural Justice

Drawing on Ambrose and Alder's (2000) research, in the present investigation I focused on three variables thought to be important in an EPMCS context: relevance, participation, and consistency. I selected these particular variables because they all are likely to affect procedural justice and are likely to vary in their effect on invasion of privacy, providing a reasonable test of the plausibility of the proposed framework.

Relevance

Relevance refers to whether collected information is necessary and appropriate for making decisions affecting employees. Relevance is argued to have a negative relationship with invasion of privacy (D. L. Stone & Stone-Romero, 1998). EPMCSs that collect job-relevant data are likely to be viewed as less invasive than systems that collect job-irrelevant data. An important assumption is that individuals expect that only job-relevant activities will be subject to monitoring. Thus, individuals expect that through their job-relevant behaviors they can control or influence decisions that affect them (e.g., performance appraisal). In practice, individuals cannot always control what information forms the basis for decisions that affect them. Insofar as individuals believe that decision-making criteria are irrelevant to job-related decisions, their control is compromised, resulting in an invasion of privacy.

In other contexts, it has been shown that decisions that are based on less relevant personal factors (e.g., personal finances) are viewed as more invasive than decisions that are based on job-relevant factors (Rosenbaum, 1973; Tolchinsky et al., 1981). Moreover, research on employee drug testing programs has found that conceptually similar variables, such as accuracy and job relatedness, reduce perceptions of privacy invasion (Dwight & Alliger, 1997; Racicot & Williams, 1993; Tepper & Braun, 1995). A similar pattern should hold for EPMCSs.

Hypothesis 2a: Individuals exposed to EPMCSs that monitor relevant activities will report lower levels of invasion of privacy than individuals exposed to EPMCSs that monitor both relevant and irrelevant activities.

Although Ambrose and Alder (2000) argued that relevance is an important determinant of procedural justice, they noted, “When employers monitor non task-related activities, they may violate an employee’s expectations of privacy” (p. 201). Moreover, they argued that unethical practices, such as those that invade privacy, affect procedural justice. Their work implies that invasions of privacy precede procedural justice judgments, consistent with research suggesting that invasion of privacy is an antecedent to procedural justice (e.g., Gilliland, 1993). Moreover, if procedures are viewed as less procedurally fair because they invade privacy, it is necessarily the case that invasion of privacy mediates the procedures’ effects on procedural justice.

Hypothesis 2b: Individuals exposed to EPMCSs that monitor relevant activities will report higher levels of procedural justice than individuals exposed to EPMCSs that monitor both relevant and irrelevant activities. However, this effect will be completely mediated by invasion of privacy.

Participation

A second variable likely to influence invasion of privacy is what Ambrose and Alder (2000) called “participation,” or the extent to which employees have input into the design or implementation of EPMCSs. Participation is similar to the procedural justice rule of representativeness. Participation enables individuals to control such things as the types of monitoring that are acceptable, what information can be collected, and how collected information can be used. In essence, participation can serve to enhance one’s control over personal information. Although Bies (1993) suggested that having voice likely reduces invasions of privacy, no study has empirically explored this possibility. Yet, excluding individuals’ input to potentially invasive practices, including electronic monitoring, is likely to engender hostility (Bies, 1993; Susser, 1988).

Hypothesis 3a: Individuals who are provided an opportunity to voice their opinions concerning the EPMCS will report lower levels of invasion of privacy than individuals not having an opportunity to voice their opinions.

Participation has been extensively examined in the procedural justice literature. Having more input into the decision-making process enhances procedural justice (Earley & Lind, 1987; Greenberg, 1986; Lind, Kanfer, & Earley, 1990; Thibaut & Walker, 1975). An instrumental view suggests that participation enhances procedural justice because it affords increased control in influencing outcomes. Insofar as participation in the design and implementation of EPMCSs enhances one’s felt control over one’s personal information and interactions with others (i.e., reduces invasion of privacy), procedural justice should consequently be enhanced. Alternatively, participation may enhance procedural justice because of its value-expressive qualities (Tyler, 1987). This perspective suggests that participation matters irrespective of outcomes. Rather, the mere opportunity to express one’s opinions has symbolic or status-enhancing qualities (Lind et al., 1990). According to the value-expressive perspective, participation will directly influence procedural justice, irrespective of privacy. Thus, participation is likely to affect procedural justice directly (value-expressive) and indirectly (instrumental).

Hypothesis 3b: Individuals who are provided an opportunity to voice their opinions concerning the EPMCS will report higher levels of procedural justice than individuals not having an opportunity to voice their opinions. However, this effect will be partially mediated by invasion of privacy.

Consistency

Consistency is the extent to which standards are applied consistently across individuals or time. Although consistency is likely to affect procedural justice perceptions (Ambrose & Alder, 2000; Greenberg, 1986; Van den Bos, Vermunt, & Wilke, 1996), it is less clear that it will affect invasion of privacy. If an employee is monitored in a manner different than other coworkers (inconsistent monitoring across individuals), that employee may experience an injustice. However, it does not appear that the inconsistency will affect the employee’s ability to control his or her personal information. I expected consistency to be privacy-invariant and chose it to test the discriminant effects of procedures on invasion of privacy.
Hypothesis 4: Individuals exposed to EPMCSs that are administered consistently across individuals will report higher levels of procedural justice than individuals exposed to EPMCSs that are administered inconsistently across individuals.

Method

Sample

A total of 206 students were recruited from an undergraduate management course at a large midwestern university to perform work at an on-campus satellite office. Students were compensated with extracredit (2% of their course grade)—half of which was dependent on their work performance as evaluated by an office supervisor. The average age of the participants was 21.6 years. Sixty-two percent of the participants were male.

Design and Procedure

The experimental design was a 2 (relevance) × 2 (participation) × 2 (consistency) between-subjects factorial design. Participants who volunteered to work attended a 1-hr session at an office located on campus (maximum of 3 students per session). On arrival at the office, a confederate posing as a site supervisor greeted participants. Participants were led to believe that the campus-located office represented a satellite branch of a real organization—the Center of Excellence in Organizations (CEO). CEO was described as a partnership between the university and the local business community with a primary mission to support advances in the field of management. Participants were told that the satellite office was created to provide outreach to the student body as well as to capitalize on knowledge being generated within the university. Participants were instructed that they would be performing tasks supporting the maintenance of CEO’s home page on the World Wide Web. In addition, “in support of CEO’s mission” students were asked to participate in a study assessing their reactions to their “telemark” experience. After consenting, participants toured the satellite office, which consisted of a main office flanked by three adjacent offices, all of which contained a desk and a personal computer. Participants were told that the computers were networked together and connected to the Internet and the main office downtown. After the tour, participants were provided task instructions.

Participants received a hard copy listing of Internet Web addresses containing both valid and invalid sites. This task involved sequentially visiting each Web site on the list and verifying its existence by using a popular Web browser. Participants were given 5 min to verify the Web sites. They were then given a 5-min break followed by another 5-min session of entering Web sites. Students were asked to remain in their office during the 5-min break period. It was my expectation that by placing students in a small office with nothing but a chair, a desk, and a “window to the world” (i.e., a computer and the Internet), they would engage in discretionary computer activity during their break, which, if monitored, could be viewed negatively. Indeed, 96% of the workers used the computer during their Task 1 break period.

After 15 min “on the job,” participants were told that in order to monitor and evaluate their performance, they were being electronically monitored. To reinforce the electronic monitoring, participants were shown a demo on the site supervisor’s workstation of a digital video playback of a “hypothetical” user’s activities. Following the demo, the manipulations were invoked (see the Measures section) to further establish the favorability or unfavorability of the electronic monitoring context. Following the manipulations, participants were given a posttreatment questionnaire assessing manipulation effectiveness, invasion of privacy, and procedural justice. Notably, students believed they would have additional performance opportunities after completing the questionnaire.

Manipulations

Participation. Those in the high-participation condition were given an opportunity to provide input into the monitoring and evaluation process. Specifically, they were given an “employee suggestion form” that allowed them to indicate their monitoring preferences, for example, preferences for physical supervision or electronic supervision. Moreover, they could provide input as to how collected data should be used to evaluate performance. They were led to believe that their opinions and preferences would be considered in determining their evaluations and would be helpful in establishing future monitoring norms for the center. Those in the no-participation condition were not given an opportunity to provide input.

Relevance. Participants were shown one of two versions of a blank performance evaluation form that the supervisor would fill out for each individual. In the high-relevance condition, the evaluation form contained only performance-relevant data, such as the number of Web sites verified. Participants in this condition were read a policy statement informing them that only their performance during assigned tasks (i.e., their “on-task” activities) were electronically monitored and that the monitoring system was deactivated during their break periods. Participants in the mixed-relevance condition were given a performance evaluation form that contained not only on-task performance criteria but also criteria related to break-period activities (e.g., number of unlisted or personal Web sites visited). Moreover, participants were read a different policy statement that indicated that not only their performance periods but also their break periods were being monitored. In addition, they were told that if they used the computer for personal use, such as visiting non-management-related Web sites, the site supervisor would know about it.

Consistency. In the high-consistency condition, participants were informed, as part of the policy statement, that their activities were being monitored and evaluated in the same manner as all other students. In the low-consistency condition, participants were told that the center was looking at different ways to monitor activities and that their activities were being monitored and evaluated in a manner different from other students.

Measures

All self-report scales were rated on a 7-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). Scale reliabilities are reported in Table 1.

Invasion of privacy. Invasion of privacy was measured using 13 items derived from prior privacy research (α = .96; Eddy et al., 1999; D. L. Stone, 1981; Tolchinsky et al., 1981). Slight modifications were required to fit the present context. Examples are “I felt like the manner in which I was evaluated was an invasion of my privacy” and “I feel that the information being collected is none of anybody’s business but my own.”

Procedural justice. Procedural justice was measured using a 5-item scale derived from procedural justice research focusing on aspects such as consistency of application, voice, relevance, and overall fairness of the process (α = .81). The item wording was consistent with the procedural justice scale adopted by Eddy et al. (1999) in their study of fairness and privacy. A sample item is “The methods used to monitor my performance were fair.”

Manipulation checks. Twelve items were included to assess the effectiveness of the three manipulations: perceived relevance (5 items), with a sample item being “All data collected by the center are relevant in determining my performance”; perceived participation (2 items), with a sample item being “I was given an opportunity to influence the monitoring and evaluation process”; and consistency (5 items), with a sample item being “My performance is determined in the same manner as all other students participating in this project.”
Table 1
Means, Standard Deviations, Zero-Order Correlations, and Scale Reliabilities (N = 206)

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Relevance*</td>
<td>0.49</td>
<td>0.50</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2. Participation*</td>
<td>0.50</td>
<td>0.50</td>
<td>−.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>3. Consistency*</td>
<td>0.50</td>
<td>0.50</td>
<td>−.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Invasion of privacy</td>
<td>3.73</td>
<td>1.67</td>
<td>−.49*</td>
<td>−.14*</td>
<td>−.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Procedural justice 6</td>
<td>4.94</td>
<td>1.31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Perceived relevance*</td>
<td>4.52</td>
<td>1.58</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>7. Perceived participation*</td>
<td>4.46</td>
<td>2.32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>8. Perceived consistency*</td>
<td>4.96</td>
<td>1.95</td>
<td></td>
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</tbody>
</table>

Note. Alpha reliabilities for relevant scales are in parentheses along the diagonal.
*Relevance, participation, and consistency refer to the manipulated variables, dummy coded as 0 = lower levels and 1 = higher levels of the respective variables.
*Perceptual measures of relevance, participation, and consistency served as manipulation checks.
*p < .05. **p < .01.

Results

Means, standard deviations, zero-order correlations for all variables, and alpha reliability estimates for scales of interest are provided in Table 1.

Manipulation Checks

Perceptual measures of relevance, participation, and consistency were included in the postmanipulation questionnaire to assess the effectiveness of the manipulations. All of the mean differences in perceived relevance (M_{mixed relevance} = 3.46 vs. M_{high relevance} = 5.62), t(204) = −13.43; participation (M = 2.78 for the non-participation condition vs. M = 6.15 for the high-participation condition), t(204) = −15.10; and consistency (M = 3.87 for the low-consistency manipulation vs. M = 6.07 for the high-consistency manipulation), t(204) = −9.54, for the relevance, participation, and consistency manipulations, respectively, were significant (all ps < .001) in the anticipated direction. Thus, it appears that all three manipulations were effective.

Relationship Between Invasion of Privacy and Procedural Justice Perceptions

A maximum-likelihood confirmatory factor analysis was conducted on the 13-item invasion of privacy scale and the 5-item procedural justice scale. Results supported a two-factor model (root-mean-square error of approximation = .08, comparative fit index = .94, nonnormed fit index = .94), which was superior when compared with a one-factor model combining the two scales (root-mean-square error of approximation = .12, comparative fit index = .88, nonnormed fit index = .86). Moreover, a nested chi-square test of the difference between the two models was significant, \( \chi^2(2, N = 206) = 220.36, p < .001 \), suggesting that the two-factor model provided a better fit to the data than a one-factor solution. Inspection of the zero-order correlation between invasion of privacy and procedural justice revealed a negative correlation (\( r = −.56, p < .001 \)), thereby supporting Hypothesis 1.

Main Effects: Invasion of Privacy and Procedural Justice

I conducted two separate three-way analyses of variance examining the effects of relevance, participation, and consistency on invasion of privacy and procedural justice (see Table 2). In support of Hypotheses 2a and 3a, both relevance, F(1, 198) = 64.26, p < .01, and participation, F(1, 198) = 5.36, p < .05, had significant negative effects on invasion of privacy. Also, both relevance and participation explained significant variance in procedural justice (a necessary condition for mediation proposed in Hypotheses 2b and 3b). However, although consistency did not have a significant effect on invasion of privacy (as I had expected), contrary to

Table 2
Analysis of Variance for Relevance, Participation, and Consistency on Dependent Measures

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>F</th>
<th>( \eta^2 )</th>
<th>df</th>
<th>F</th>
<th>( \eta^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance (A)</td>
<td>1</td>
<td>64.26**</td>
<td>.25</td>
<td>1</td>
<td>21.70**</td>
<td>.10</td>
</tr>
<tr>
<td>Participation (B)</td>
<td>1</td>
<td>5.36*</td>
<td>.03</td>
<td>1</td>
<td>13.94**</td>
<td>.07</td>
</tr>
<tr>
<td>Consistency (C)</td>
<td>1</td>
<td>0.05</td>
<td>.00</td>
<td>1</td>
<td>0.40</td>
<td>.00</td>
</tr>
<tr>
<td>A × B</td>
<td>1</td>
<td>0.07</td>
<td>.00</td>
<td>1</td>
<td>0.01</td>
<td>.00</td>
</tr>
<tr>
<td>A × C</td>
<td>1</td>
<td>0.05</td>
<td>.00</td>
<td>1</td>
<td>2.74</td>
<td>.01</td>
</tr>
<tr>
<td>B × C</td>
<td>1</td>
<td>0.03</td>
<td>.00</td>
<td>1</td>
<td>0.25</td>
<td>.00</td>
</tr>
<tr>
<td>A × B × C</td>
<td>1</td>
<td>0.02</td>
<td>.00</td>
<td>1</td>
<td>3.12</td>
<td>.02</td>
</tr>
<tr>
<td>Error</td>
<td>198</td>
<td>(2.15)</td>
<td>(1.45)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Note. Values in parentheses represent mean square errors.
*p < .05. **p < .01.
Hypothesis 4, consistency did not have an effect on procedural justice. No interaction terms were significant.

Mediating Role of Privacy

Hypothesis 2b predicted that invasion of privacy would fully mediate the relationship between relevance and procedural justice. For complete mediation to occur, the variance in procedural justice explained by relevance should be completely attenuated when invasion of privacy is controlled for. Following mediation procedures recommended by Baron and Kenny (1986, p. 1176), I established that relevance had a significant negative effect on invasion of privacy and that invasion of privacy was negatively related to procedural justice. Relevance was also related to procedural justice (r = .30, p < .001). As one can see in Table 3, invasion of privacy explained a significant 32% of the variance in procedural justice (Step 1). However, the variance in procedural justice explained by relevance was completely eliminated when invasion of privacy was controlled for. Therefore, the effect of relevance on procedural justice was completely mediated by invasion of privacy, thus supporting Hypothesis 2b.

Hypothesis 3b predicted that invasion of privacy would partially mediate the effect of participation on procedural justice. Inspection of the zero-order correlation between participation and procedural justice revealed a positive effect (r = .24, p < .001). However, examination of the hierarchical regression in Table 4 demonstrates that the variance in procedural justice explained by participation was reduced from 6% to 3% after invasion of privacy was controlled for. That is, participation had both direct and indirect effects on procedural justice, thus supporting Hypothesis 3b.

Post hoc analysis also revealed that procedural justice reduced the effects of relevance and participation on invasion of privacy, suggesting perhaps that procedural justice mediates procedural effects on privacy. Although the mediating role of procedural justice is consistent with the data, the privacy as mediator conclusion is consistent with both theory and data. Nevertheless, the mediation conclusion should be considered tentative, pending future research.

Discussion

Organizations are increasingly turning to electronic technologies to monitor and control employees (e.g., American Manage-

Table 4

<table>
<thead>
<tr>
<th>Variable</th>
<th>Step 1</th>
<th>Step 2</th>
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<tbody>
<tr>
<td>Invasion of privacy</td>
<td>−.56</td>
<td>−.54</td>
</tr>
<tr>
<td>Participation*</td>
<td>−9.74**</td>
<td>−9.42**</td>
</tr>
<tr>
<td>R²</td>
<td>.32</td>
<td>.35</td>
</tr>
<tr>
<td>F</td>
<td>94.81**</td>
<td>53.42**</td>
</tr>
<tr>
<td>df</td>
<td>1, 204</td>
<td>2, 203</td>
</tr>
<tr>
<td>ΔR²</td>
<td>.03</td>
<td>.03</td>
</tr>
<tr>
<td>ΔF</td>
<td>8.53**</td>
<td>4.53**</td>
</tr>
</tbody>
</table>

*0 = no participation and 1 = participation.
**p < .01.

ment Association, 2001), and this practice is fueling concerns about privacy and fairness in organizations. The results of this study provide causal evidence that procedural variation in the design and implementation of EPMCSs affects privacy and procedural justice perceptions. Both relevance and participation reduced invasion of privacy and enhanced procedural justice. Moreover, invasion of privacy completely mediated the effect of relevance and partially mediated the effect of participation on procedural justice, as I predicted. This is the first study to systematically examine EPMCS from both a justice and privacy perspective. This study provides empirical support for recently proposed justice-based models of EPMCSs (see Ambrose & Alder, 2000; Kidwell & Bennett, 1994a) and extends these models by demonstrating that privacy perceptions serve a mediating role between procedures and procedural justice.

A goal of this study was to test if procedures have differing effects on privacy and procedural justice. As I expected, both relevance and participation affected privacy, whereas consistency did not. Bies (1993) predicted that voice would affect privacy. Other studies have linked authorization procedures to invasion of privacy (e.g., Eddy et al., 1999). This is the first known study, however, to link participation in system design to invasion of privacy. Moreover, this is the first study to experimentally link relevance and participation to invasion of privacy in an EPMCS context. The present findings provide support for D. L. Stone and Stone-Romero’s (1998) recently proposed stakeholder model of privacy by confirming that relevance, as a norm of social justice, is likely to be a strong predictor of invasion of privacy. Together, relevance and participation establish procedural variables commonly studied in the procedural justice literature to also be important determinants of invasion of privacy perceptions.

Although the importance of relevance and participation on procedural justice has been established in a variety of contexts (e.g., Earley & Lind, 1987; Greenberg, 1986; Lind et al., 1990; Steiner & Gilliland, 1996), this is the first study to examine and find such effects in an EPMCS context. Correlational studies examining EPMCSs have linked fair procedures to organizational outcomes (Kidwell & Bennett, 1994b) and procedural practices to procedural justice (Stanton, 2000). However, this study provides causal evidence that how EPMCSs are designed and implemented affects procedural justice.

Table 3

<table>
<thead>
<tr>
<th>Variable</th>
<th>Step 1</th>
<th>Step 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invasion of privacy</td>
<td>−.56</td>
<td>−.55</td>
</tr>
<tr>
<td>Relevance*</td>
<td>−9.74**</td>
<td>−8.24**</td>
</tr>
<tr>
<td>R²</td>
<td>.32</td>
<td>.03</td>
</tr>
<tr>
<td>F</td>
<td>94.81**</td>
<td>47.35**</td>
</tr>
<tr>
<td>df</td>
<td>1, 204</td>
<td>2, 203</td>
</tr>
<tr>
<td>ΔR²</td>
<td>.03</td>
<td>.00</td>
</tr>
<tr>
<td>ΔF</td>
<td>8.53**</td>
<td>4.53**</td>
</tr>
</tbody>
</table>

*0 = both relevant and irrelevant monitoring and 1 = relevant monitoring only.
** p < .01.
It is notable that consistency in the application of monitoring across individuals failed to have a positive effect on procedural justice. Although the manipulation check was significant, it is possible that the manipulation was relatively weak. Perhaps a consistency effect might have been observed had it been operationalized such that individuals actually experienced an unmet expectation (e.g., Van den Bos et al., 1996). Nevertheless, participation exhibited both direct and indirect effects on procedural justice. The direct effect supports the notion that value-expressive qualities of participation are privacy-invariant. Consequently, the test that some procedures would affect procedural justice, irrespective of privacy, received only partial support.

An important implication of the present research emerges when one considers the psychological mechanisms that explain procedural justice and what this means for future theory building. Justice-based models have been adopted to explain individual reactions to a variety of information-gathering and control systems (Ambrose & Alder, 2000; Crant & Bateman, 1989; Gilliland, 1993; Kidwell & Bennett, 1994a). A shortcoming of these theory-building attempts is a general failure to consider the underlying mechanisms explaining procedural justice effects. This study demonstrated that invasion of privacy partly explains procedural justice effects. How these findings fit existing models of procedural justice (e.g., instrumental and relational) is a question for future research. However, the proposed framework and findings here may suggest an expanded view of the psychology of procedural justice—one that recognizes the importance of procedures that influence one’s personal identity—providing a theoretical link between instrumental and relational models of procedural justice.

Future research should continue to develop and test the proposed privacy–justice framework (see Figure 1), including the causal ordering and mediating roles of privacy and procedural justice. Examining privacy together with procedural justice may reveal new outcomes not previously examined in the procedural justice realm (Bies, 1993). In particular, research is needed to identify and test work-related outcomes unique to privacy. For example, procedures that invade privacy may lead to behaviors to protect privacy, such as withholding employee information (Eddy, 1997; E. F. Stone & Stone, 1990). The present findings should serve as a catalyst for bridging two areas of research, organizational justice and organizational privacy, which have developed largely independent of each other. Indeed, Bies (1993) noted that procedural justice research on privacy is nonexistent. This study and other recent studies (Eddy et al., 1999) add to a small but growing body of research filling this void.

The present findings have important implications for managers considering or currently using EPMCSs. Managers who find the need to electronically monitor their employees should take steps to ensure that (a) monitored activities are viewed by employees as relevant to their job performance and (b) employees have input into the electronic monitoring process. Doing so, at least in the present study, reduced perceptions of privacy invasion and enhanced procedural justice evaluations. Of course, managers and employees are likely to disagree on what is viewed as "relevant." Communicating with and involving employees in the design, implementation, and administration of EPMCSs are likely to reduce any discrepancy over what is viewed as relevant.

Creating a simulated organization required procedural trade-offs, however. The posttask manipulations were designed to create an electronic monitoring context, ranging from favorable to unfavorable, akin to an employer announcing electronic monitoring, intentionally or unintentionally, in the midst of the monitoring. However, participation provided in the midst of monitoring may be viewed differently than participation provided prior to monitoring. For example, had participation been introduced prior to any monitoring, individuals may have felt that their input would be more meaningful, and as a result, a larger effect between participation and reaction variables such as invasion of privacy and procedural justice might have been observed. Doing so, however, would have sensitized participants to the monitoring beforehand (in effect, providing advanced notice), making it less likely that they would engage in activities in which their privacy might be invaded.

Privacy and procedural justice data also were collected at nearly the same time. A clearer case for invasion of privacy as mediator could be made if invasion of privacy is established prior to procedural justice formation. Nevertheless, the present findings show that invasion of privacy statistically mediates the relationship of relevance and participation on procedural justice. Coupled with the theoretical rationale suggesting that invasion of privacy is an antecedent to procedural justice, the mediation conclusion is plausible. Future research should attempt to bolster the present findings by establishing the temporal precedent of invasion of privacy.

Notwithstanding these limitations, this study suggests that a joint consideration of procedural justice and privacy is warranted when one is considering the collection and utilization of employee information. Moreover, adopting a justice–privacy framework shows great promise for advancing the understanding of individual reactions to electronic performance monitoring and control systems.

References


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