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# The Hidden Dangers of Attending Work While Unwell: A Survey Study of Presenteeism Among Pharmacists

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*Presenteeism refers to the phenomenon whereby employees continue to attend work while unwell. Existing research suggests that presentee workers may suffer consequences to their health and mental strain. In this paper, we investigate whether such consequences also have downstream effects in terms of the errors people make at work. We studied the effects of presenteeism among a large sample of pharmacists (N = 1,205), an occupation in which errors made can be safety critical, with implications for patient health. Seventy-six percent of the pharmacists in our sample were classed as presentee, having attended work while unwell enough to have taken time off on at least two occasions over the previous year. Presentee pharmacists made significantly more minor errors and serious mistakes, such as dispensing errors, compared to nonpresentee pharmacists. They also experienced greater feelings of anxiety and depression. Mediation analyses suggested that higher anxiety rates explained why presentee employees made more errors at work. Presenteeism therefore has significant health costs for both workers and their beneficiaries and can be classed as an important work-related stressor.*

**Keywords:** presenteeism, errors, anxiety, depression, pharmacists

Illness is an inevitable part of the human condition. Taking time off work due to illness (i.e., absenteeism) may be inconvenient to both workers and their employing organizations, due to issues including increased workload on return to work and difficulties and costs associated with finding replacements. For such

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reasons, a trend termed "presenteeism" is emerging in organizations, whereby people continue to attend work even when they are ill. Although at first glance presenteeism appears to address some of the issues associated with absenteeism, it may lead to other problems. Research suggests that attending work while unwell can reduce workers' productivity, worsen the health of presentee workers, and lead to the spread of illness and may therefore have even greater costs than absenteeism (Goetzel et al., 2004).

In spite of mounting evidence for its importance, presenteeism has traditionally been a much underresearched area. According to Dew and colleagues, as of a July 2003 search, the number of published research articles concerning presenteeism was a mere .01% of those regarding absenteeism (Dew, Keefe, & Small, 2005). Thus, there are significant gaps within our knowledge of presenteeism. In particular, while presenteeism has been linked to negative consequences for employees, such as poorer mental and physical health, it is unclear whether employees who attend work while unwell are more prone to making errors. Errors can have important consequences, particularly for those working in safety-critical occupations. Yet while stressors that cause workers' health to suffer have been implicated more generally as key predictors of worker errors (Vidyarthi, Auerbach, Wachter, & Katz, 2007), the link between presenteeism and making errors is currently poorly understood. Moreover, there are many occupational groups for whom the consequences of presenteeism have yet to be identified. For example, while presenteeism is known to be most prevalent among health care professionals (Aronsson, Gustafsson, & Dallner, 2000), little, if any, research has focused on pharmacists. Not only might pharmacists experience negative consequences for their own health if they attend work while unwell, but there may also be grave implications for their patients, as an increase in employee errors could potentially lead to fatal consequences (Phipps, Noyce, Parker, & Ashcroft, 2009).

The current paper presents a large-scale survey study that extends the literature on presenteeism in two key ways. First, we provide a test of whether presenteeism is associated with higher work-related error rates. In doing so, we explore the effect of presenteeism on mental strain as a potential mechanism for the effects on error rates. Second, we examine presenteeism among pharmacists, providing the first evidence (to our knowledge) of the prevalence and effects of presenteeism in this underresearched occupational group.

## PRESENTEEISM

There is some debate in the literature regarding the definition of presenteeism. Early accounts used the term to refer to individuals who exhibited excellent attendance at work (Canfield & Soash, 1955) or to those who

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simply attended work as opposed to being absent (Smith, 1970). Others have used the term presenteeism to refer to the tendency to be reluctant to work part time rather than full time (Sheridan, 2004) or have equated presenteeism with a kind of "survivor syndrome" whereby people stay at work beyond the time needed to perform effectively (Simpson, 1998). Nevertheless, in recent years researchers have started to converge on a common definition of presenteeism as referring to situations wherein workers continue to attend work even though they feel unwell enough to take sickness absence (e.g., Aronsson & Gustafsson, 2005; Aronsson et al., 2000; Johns, 2011). In accordance with this definition, estimates of the prevalence of presenteeism usually classify someone as presentee if they have attended work while unwell at least twice over a yearlong period. Such estimates have ranged between 53% and 72% in recent population studies (Aronsson & Gustafsson, 2005; Caverley, Cunningham, & MacGregor, 2007).

The trend toward presenteeism that has emerged in organizations is troubling from a health perspective, as people may find it more difficult to recover from illness and may develop complications or pass their illness on to others (Broadhead, Blazer, George, & Tse, 1990; Kivimäki et al., 2005). For example, Rosvold and Bjertness (2001) reported that over a 1-year period, more than half of the Norwegian physicians they surveyed had attended work while having an infectious disease that could be transmitted to their patients.

However, recent conceptualizations of presenteeism advocate taking a psychological, rather than medical, approach to understanding the phenomenon and the dangers it presents (Johns, 2011). Presenteeism is thought to be strongly interlinked with stress at work, and studies of presenteeism have reported that job stress is an important trigger of staying at work even though one is unwell. For example, Elstad and Vabø's (2008) survey study of Scandinavian care workers found that as job stress increased, the level of sickness presenteeism rose sharply and to a greater extent than did the level of absenteeism. A further study of Sweden council employees reported that rates of sickness presence were significantly higher among employees who suffered burnout and emotional exhaustion compared with a nonburnout group (Peterson et al., 2008). Longitudinal research has further explicated that job stress and presenteeism are causally linked in both directions, with presenteeism also leading to burnout over time (Demerouti, Le Blanc, Bakker, Schaufeli, & Hox, 2009).

Not only are employees who go to work when feeling ill more prone to experiencing signs of strain and mental ill health (e.g., anxiety, depression; Bergström et al., 2009), but these negative consequences are also thought to compromise workers' ability to do their job (Burton, Conti, Chen, Schultz, & Edington, 2002; Lerner et al., 2004). For such reasons, researchers increasingly suggest that going to work while unwell may have more significant

costs than taking time off. A review integrating the results of five large studies reported that costs of presenteeism (operationalized as on-the-job productivity losses) associated with the 10 most costly health conditions were higher than the costs of absenteeism resulting from these same conditions (Goetzel et al., 2004). For headache/migraine, allergies, arthritis, asthma, and mental illness, presenteeism costs accounted for over 70% of the overall costs associated with the condition.

## Presenteeism and Work Errors

One of the potential costs of presenteeism that has to date been unexplored concerns its links with workplace errors. Errors are an unfortunate reality within all industrial sectors and can have devastating consequences for employees and their organizations, especially in safety-critical occupations. For example, within health care contexts, medication errors are a leading cause of unintended harm to patients (Fogarty & McKeon, 2006).

Most theories that seek to explain how and why errors occur in organizations suggest a contributory role of work-related stressors. For example, Hockey's (1997) theory explains how stressors such as high workload influence performance and errors. The idea that underlies Hockey's theory is that compensatory mechanisms typically kick in under conditions of stress, such that people seek to protect their performance by recruiting and allocating further resources. However, because people's resources are limited, this process comes at the expense of mental strain, which in turn can produce behavioral costs. In other words, when workers are under high pressure, they are only able to maintain normal levels of performance by risking their psychological health, making the probability of errors substantially larger.

Presenteeism can be conceptualized according to this theory as a form of stressor that the worker chooses, feels obligated, or is obligated to engage in. When physically unwell and continuing to attend work, maintenance of ordinary levels of performance will require greater compensatory effort (e.g., higher concentration, battling to overcome symptoms that may adversely affect work) on the part of the employee, which is likely to lead to mental strain. In support of this notion, several studies have reported strong causal links between presenteeism and mental strain (e.g., Bergström et al., 2009; Demerouti et al., 2009). In turn, this greater level of strain is likely to lead to higher rates of errors, as the capacity for paying attention to environmental stimuli and monitoring one's behavior is compromised. Indeed, mental strain has been implicated as a major cause of workplace errors (e.g., Fogarty & McKeon, 2006; Holden et al., 2010; Vidyarthi et al., 2007).

The expected link between presenteeism and errors is particularly troubling within health care occupations, not just because of the importance of errors in

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such contexts, but also because of the prevalence of presenteeism. Presenteeism rates among health care professionals are among the highest of any occupational group (Aronsson et al., 2000; Elstad & Vabø, 2008). For example, despite guidelines clearly stating that doctors have an ethical duty to ensure that their own health problems are effectively managed, the majority of United Kingdom (UK)–based consultants and general practitioners surveyed indicated that they would not take time off work when experiencing a range of health problems, including vomiting all night, unexplained headaches, and a growing dependence on alcohol (Forsythe, Calnan, & Wall, 1999). Commonly cited reasons for the high prevalence of presenteeism among health care workers include viewing daily tasks as "must-do" tasks and perceiving a difficulty in finding replacements (e.g., Aronsson et al., 2000).

Although researchers have intensively studied presenteeism among many health care occupations (e.g., hospital physicians, medical residents, general practitioners, nurses), pharmacists have so far been relatively neglected. This is despite the fact that the factors that typically lead to high rates of presenteeism in other health care occupations are likely to be equally present among pharmacists and that pharmacists work within an environment in which errors (e.g., dispensing errors) can compromise patient health and, in the most extreme cases, may cost a patient's life (Phipps et al., 2009).

In the present study, we build on existing research by studying associations between presenteeism and error rates among pharmacists. In line with the theoretical and empirical evidence discussed above, we expect that higher levels of mental strain (e.g., anxiety and depression) will account for the links between presenteeism and errors. To establish the relative importance of presenteeism as a contributing factor to work-related strain and errors, we investigate the effects of presenteeism over and above the effects of absenteeism.

*Hypothesis 1:* Presentee employees will report higher levels of errors than nonpresentee employees.

*Hypothesis 2:* The link between presenteeism and error rates will be mediated by mental strain.

## METHOD

### Participants

Participants were members of the Pharmacists' Defense Association (PDA), a not-for-profit organization that represents the interests of pharmacists in the UK. In the UK, there are no nationwide sick leave policies for

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pharmacists, meaning that policies vary across employing organizations. An e-mail was sent out to all registered PDA members that advertised the study as an investigation of pharmacists' work experiences and that included a link to an online survey. At the time, around 19,000 pharmacists were members of the PDA. The survey was available for a 1-month period, and 1,205 completed responses were returned (representing an approximate response rate of 6.3%). The sample (63% females, mean age = 41.12 years, *SD* = 12.70) had an average of 17.05 years of experience (*SD* = 13.06) working in a pharmacy. Seventy-seven percent of the sample worked in community pharmacies; 17% worked in hospital pharmacies; and 6% worked in Primary Care Trusts (PCTs, which are UK National Health Service administrative bodies responsible for commissioning primary, community, and secondary health services from providers). Of those working in community pharmacies, 12% worked in single shops, while the remaining 88% worked for pharmacy chains.

## Measures

The survey comprised a series of self-reported measures. The measures were presented in the following order: control variables, presenteeism, absenteeism, errors, and mental strain.

### *Presenteeism and Absenteeism*

Respondents were asked to complete established measures of presenteeism and absenteeism developed by Aronsson et al. (2000) and validated in numerous research studies (e.g., Aronsson & Gustafsson, 2005; Hansen & Andersen, 2008). The measures asked: "How many times during the last 12 months have you taken sick leave outside of your annual leave?" (for absenteeism) and "How many times during the last 12 months have you gone to work even though it would have been reasonable to take sick leave?" (for presenteeism). We extended the original 4-point response scale to include seven options: *not relevant*, have not been sick over the previous 12 months (*1*), none (*2*), once (*3*), 2–3 times (*4*), 4–5 times (*5*), 6–10 times (*6*), and more than 10 times (*7*). The measures were developed to be used as dichotomous, with the cutoff point being more than or less than two instances of presenteeism (or absenteeism) across the year, to match the accepted definition of presenteeism (Aronsson et al., 2000), and most studies in the literature retain this scoring system. In keeping with this, in the present study we dichotomized the items for analysis, with Responses 1–3 coded as "0" and 4–7

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(representing two or more incidents of absence or presence over the last year) coded as "1."

### *Errors*

The frequency with which errors were made by the pharmacists was assessed using two self-reported items. Although self-reported data on errors could be subject to some biases (as discussed later in the paper), self-reported measures of errors are common in the literature in health care (e.g., Fogarty & McKeon, 2006; Vidyarthi et al., 2007) and non-health care (e.g., Kecklund & Svenson, 1997) settings due to the difficulty in obtaining accurate objective data from organizations. The items regarded minor and serious errors, respectively, and were developed in consultation with a focus group of pharmacists concerning the types of errors they (or others they knew) had made at work. The pharmacists identified that medication errors with potentially severe consequences were more serious than other, more minor (i.e., less consequential) errors that could be made (e.g., an error that led to no patient harm, such as giving incorrect informal advice) and so suggested that they might be meaningfully distinguished. After developing the two items, face validity was checked with another, independent sample of pharmacists.

Both items asked about errors made over the previous 4 weeks in order to avoid retrospective biases that can affect recall of specific incidents over longer time periods (Lawrence, Roy, Harikrishnan, Yu, & Dabbous, 2013). Specifically, respondents were asked: "How many times within the last 4 weeks have you made a minor work-related mistake when at work?" and "How many times within the last 4 weeks have you made a more serious work-related mistake when at work (e.g., giving a patient the wrong medication, prescribing the wrong dosage of a medication, or prescribing medication of the wrong strength)?" We chose to specify the nature of serious errors to signal that these would be errors relating to medication with potentially severe consequences. In contrast, the nature of minor errors was not specified due to the diverse range of examples offered within our focus group. Response options were *none* (1), *none* (2), *2–3 times* (3), *4–5 times* (4), *6–10 times* (5), and *more than 10 times* (6).

### *Mental Strain*

Mental strain was measured using established scales developed by Warr (1990), assessing the extent to which pharmacists had experienced feelings of anxiety ($\alpha = .92$) and depression ($\alpha = .94$) while at work over the past month.

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### *Control Variables*

Sex, age, and years of working experience were measured as control variables for the present study. These variables were selected because they are typically controlled for in studies of presenteeism, mental strain, and errors. Although findings vary from study to study, there is some indication that presenteeism and mental strain might be more prevalent among females than males and that age and tenure may be positively associated with these outcomes (e.g., Aronsson et al., 2000; Sevastos, Smith, & Cordery, 1992).

## Data Analysis

Data were analyzed using SPSS version 20. Hypothesis 1 was analyzed using multiple analysis of covariance (MANCOVA), in which the differences between presentee and nonpresentee pharmacists were examined simultaneously on four outcome variables: minor errors, serious errors, anxiety, and depression. Absenteeism was included as a second factor in the model to identify the relative risks of pharmacists staying at work versus taking time off work when unwell. Hypothesis 2, which predicted mediation of the effect of presenteeism on errors via mental strain, was tested in two ways. First, the procedures of Baron and Kenny (1986) were followed, in which the effect of presenteeism on error rates was tested in the presence of the additional predictors of anxiety and depression in a regression analysis. Second, the procedures of Hayes (2009) were followed, with the significance of the indirect effects of presenteeism on error rates via anxiety and depression tested simultaneously using bootstrapping procedures. Bootstrapping is recommended over alternative procedures (e.g., the Sobel test) because it avoids unrealistic assumptions about the shape of the sampling distribution of indirect effects. Instead, 1,000 resamples are drawn to estimate 95% bias-corrected bootstrap confidence intervals (CIs) for all indirect effects. If the CIs do not include 0, the indirect effect is said to be significant. In all analyses, the three control variables were included (sex, age, and years of experience).

## RESULTS

Of the overall sample, 76% was classed as presentee, having attended work while unwell enough to have taken time off at least twice in the past year. Rates of presenteeism differed slightly across pharmacy types, with rates highest in hospital pharmacies (83%) compared to community pharma-

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cies (75%) and PCTs (70%), $\chi^2(2) = 6.13$, $p < .05$. A smaller proportion of the sample (43%) was classed as absentee, having taken time off while unwell at least twice in the past year. Again, absenteeism rates were highest in hospital pharmacies (65%) compared to community pharmacies (38%) and PCTs (47%), $\chi^2(2) = 47.60$, $p < .01$.

The results of the MANCOVA revealed a significant multivariate effect of presenteeism, $F(4, 1{,}117) = 21.26$, $p < .01$, on the outcome variables. Univariate analyses confirmed that there were significant differences between presentee and nonpresentee employees in all four outcomes (see Table 1). In support of Hypothesis 1, presentee employees made more minor and serious errors compared with nonpresentee employees. They also experienced higher levels of anxiety and depression.

No multivariate effect of absenteeism was observed in the MANCOVA, $F(4, 1{,}117) = 1.01$, $p = .40$. Similarly, there was no significant interaction between absenteeism and presenteeism, $F(4, 1{,}117) = 2.07$, $p = .08$. These findings suggest that being unwell in and of itself did not affect pharmacists' mental strain and errors made, because taking sick leave did not produce any additional detriments above and beyond remaining at work while unwell. Of the control variables, sex, $F(4, 1{,}117) = 6.43$, $p < .01$, and years of experience, $F(4, 1{,}117) = 2.50$, $p < .05$, both had significant multivariate effects. Univariate tests indicated that sex predicted serious error rates, $F(1, 1{,}112) = 14.96$, $p < .01$, with more errors reported by males. Years of experience predicted pharmacists' anxiety, $F(1, 1{,}112) = 8.68$, $p < .01$, with higher years of experience associated with lower anxiety.

Mediation analysis was then run to test whether mental strain was responsible for the effect of presenteeism on pharmacists' errors. The results of regression (in Table 2) show support for this proposition; presenteeism was no longer a significant predictor of either minor (Model 1) or serious (Model 2) errors when mental strain was controlled for, while anxiety (but not depression) did have a significant effect on both outcomes. Moreover, the

**Table 1.** Differences Between Presentee and Nonpresentee Employees in Core Study Outcomes

| | Presentee employees ($N = 918$) | | Nonpresentee employees ($N = 287$) | | |
|---|---|---|---|---|---|
| | Mean | *SD* | Mean | *SD* | Difference $F(df)$ |
| Minor errors | 2.47 | .04 | 2.20 | .08 | 8.83 (1, 1,112)** |
| Serious errors | 1.38 | .02 | 1.26 | .05 | 4.80 (1, 1,112)* |
| Anxiety | 3.57 | .03 | 2.91 | .07 | 80.26 (1, 1,112)** |
| Depression | 3.00 | .04 | 2.34 | .08 | 57.35 (1, 1,112)** |

*Note.* Sex, age, and years of experience were controlled for in these analyses.
* $p < .05$. ** $p < .01$.

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**Table 2.** Mediated Effects of Presenteeism on Error Rates Via Mental Strain

| | Model 1 | | | Model 2 | | |
|---|---|---|---|---|---|---|
| | Effect on minor errors | | | Effect on serious errors | | |
| Predictors | β | *SE* | *t* | β | *SE* | *t* |
| Sex | −.15 | .06 | −2.40* | −.15 | .04 | −3.86** |
| Age | .01 | .01 | 0.75 | <.01 | .01 | 0.58 |
| Experience | −.01 | .01 | −0.75 | <.01 | .01 | −0.82 |
| Presenteeism | .10 | .08 | 1.29 | <.01 | .05 | 0.05 |
| Anxiety | .27 | .05 | 5.78** | .12 | .03 | 4.32** |
| Depression | −.03 | .04 | 0.75 | .01 | .02 | 0.21 |

* $p < .05$. ** $p < .01$.

results of bootstrapping to test the significance of the indirect effects confirmed a significant indirect effect of presenteeism via anxiety for minor errors (estimate = .16, 95% CI [.10, .24]) and serious errors (estimate = .07, 95% CI [.04, .12]). In contrast, the indirect effects of presenteeism via depression were not significant (minor errors, estimate = −.02, 95% CI [−.07, .03]; serious errors, estimate = .00, 95% CI [−.03, .04]). Hypothesis 2 was therefore partially supported; the feelings of anxiety that arise from presenteeism explain why people who attend work while unwell make more errors in their work.

## DISCUSSION

The current study presents evidence that presenteeism affects the rates with which pharmacists make both minor errors and more serious errors, such as giving a patient the wrong medication or prescribing the wrong dosage of a medication. The effect of presenteeism was observed over and above the effect of absenteeism. Thus, increased error rates were not simply a product of illness; they were specifically a product of being unwell and continuing to attend work. Those pharmacists who remained at work while unwell also experienced higher feelings of anxiety and depression, with the higher anxiety shown to be responsible for the increased error rates.

The effects observed are consistent with Hockey's (1997) theory concerning how stressors affect work performance. While working when unwell, the pharmacists would have needed to exert compensatory effort to maintain ordinary performance levels, which would lead to higher anxiety and depression. In turn, this mental strain would make the likelihood of errors greater. The finding that anxiety rather than depression was responsible for higher errors is consistent with the literature on well-being, which conceptualizes anxiety and depression as unpleasant states that differ primarily based on their level of arousal (e.g., Warr, 1990). As the high arousal state, anxiety

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could be seen as more likely to interfere with the types of cognitive processes (e.g., attention, monitoring) that are necessary to avoid errors (Tobias, 1985). Depression, in contrast, is low arousal and so may not interfere as much with these processes.

Our findings of 76% prevalence of presenteeism among this population are slightly higher than the prevalence rates reported in previous studies in the working population, with estimates ranging between 53% and 72% (Aronsson & Gustafsson, 2005; Caverley et al., 2007). However, this is in line with accounts that report prevalence as particularly high among health care workers (e.g., Aronsson et al., 2000), who appear to take their own health concerns less seriously than those of their patients (Rosvold & Bjertness, 2001). Moreover, the findings largely concur with the growing body of evidence suggesting that presenteeism may be more costly for organizations than absenteeism (Goetzel et al., 2004). In the present case, presenteeism, but not absenteeism, was linked to the outcomes of anxiety, depression, and errors, all of which could lead to costs such as reduced productivity, further periods of illness, and litigation.

To the best of our knowledge, this is the first study to demonstrate that not only might attending work while unwell have implications for workers' own health, it might also lead to significant errors that could compromise other people's health. In addition, the study is the first to explore the prevalence and effects of presenteeism among pharmacists. Although presenteeism has been investigated in other health care professions, such as physicians and nurses (e.g., Aronsson et al., 2000; Forsythe et al., 1999), pharmacists have to date been relatively neglected. The study involved a large sample, with representation from different types of pharmacists (including those working in hospitals, PCTs, and community pharmacies).

Nevertheless, the study does include some weaknesses that should be recognized. In particular, the cross-sectional study design means that our findings show a link between presenteeism, anxiety, and error rates but do not prove a causal order. Although prospective studies are relatively rare in this area, those reported support the causal order proposed here; for example, Bergström and colleagues (2009) reported a causal link between presenteeism and mental ill health at 18 months and 3 years. The use of self-reported data in the present study could also have led to socially desirable patterns of responding. However, as Johns (2011) argues, "it is hard to conceive of a measure of presenteeism that would not use self-report" (p. 496), and the high reported incidence suggests that social desirability was unlikely to be a problem in terms of the reporting of presenteeism in this study. Moreover, although it could be argued that pharmacists might have underreported errors to portray themselves positively, we do not believe that this issue would have strongly compromised our findings, in that workers are likely to be more inclined to respond truthfully to an anonymous, independent survey than to

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report errors in official systems to their organizations, which may go on their employment records and be used in official decisions (e.g., about promotions). A related issue, however, is that the order of question presentation in the survey could have affected responses (e.g., participants who reported making errors might have been more likely to report suffering mental strain as a possible justification for those errors).

A further limitation of the research is the low response rate. While the sample in the study is certainly large, only 6.3% of the members of the PDA at the time actually completed the survey. The low response may be due to issues in contacting members, many of whom may not have a current e-mail address registered with the PDA or may not regularly check their e-mail; the lack of direct incentives for participation; or the overworked nature of the target sample (Phipps et al., 2009). Advertising the study as an investigation of pharmacists' work experiences helped to mitigate issues of bias in the sample in terms of having a vested interest in the issue of presenteeism, but it is possible that the final sample is not completely representative of the membership of the PDA and thus of UK pharmacists as a whole. Finally, although we controlled for some of the demographic factors that may be related to presenteeism in our analysis (i.e., age, sex, years of experience), we did not account for other demographic factors, such as ethnicity, marital status, and number of dependents, which may also be relevant factors in influencing workers' sense of responsibility and ability to be present at work. Nor did we consider working time arrangements (Bockerman & Laukkanen, 2010), worker attitudes, and health status.

Future studies on the link between presenteeism and errors should take some of the factors outlined above into account to determine whether presenteeism is still associated with error rates over and above these possible confounds. A qualitative or mixed-methods approach might also be useful to obtain richer data concerning the actual errors that are made under situations of presenteeism. In turn, this might facilitate a more comprehensive estimation of the costs associated with presenteeism in specific industry settings, such as pharmacies.

Future research should also investigate potential differences associated with presenteeism caused by different types of illnesses to determine whether anxiety and therefore error rates vary by condition. There are many people who have chronic health conditions (e.g., lower back pain) who need to continue to work rather than taking absences every time the problem arises. It will be important for future research to establish whether presenteeism in such conditions poses less threat to the worker (and potentially less threat to others) and what types of measures can be taken by the organization to prevent presenteeism in these conditions becoming detrimental. Further investigation of the contextual factors that contribute to presenteeism, such as job insecurity, managerial pressure, or difficulty in finding a replacement,

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will also be important in informing interventions to reduce presenteeism for those who have acute health conditions.

The emerging trend toward staying at work when unwell may offset some of the more immediate costs associated with absenteeism, such as replacing staff. However, the present study suggests that this trend could have devastating consequences for the well-being of pharmacists and their patients. Reducing presenteeism and its associated concerns should therefore be a high priority for policy makers. Our findings suggest that there is a need to monitor the health of employees who are attending work and to establish whether there is any external pressure (e.g., from managers) or internal pressure (e.g., fear of losing one's job) to attend work even when unwell. Any organizational practices that put undue pressure on employees to be present when unwell (e.g., policies whereby sick leave is prohibited unless a replacement can be found) should be strongly discouraged. In terms of actually reducing presenteeism, Wrate (1999) opines that in the case of doctors at least, "only a substantial increase in medical staffing may noticeably reduce doctors' presenteeism" (p. 1502). An alternative or at least complementary approach suggested by the present findings would be to tackle the consequences of presenteeism. In the present study, the main reason why errors occurred through presenteeism was the increased anxiety experienced by presentee workers. Increasing job autonomy (Wieclaw et al., 2008) or using psychoeducational interventions (Donker, Griffiths, Cuijpers, & Christensen, 2009) could help reduce anxiety among workers, which in turn could reduce error rates.

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