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Sickness Presenteeism: Measurement and Management Challenges

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Abstract

Since work can be restorative to health, attending work when unwell should not be viewed as an inherently negative phenomenon. However, the functional benefits are likely to depend on the health condition, and the psychosocial quality of the work provided. The current study used a workforce survey to explore differences in the pattern of presenteeism and absenteeism by health condition, the association of psychosocial work factors with presenteeism compared to absenteeism, and their interaction to predict health. Findings indicate that instead of substituting absenteeism for presenteeism, the two tend to coincide, but the balance differs by health condition. Presenteeism is more likely to occur in poorer psychosocial environments, reinforcing the importance of ensuring work is designed and managed in ways that are beneficial rather than detrimental to health. The findings also highlight the methodological importance of differentiating between the act and impact of presenteeism in future research and practice.

Keywords: Health risks, attitudes and behaviour, mental work capacity, musculoskeletal disorders, psychological stress

Practitioner summary: Effective management of work-related health requires that practitioners manage both sickness absence and presence together, since employees tend to fluctuate between the two when unwell. Interventions should be tailored to the specific health concern, paying particular attention to the psychosocial environment in enabling employees to continue working without exacerbating health.

Sickness Presenteeism: Measurement and Management Challenges

1. Introduction

Commonly defined as going to work when unwell (Chartered Institute of Personnel and Development, CIPD, 2015; Johns, 2010), sickness presenteeism (SP) has been highlighted as a growing concern for employers and health professionals, due to its potentially damaging effects on both employee and organisational health. SP is reported to account for a significantly higher proportion of lost productivity than missed work days due to illness (e.g. Goetzel et al., 2004; Stewart, et al., 2003), with estimates putting the cost of SP at between 6 and 10 times more than sickness absence (SA) (Collins et al., 2005; Ozminowski et al., 2004). In addition, there is a risk that working whilst unwell might exacerbate existing medical conditions, impair quality of working life, invite feelings of ineffectiveness at work (Johns, 2010), and produce a cumulative psychological burden with psycho-physiological consequences (Kivimaki et al., 2005). Longitudinal relationships have been identified between SP and burnout, causing some to label it a risk-taking organisational behaviour (Demerouti et al., 2009).

The overwhelmingly negative perception of SP, however, is at odds with academic literature, policy, and guidance regarding vocational rehabilitation, which emphasises that: "When their health condition permits, sick and disabled people (particularly those with 'common health problems') should be encouraged and supported to remain in or to (re)-enter work as soon as possible…" (Waddell and Burton, 2006, p.8). Based on a review of the evidence, Waddell and Burton concluded that work is generally good for health and wellbeing; work itself can be restorative, whereas worklessness can be detrimental to health and well-being (Waddell and Burton, 2006). Not only does remaining at work, or returning to work as early as possible support gradual recovery, but work provides individuals with a sense of accomplishment (Johns, 2010), which may also be beneficial for recovery. Consistent with the concept of work as beneficial to health, in the UK, the 'fit note' was introduced in April 2010, requiring doctors to think about their patient's ability to work and 'to encourage people back to health through work' (IOSH, 2015, p.3.). As highlighted by IOSH, given these developments, it is likely that, in the future, more people will be at work with medical conditions and impairments.

It is important, therefore, that SP is not viewed as an intrinsically positive nor a negative phenomenon (Karanika-Murray et al., 2015; Miraglia and Johns, 2015), but instead as a trigger of a range of outcomes which have the potential to be negative or positive (Karanika-Murray et al., 2015). Problematic outcomes do not arise automatically as a result of attending work unwell, but in doing so without appropriate management or adjustments being made to the work tasks, environment, or equipment, to ensure the effect on health is restorative rather than detrimental. Thus, the focus should not be on preventing SP as such, but on ensuring that attending work is the most appropriate course of action considering both the health condition and the nature of the work/working environment.

Since SP has been identified as a stronger predictor of health than SA (Caverley, Cunningham, and MacGregor, 2007), its management has been identified as an important source of competitive advantage (Hemp, 2004). Currently, however, efforts to manage SP are hampered by a lack of practical and theoretical understanding of the phenomenon (Johns, 2011). A more nuanced understanding of SP is required, once which takes into account both the nature of the health condition(s) experienced, and the nature of the work undertaken by individuals engaging in SP, to identify the circumstances under which SP might lead to positive as opposed to negative outcomes.

1.1 Functional and dysfunctional presenteeism

As reflected in Waddell and Burton's (2006) model of the relationship between work and health, health outcomes are likely to result from an interaction between differences in employees' own characteristics, strengths or vulnerabilities, and differences in the nature or design of their work, in terms of the demands and rewards it offers. Thus, the extent to which SP is functional or dysfunctional is likely to be determined by the interaction between the individual and the health condition they are experiencing, and the design of the job they are undertaking. The extent to which the job design encapsulates characteristics identified as elements of "good" work, such as high levels of control, autonomy, and social support, will determine whether remaining at work will aggravate or help to improve a health condition.

Significant associations have been found between SP and a variety of psychosocial factors such as perceived job insecurity, lack of social support, and high job demands (e.g. Baker-McClearn et al., 2010; Burton et al,. 2005; Caverley et al., 2007; Demerouti et al., 2009; Heponiemi et al., 2010; Lu et al., 2014; see Miraglia and Johns, 2015 for a recent meta-analysis). For instance, it is argued that when social resources are mobilized, employees may be better equipped to cope with the detrimental effects of SP, containing its impacts and further detrimental effects to health (Dew, Keefe, and Small, 2005; Lu et al., 2013). Dew et al (2005) found some nurses use a metaphor of work as a "sanctuary", describing their teams as "family" when discussing their experiences of SP. Those nurses were highly engaged in their jobs, and with the support of their co-workers they worked through mild sickness and eventually felt better or ignored discomfort altogether.

Not only do job and worker characteristics influence health directly, but as recognised by Johns' (2010) dynamic model of SP, these factors also influence the decision process leading to SA or SP. Miraglia and Johns argue that their dual path model speaks to some contradictions in the literature, such as inconsistent findings regarding job control; with studies identifying positive, negative, and nonsignificant associations between SP and job control. For example, although greater control is typically associated with improved health (and by extension, decreased need for SP), if greater job control allows an individual to modify their work it may make it more feasible for them to remain at work whilst sick (thereby leading to increased SP through the attitudinal/motivational path).

Furthermore, whilst the substitution hypothesis (Caverley et al., 2007) posits that employees tend to use SP as a substitute for SA, other evidence has identified the two outcomes as positively correlated, suggesting instead that when employees are unwell they tend to engage in both SA and SP (Leineweber et al., 2012). In contrast, Leineweber et al. argue that the pattern of SA/SP behaviour is likely to differ depending on the health condition affecting the individual. Health problems like the common cold, influenza, and acute gastric problems, for instance, may inevitably lead to both SA and SP within the same time period, being largely random events relatively unrelated to other health and work-related factors. In

contrast, they contended, more severe illnesses may tip the scale, leading more often to SA as opposed to SP. This contrasts with the substitution hypothesis, according to which the nature and severity of ailments observed under SA and SP should be substantially similar (Caverley et al., 2007).

Needless to say, the optimal approach and rehabilitation path will vary drastically for the diverse range of conditions identified as common causes of SP. Consequently, an understanding of the patterns of SP and SA adopted by individuals according to the health condition experienced would provide a useful starting point for developing an understanding of the extent to which this is likely to be a functional or dysfunctional behaviour. Furthermore, given the relative invisibility of SP compared to SA, it is possible that the conditions for which employees tend to adopt SP are more likely to go untreated than those for which employees take SA. Given the importance of early intervention, it is important to identify whether this is the case, and to prevent the potentially detrimental consequences. In fact, once identified, evidence suggests that 'presentees' are significantly more likely (than those absent) to complete a prescribed functional restoration treatment program, to return to work (full-duty or full-time), and to retain work 1-year posttreatment (Howard, Mayer, and Gatchel, 2009).

1.2 Measurement challenges

Measurement issues have been highlighted as a significant barrier impeding progress towards a fuller understanding of SP and its management (Johns, 2010). Numerous measurement approaches have been adopted to measure presenteeism (see Johns, 2010 for a review), broadly falling into two main categories. The first involves assessing SP by measuring the act/duration of presenteeism (i.e., number of days attending work despite being unwell). The second assesses SP via its impact on performance at work, as an estimated rating of the extent to which their ill-health has affected their productivity. Recall periods for the second approach typically vary between 1 week and 1 month, some of which are then multiplied accordingly to provide an annualised productivity decrement estimates. The second approach "…takes the act of presenteeism, as defined above, for granted and does not usually measure it directly." (Johns, 2011, p.483). As recognised by Johns (2010, 2011), the failure to distinguish

between the act of SP and any subsequent reduction in productivity that this causes, is a significant limitation. As a result, this study assessed SP using both approaches, assessing both the act of SP (number of days attending work whilst unwell) and the estimated impact of this on the individual's productivity.

1.3 Current study

Clearly, SP is a complex phenomenon with multiple potential antecedents and mediators (see Johns, 2011; Miraglia & Johns, 2016 for reviews), yet the majority of research has approached SP from the perspective as a risk factor for ill-health, overlooking potentially beneficial outcomes. In addition, as emphasised by Cooper and Dewe (2008), 'most of the presenteeism research comes from the USA, Canada and Australia with little published UK data to draw on.' (p.523). This is a concern since a third (31%) of UK organisations reported an increase in SP in recent years, whilst over half (56%) have failed to take any steps to prevent or discourage it (CIPD, 2015). This study provides the first known quantitative assessment of SP in a UK based organisation.

As highlighted by Johns (2010), presenteeism research has the potential to contribute to the literature by addressing the grey area that exists between SA and full work engagement. Work has the potential to be promoting of health, yet this is likely to depend on the nature of the health condition, and the extent to which the work constitutes 'good' work from a psychosocial perspective. Furthermore, whilst SP should not be viewed as inherently good or bad, there is a risk that if efforts aren't made to proactively identify ill-health amongst those present at work, the health conditions contributing towards SP may go unaddressed. The purpose of the current study, therefore, was to advance understanding of SP by exploring (i) if and how the profile of SA/SP adopted by employees differs significantly according to the health condition experienced, (ii) the extent to which psychosocial factors at work are differentially associated with SP compared to SA, and interact with SP to predict health, and finally (iii) the extent to which employees have received/are receiving treatment for the health conditions identified as the leading causes of SP.

2. Method

2.1 Sample and procedure

A questionnaire was administered to all 1,300 employees of a large UK Utilities organisation. Prior to full distribution the questionnaire was piloted with a small group of employees, resulting in minor amendments to wording and formatting. Due to the combination of office-based and field staff, the survey was distributed both in hard copy and electronically, with a freepost envelope for return direct to the independent research team. Employees were given a 4-week window within which to respond, with a reminder issued mid-way through this period. All questionnaires were accompanied by an introductory letter explaining that the purpose of the survey was to explore employee health and wellbeing at work, and that all responses were anonymous and confidential to the research team.

A total of 316 responses were received, reflecting a 24% response rate. Consistent with the demography of the workforce as a whole, the majority of respondents (82%) were male. Mean age was 44 years (SD 11 years), and mean length of tenure with the organisation was 15 years (SD 10 years). Respondents represented the range of business areas within the organisation, which can be broadly classified as scientific or technical (52%) and business support (48%).

2.2 Measures

The questionnaire comprised a combination of dichotomous, categorical, numerical, multiple-choice and rating scale items, incorporating some standard instruments and some bespoke elements. A number of qualitative items were also included. Specific measures included in the questionnaire are described below.

Presenteeism. Different methods for measuring presenteeism are available, ranging from estimates of the number of days on which an individual attended work when feeling unwell (e.g. Caverley et al., 2007; Leineweber et al., 2012; Lowe, 2002), to ratings of average performance over a given period of time, on a scale of 0-10 (worst performance to top performance) (e.g. Kessler et al., 2003; Ozminkowski et al., 2003). The current study included means of assessing both the act/duration of SP and its estimated impact on productivity.

The act of SP was assessed using a single item; '*During the past 12 months, how many days have you worked despite feeling unwell?*"; as adopted in numerous previous studies (e.g. Caverley et al., 2007; Gerich, 2014; Leineweber et al., 2012). An open ended response format was used, to avoid issues such as priming effects associated with the provision of a range of categorical responses from which to select (Johns, 1994, 2010). A 12 month time frame was adopted, in keeping with previous studies (e.g. Caverley et al., 2007; Gerich, 2014; Leineweber et al., 2012) and in recognition of the fact that health can fluctuate significantly over the course of a year, therefore a shorter snapshot (e.g. past 28 days) may not reflect an individual's health over the course of a given year. This is particularly problematic if that 28 day period is then used to calculate annual productivity loss. Although recall problems present a potential issue with longer time periods, Demerouti et al. (2009) reported test-retest reliabilities of .58 or greater for 6 month and 1 year intervals for the Aronsson presenteeism frequency measure (Aronsson and Gustafsson, 2005; Aronsson, Gustafsson, and Dallner, 2000).

The second assessment of SP assessed its impact on performance, using the presenteeism component of the World Health Organisation's Health and Work Performance Questionnaire (Kessler et al., 2003), with the wording adjusted to relate to health-related presenteeism only; "*How have your health problems affected your overall work performance in the past 12 months, using the 0-10 scale?*". The timescale was extended from 28 days to 12 months to provide compatibility with the days estimate employed by Caverley et al and others, described above, in addition to comparison with annual sickness absence figures, and to enable an annual cost of presenteeism to be calculated. This decision was also consistent with Goetzel et al.'s (2003) finding that a 3 or 12-month timeframe was statistically preferable to a 2-week timeframe. To allow for an estimate of the cost associated with any reduced performance associated with presenteeism, respondents were asked to identify their salary band (from a list of the participating organisation's salary bands).

Respondents were asked to denote the specific nature of health problems that they were experiencing when they worked despite feeling unwell in the last 12 months. A list of common health concerns was provided, including an "Other" section. For each health concern identified,

respondents were also asked if they had received any treatment for the problem. Two qualitative items were incorporated into the survey. All respondents were asked if they ever feel pressured to come to work when they are unwell, and if so, what makes them feel this way. In addition, to investigate the potential knock-on effect of colleagues attending work when unwell, respondents were asked whether their own ability to get their work done had been affected by any colleagues coming to work when unwell, and if so, how they were affected.

Absenteeism & General health-related information. Respondents were asked how many days sick leave they had taken in the past 12 months. Company data for sickness absence rate was also obtained. Perceived general health was assessed on a 4-point scale (poor, fair, good, very good).

Work-related factors. Questions were included to assess work-related factors including job role (to be categorized into field or office-based roles), department/business area, tenure with the organisation, employment status (permanent or temporary), full or part-time work, whether or not payment is received for overtime and salary band. The short form General Nordic Questionnaire for Psychosocial and Social Factors at Work (QPSNordic+34; Lindstrom et al., 2000) was used to assess respondents' perceptions of their work environment, including job demands, role expectations, control at work, predictability at work, mastery of work, social interactions and leadership. Individual items (see Table 4) were rated on an ordinal scale with 1=Always, 2=Often, 3=Sometimes, 4=Rarely, 5=Never. Ordinal reliability coefficients (alphas) for the multi-item subscales were as follows: 0.64 (job demands), 0.62 (role expectations), 0.72 (control), 0.33 (predictability), 0.76 (social interaction/support), and 0.84 (leadership).

2.3 Analysis

The act and impact of presenteeism was assessed by the mean estimated number of days having worked despite feeling unwell in the last 12 months (e.g. Caverley et al., 2007), and the mean estimated performance detriment (Kessler et al., 2003). The cost of lost productivity associated with this calculated using the mid-point of each respondent's salary against their individual performance detriment rating. Means and standard deviations were calculated for the estimated number of days on which performance was affected by each different health

condition, in addition to the percentage of the sample that reported having experienced presenteeism associated with each health condition.

Relationships between presenteeism (estimated number of days having worked despite feeling unwell in the last 12 months) and the independent variables assessed were explored using correlations, parametric and non-parametric independent t-tests. A hierarchical ordinal regression was used to assess whether presenteeism was a stronger predictor of health than sickness absence. Psychosocial and Social Factors at Work (from the General Nordic Questionnaire) were also investigated as predictors of health including potential interactions with presenteeism using moderated ordinal regression methods. Finally, following Caverley et al. (2007), the sample was divided into four groups reflecting whether they were below or above the median on presenteeism and absenteeism, with Chi-square tests carried out to assess whether the ailments associated with presenteeism differ from those associated with absenteeism.

3. Results

3.1 The extent, nature, and impact of presenteeism

The mean number of days that employees reported having worked despite feeling unwell (SP) in the last 12 months was 13.09 days (95% Confidence Interval (CI): 9.08 to 17.10 days), significantly higher than the mean number of self-reported days sickness absence (5.63 days, 95% CI: 3.95 to 7.30 days) over this period. Company data provided some evidence of concurrent validity of the self-reported estimates, with an average annual sickness absence rate of 6.63 days. In terms of the impact of SP on productivity, respondents reported operating at 84% of full capacity on average. This equates to a mean productivity loss due to presenteeism of 16%, with some workers estimating their level of functioning at 100% capacity and others reporting their average functioning at as low as 20% of full capacity over this period. Using each respondent's own salary band mid-point, this equates to a mean lost productivity cost of £4,058.93 (95% CI: £3,276.75 to £4,822.46) per person per annum.

The health conditions reported as having affected performance at work over the past 12 months are presented in Table 1, reflecting both the proportion of respondents reporting each condition and the average number of days on which their performance was affected by it. This reveals that whilst colds and flu was the SP condition affecting the largest proportion of employees (59%), it was musculoskeletal conditions, specifically hand and wrist problems, followed by arthritis, which accounted for the largest number of SP days. In partial validation, these findings are consistent with the leading causes of SA in the UK in terms of both percentage of employees affected and duration (UK Office of National Statistics, 2014), to be expected given the positive correlation between SA and SP.

[INSERT TABLE 1 ABOUT HERE]

There were no significant differences in presenteeism according to department/business area, length of tenure with the organisation, employment status (permanent/temporary), full or part-time workers or payment for overtime. Significant differences were found between office and field-based workers in terms of both presenteeism (t (297) = 2.31; $p < 0.05$) and sickness absence (t (309) = 2.21; $p < 0.05$), both of which were significantly higher among field-based employees.

Significant correlations were found between perceived general health and both presenteeism ($r = -.24$, $p < 0.001$) and sickness absence ($r = -.17$, $p < 0.05$, and between presenteeism and sickness absence ($r = .34$, $p < 0.001$). However, a hierarchical regression identified presenteeism as a stronger predictor of health than sickness absence. With perceived general health as the dependent variable and presenteeism and absenteeism as independent variables, entered in that order (following the findings of Caverley et al., 2007), presenteeism accounted for a small, but significant percentage (7.7%) of variance in health rating. The addition of absenteeism did not result in a significant increase in the variation accounted for, nor did the interaction (see Table 2).

3.2 SA/SP profiles for different health conditions

Closer examination of SA/SP patterns at the level of the specific health condition, addressing the first main objective of this paper, confirmed that the profiles of SA/SP adopted by employees differ significantly according to the health condition experienced. The sample was divided into four groups reflecting whether they were below or above the median in terms of days presenteeism and absenteeism (following Caverley et al., 2007). The results are shown in Table 3, where A and P stand for 'absenteeism' and 'presenteeism', and where the subscripts H and L stand for 'high' and 'low'. Significant differences between the groups are indicated, revealing distinctly different patterns of behaviour for certain health conditions. For instance, the largest proportion of individuals with colds/flu fall into the low SA/low SP category, suggesting that this health condition rarely triggers significant amounts of SA, nor does it impact on productivity at work for long periods of time. The profiles for stress, depression/anxiety and lower back pain, on the other hand, reveal a larger proportion of individuals in the high SA/high SP condition, indicative of the typically chronic nature of these conditions, and relatively fewer in the high SA/low SP category. This may reflect the typically gradual progressive nature of these conditions, making it unlikely that individuals will move directly from being fully productive at work straight to sickness absence. Alternatively, it could indicate that individuals are unlikely to take SA until the condition is relatively progressed, having been affected at work for some time. The low SA/high SP category reflects an interesting scenario for examination of work-related ill-health, since individuals in this category are finding that their performance at work is affected by their ill-health, yet are not taking time off to rest and recuperate. The largest proportion of individuals experiencing neck or shoulder pain fell into this category.

[INSERT TABLE 2 ABOUT HERE]

[INSERT TABLE 3 ABOUT HERE]

3.3. Relationships between SA/SP and psychosocial factors

The second objective of this paper was to explore the extent to which psychosocial factors are differentially associated with SP compared to SA, and interact with SP to predict health. Fifteen of the 22 items in the General Nordic Questionnaire for Psychosocial and Social Factors at Work were significantly correlated with SP, but only three with SA, although reflecting only weak associations (see Table 4). The differential pattern of correlations suggests that the design and management of work has a stronger association with SP than SA. Furthermore, correlations suggest that SP is less likely to occur when the individual's work possesses stronger psychosocial qualities (i.e. clear expectations, reasonable demands, high level of control, good social support). The 'social interaction/support' construct of the General Nordic Questionnaire for Psychosocial and Social Factors at Work was found to be a significant predictor of health (see Table 5), although there was no significant interaction between social interaction/support and presenteeism in predicting health (Table 6). There were no other significant interactions between SP and any of the other psychosocial factors in predicting health.

[INSERT TABLE 4 ABOUT HERE]

[INSERT TABLE 5 ABOUT HERE]

[INSERT TABLE 6 ABOUT HERE]

3.4 Extent to which SP health conditions are being treated

Given the relative invisibility of SP, a third objective of the current study was to explore whether this means that the conditions causing SP tend to go untreated. The aim of the analysis was to focus on the most prevalent SP conditions, so given the difference identified between the types of SP conditions affecting the largest number of individuals compared to the largest number of days SP, a calculation was made to identify the SP conditions with the largest combined prevalence. This involved multiplying the number of individuals reporting each condition by the mean number of days for which they reported to have been affected by it at work, resulting in a 'top 5' of SP conditions in terms of combined prevalence. The top 5 health

conditions are shown in Table 7, and alongside each, the proportion of employees that are/had received any type of treatment for that ailment is shown. Taking both prevalence and duration into account reveals that stress, anxiety/depression was the condition having the largest combined impact, but was the condition for which the smallest proportion of employees reported having received any form of treatment or intervention (22%). In contrast, however, the condition with the fifth highest combined prevalence, arthritis, was clearly well identified, with 69% having received treatment or intervention for it.

[INSERT TABLE 7 ABOUT HERE]

4. Discussion

Consistent with Leineweber et al. (2012) and in contrast to substitution theory (Caverley et al., 2007), this study revealed a positive correlation between SP and SA, suggesting that instead of substituting SA for SP, employees tend to engage in both. However, in addressing the first aim of this study, exploration of the SA/SP profiles revealed a more nuanced picture, with SA/SP profile differing according to the health condition concerned. Confirming the proposal by Leineweber et al. (2012), it appears that employees tend to fluctuate between SA and SP during the course of an illness, but the balance between the two options is likely to differ dependent on the health condition. Thus, these findings highlight the importance of further research exploring SP at the level of specific health conditions, and the need for employers to take a tailored approach to managing work-related health. The management approach for the high SA/low SP category, for example, would be to focus on identifying the barriers (physical or psychological in nature) that are preventing a return to work. In contrast, individuals in the high SA/high SP category are likely fluctuate between sickness absence and presence, and when at work are more often unable to adequately perform their tasks. This group requires robust occupational health assessment and rehabilitation advice, and once every attempt to rehabilitate and support a return to work has been exhausted, consideration may need to be given to the appropriateness of dismissal on the grounds of ill-health.

Stress, depression/anxiety and lower back pain showed similar profiles, tending to involve high levels of both SA and SP, and much less likely high SA/low SP. This may reflect the typically chronic and gradually progressive nature of these conditions in many cases, meaning that there is typically a grey area between full engagement with work and SA, where SP arises. This has significant implications for management of these conditions, given the importance of early intervention with lower back pain and stress, depression, or anxiety. Alternatively, it could indicate that individuals are unlikely to take SA until the condition is relatively progressed, having been affecting them at work for some time, a scenario which warrants further testing.

The low SA/high SP group presents an important group for the study and management of work-related ill-health. These individuals are less likely to be absent as a result of their symptoms but are finding it difficult to perform their duties. For this group of individuals, the management approach for would be to focus on making adjustments to the work to remove or reduce the physical or psychological factors which are impeding an individual's ability to perform their work. Individuals experiencing neck/shoulder pain, tended to fall into this category most commonly, although closely followed by the high SA/high SP category. This pattern is similar to that found in previous studies of individual with neck and shoulder injuries, which have recognised that most workers with these conditions tend to experience productivity loss more from decreased performance at work than sickness absence (Van den Heuvel et al., 2007). In addition, following Leineweber et al.'s proposition, it is possible that neck/shoulder pain encompasses a range of more specific conditions or problems ranging in severity, which could could explain the large proportions in both the low SA/high SP or high SA/high SP categories.

In summary, the findings support the proposition that many conditions are likely to lead to both SA and SP within the same time period, but the balance of SA and SP tends to fluctuate depending on the health condition. Previous authors have recognised that due to the complex interaction between work and health, different forms of absenteeism need to be looked at in parallel (Landstad et al., 2010). We reinforce and extend this proposition, arguing that to understand the impact of work on health (and vice versa), both absenteeism and presenteeism

behaviours must be observed in parallel, but also over time. Given the potentially wide variation of severity within some of the ill-health categories, further longitudinal and in-depth case-based research is needed to gain a more detailed understanding, and to explore any trends in the temporal sequencing of SA and SP for specific health conditions.

Furthermore, in the current study there were no significant differences between the SA/SP categories for a number of health conditions. Although this may be due to a lack of power since only a small numbers of individuals experienced certain conditions, it could also be indicative of vast individual differences in how people manage common health conditions in relation to their work. This notion is consistent with Waddell and Burton's model of health outcomes arising from a complex interaction between characteristics of the individual and of the nature or design of their work, as well as Johns' (2010) dynamic model of SP which recognises that job and worker characteristics not only influence health directly, but also influence an individual's decision process between SA and SP. Indeed, previous research has recognised that many individual and organisational factors influence the decision of an employee to report sick (Bos et al., 2007). Inevitably, therefore, these factors also determine the alternative; to attend work when sick. Further research is needed to explore the SA/SP decision-making process in more depth, to understand the factors which are more likely to influence an individual to opt for SA above SP (and vice versa), under what circumstances, and why.

The second objective of the current study was to explore the psychosocial work conditions under which SP is more likely to take place, compared to SA. The findings reveal stronger relationships between the psychosocial qualities of work and SP compared to SA. SP is more likely to occur when the psychosocial quality of work is poor, specifically, when there are unclear expectations, excessive demands, low levels of control, and poor social support. This is consistent with the notion that psychosocial factors influence SP directly, via the health route (Miraglia and Johns, 2015) since a positive psychosocial environments is associated with improved health, thereby decreased need for SP. Indeed, the moderated ordinal regression analysis in the current study identified social interaction/support to be a significant predictor of health, consistent with the substantial body of research which highlights social support as a key

predictor of physical and psychological health (see Berkman, Glass, Brissette, and Seeman, 2000). The absence of any significant interaction between this and presenteeism, in predicting health, however, means that we did not find evidence for the moderating influence of psychosocial factors on health via presenteeism. Given the mixed findings regarding the relationship between psychosocial factors and presenteeism in previous research, and the finding in this paper that patterns of SP behaviour vary significantly depending on the health condition, future research with a larger sample size would be beneficial, to confirm the impact of psychosocial factors on SP/SA profiles for different health conditions.

Consistent with the principles of vocational rehabilitation (e.g. IOSH, 2015), when the work allows or is modified to allow, individuals experiencing ill-health should remain in or return to work as soon as possible. The findings of the current study are consistent with the importance of good work design and management in reducing SP, thereby helping individuals to remain at or return to work without their health impacting detrimentally on their performance. The current study also identified SP as a stronger predictor of health than SA, in line with Caverley et al., and supporting the proposition that efforts to improve health might be more effectively focused on SP than on SA. Although SP has the potential to be beneficial to health, given the well-documented advantages of remaining active and engaged with modified work (Waddell, Burton, and Kendall, 2008), this is not a given; work must be well-managed if the health benefits are to be reaped.

In addition, to ensure that SP is functional (i.e. health promoting), management must be proactive. A potential risk of SP, given its relative invisibility, is that health conditions go unnoticed, untreated, and unmanaged. Thus, the third purpose of the current study was to identify the extent to which the most prevalent SP conditions are ones for which employees had or are receiving some form of treatment or intervention. The leading cause of SP (stress, depression/anxiety), a condition for which only 22% of those reporting it has or were receiving any form of treatment or intervention. However, this was not a consistent pattern across the top 5 SP conditions. Instead, the extent to which treatment had or was being received varied widely across the top 5 SP conditions. For instance, 69% of those experiencing arthritis, the fifth most

common SP condition, had or were received treatment for it, suggesting that the extent to which treatment had been sought might be more attributable to the condition rather than the fact that it was widely associated with presenteeism.

Collectively, these findings highlight that effective, proactive occupational health advice and management is critical to ensure that employees take the appropriate course of action, so that when it occurs, SP is functional. This may not always be the case, since SP might often occur without an employer's awareness, leaving employees to make the SA/SP decision without support or advice, and possibly even without a great deal of conscious consideration. Instead, employees need to be encouraged to raise health concerns with their employer early so that they can receive appropriate support and advice as to the best course of action.

To help advance understanding of SP and identify implications for theory, practice, and further research, Figure 1 presents a conceptualisation of the findings, also drawing upon previous SP research. It reflects a feedback loop from SP/SA to health status since, depending on its appropriateness, the chosen course of action may be restorative (as evidenced by the vocational rehabilitation literature) or may exacerbate ill-health. For instance, recovery may be hindered if SA continues when returning to work (potentially with modified duties) would have been more beneficial, or if a person remains at work when unwell without appropriate modifications having been made. SP is reflected in the broader context of wellbeing; defined as an individual's cognitive and affective evaluation of their life, including satisfaction with important domains, positive affect, and low negative affect (Diener, 2000). Not only is wellbeing an important predictor of physical and mental health, but recent evidence suggests it might also provide explanatory power for productivity beyond ill-health alone (Gandy et al., 2014). Finally, the correlation between SA and SP is acknowledged by a two-way connector, reflecting the potential for a vicious cycle of ill-health to emerge if SP and SA are not adopted appropriately, although this relationship requires further exploration to identify any temporal causality.

[INSERT FIGURE 1 ABOUT HERE]

Assessment of presenteeism

As highlighted by Johns (2010), one of the two main approaches to SP measurement involves assessing the number of days an employee has attended work whilst feeling unwell, days which are typically then considered lost productivity days. However, as these findings reinforce, it is not necessarily the case that employees are 100% unproductive, or even that productivity is affected at all, when employees attend work despite experiencing ill-health. This bolsters the argument put forward by Johns (2010) that it is essential to differentiate between the act of SP (number of days attending work while sick) and its impact on work productivity. In the current study, participants reported an average productivity detriment as a result of SP at 16% over the previous 12 months (in other words, operating at 84% of full capacity, on average), comparable to estimates from Goetzel et al. (2004) of between 6.8% - 20.5% productivity detriment. It has been argued, however, that estimates of the impact on productivity may be exaggerated due to factors such as priming of health related questions, implicit theories about the connection between health and performance, and the inherent vagueness of what constitutes full productivity (Johns, 2010). Indeed, if one adopted the alternative method, and calculated the cost of SP based on the act of SP instead, as some studies have, assuming (falsely) that productivity was nil on each of these days, the mean cost of lost productivity would equate to a much lower figure of £659.61 per person per annum (compared to £4,059 based on the performance detriment rating).

These findings underline the inherent challenge and complexity of assessing SP, and accentuate the need for more sophisticated measures which take a combined account of both the act of SP and its impact on performance. In addition, these findings caution against making absolute (as opposed to purely relative) comparisons of presenteeism data. Arguably, improvements could be made in future by adopting a multiple item, job analysis type scale which requires respondents to reflect more specifically on how their health condition(s) have impacted upon certain aspects of their job performance (e.g. WLQ, Lerner et al., 2001). However, existing tools of this nature use predetermined lists of health conditions that do not necessarily reflect all health conditions associated with presenteeism, particularly for use outside of the countries in which they were developed.

More guidance on appropriate ways of calculating the cost of productivity loss (for instance, recognising the many other costs associated with SP beyond salary, and accounting for international differences) is needed to improve the validity and comparability of different cost estimates. However, little progress appears to have been made in this area since Goetzel et al. (2004) made a similar call over a decade ago. At the same time, it is also worth questioning the value of making comparisons between different organisations, not to mention different nations, given the complexity of SP and organisation-specific factors likely to be influencing it.

Methodological Limitations

The challenges of measuring presenteeism are well documented (e.g. Johns, 2010). Since no existing tool measures both the duration and performance impact of presenteeism, the current study combined methods used in previous research. This included an estimate of duration via days presenteeism in the past 12 months (as per Caverley et al.), and elements of the HPQ scale to assess impact. To compare the two, the HPQ's usual 28 day time period was extended to 12 months. Although this introduces the risk of recall issues, respondents' SA estimates over the same 12 month period were accurate (verified by company absence data). Furthermore, Demerouti et al. (2009) reported test-retest reliabilities of .58 or greater for 6 month and 1 year intervals, and Goetzel et al. (2003)[1] found a 3 or 12-month timeframe statistically preferable to a 2-week timeframe. Goetzel et al. also highlight that extrapolating from a single 28 day period to a year is likely to lead to overestimated time losses from any given condition that could be short lived. This could equally lead to underestimates if the identified 28 day period happened to be illness free.

The effect of subtle wording variations in these two methods also warrants further investigation. For instance, the number of days worked despite feeling "unwell" in relation to duration, compared to the HPQ which enquires about "health problems" affecting performance. Although subtle, respondents may perceive being unwell differently to having a health problem. For instance, some may not class arthritis as being "unwell", but may consider it a health

[1] Development and Reliability Analysis of the Work Productivity Short Inventory (WPSI) Instrument Measuring Employee Health and Productivity

problem. Indeed, Vingard, Alexanderson, and Norlund (2004) argued that the definition of presenteeism as attending work when ill could be problematic because many people continue to work given that the condition they are experiencing does not affect their workability, and therefore may not think themselves ill. Further bias in presenteeism reporting may even result from respondents' reaction to their organisation's culture and values (Yamamoto, Loerbroks, and Terris, 2009).

At 13.09 days per year on average, SP in this UK sample was higher than that reported in two previous Canadian studies which have produced a days/duration estimate (3.89 days, Caverley et al., 2007; and 6.7 days; Lowe, 2002). Since mean SA in the current sample (6.63 days based on company data) also higher than that reported by Caverley et al. (2.87 days), it is possible that that the current sample was generally an unhealthier sample. However, this figure is in line with UK norms for SA (6.6 days in the private sector, CIPD, 2014). As a proportion of all sick days (both present and absent), at 70% SP in the current sample is higher than in the aforementioned studies (58% in Caverley et al., 2007; 30% in Lowe, 2002), but similar to Stewart et al. (2003), who identified SP as 71% of total health-related lost productive time in a large U.S. sample.

Finally, it is recognised that the findings of the current study were derived from a single organisation, thereby limiting their broader generalizability. The response rate (24%) was relatively low, although perhaps not surprisingly so given the large proportion of mobile workers in the target organisation. In addition, as with any study gathering data from people in the workplace, there is a risk of excluding those currently absent. Although a 4-week window was provided for responses to the survey, those on long-term sickness absence may still have been missed.

Practical implications & Future recommendations

Managing SP offers the potential for organisations to gain competitive advantage by reducing costs and enhancing productivity, also enhancing employee health and wellbeing. Given the positive correlation between SA and SP, not only could proactive measures to prevent SP help to reduce the cost of lost productivity at work, but they are also likely to reduce

SA and the additional costs associated with it. Such measures might include encouraging early reporting, proactive health screening and health promotion activities. In targeting such initiatives, organisations and practitioners should consider the combined impact of SP (prevalence x duration of impact on performance at work), thereby tackling the conditions having the most significant impact on health and productivity overall, and should design interventions with the support of qualified Occupational Health Professionals to determine the optimal strategies. For instance, with the exception of contagious illnesses, with many common conditions it is often better to remain at work in order to stay active since work can often play a positive role in facilitating recovery. Employees do not need to be 100 per cent fit to continue to work, yet tasks or the working environment may need to be appropriately modified to ensure that the work remains beneficial and not detrimental to health and wellbeing.

Advancement of presenteeism research, and subsequent development of theory and practical knowledge regarding its management, hinges upon development of a measure which takes into account both the duration of SP and any associated performance detriment. Moreover, this tool should also account for the fact that people can (and indeed often) experience more than one condition at once (co-morbidity), which may have separate, differing impacts on performance as well as a combined impact.

In addition, to provide the theoretical development that the construct desperately needs, further research is needed to explore *why* people engage in SP. Such investigations would benefit from exploring health status in its fullest sense; to include wellbeing and the individual, psychosocial, and organisational factors that act as antecedents of SP. As noted by Lu et al. (2014), people may report to work when feeling unwell for very different reasons, and the large standard deviations in presenteeism duration identified by the current study suggests wide variation in terms of individual differences. As highlighted by Gerich (2015), the full range of factors influencing the SP/SA decision process are largely undiscovered, and further research is needed to examine relative contribution of such factors in terms of their influence on health, the SP/SA decision, or both. In the current study presenteeism was significantly more prevalent among field-based staff, for whom qualitative data revealed that the build-up of work (and

absence of cover) appeared to trigger a knock-on effect of further SP and SA among the team members left to shoulder the burden. As a result, the introduction of a 'roaming' cover arrangement for field-based teams may well provide return on investment; a worthy target for future intervention research. Additional qualitative research would also be beneficially targeted at shedding light on the motivational dynamism that drives presenteeism as a behavioural manifestation.

The current study does not provide support for the substitution hypothesis, instead suggesting that when unwell employees tend to engage in both SA and SP. Future longitudinal research is now needed to explore any more subtle, causal relationships that may exist or develop over time, and to identify any trends in causality between SA and SP, or whether people do indeed engage in a mixture of both during any single episode of ill-health. Since this is likely to differ according to the specific health condition(s) experienced, future research should ensure that such differences are examined by condition. Furthermore, in the broader context of occupational health and wellbeing research, particularly studies evaluating workplace health promotion interventions for example, it is important that outcomes are measured in terms of health, SA, and SP since SA may turn out to be a rather blunt indicator of the health of a given occupational population, and in cases when an impact on SA is not evident there may be an impact on SP.

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List of Tables

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Table 1. Health conditions affecting the largest number staff and accounting for the largest number of days presenteeism

Percentage of sample affected by health condition at work, in the past 12 mths		Mean number of days affected by health condition, in the past 12 mths	
Colds and flu	59%	Hand or wrist pain	81.64 (SD 142.40)
Lower back pain	31%	Arthritis	66.00 (SD 129.95)
Stress, anxiety or depression	21%	Stress, anxiety or depression	30.33 (SD 63.64)
Migraine	20%	Asthma	26.19 (SD 90.46)
Upper back, neck or shoulder pain	20%	Heart or circulatory problems	23.68 (SD 58.40)
Gastrointestinal	17%	Upper back, neck or shoulder pain	18.02 (SD 56.85)
Allergies	16%	Lower back pain	13.25 (SD 40.82)
Heart or circulatory problems	6%	Allergies	11.80 (SD 29.34)
Hand or wrist pain	6%	Gastrointestinal	9.11 (SD 23.12)
Asthma	5%	Colds or flu	4.31 (SD 5.36)

Table 2. Hierarchical regression analysis predicting health based on Presenteeism and Absenteeism.

	Nagelkerke R^2	*β*	*Standard error*	*Wald*	*p (Goodness of fit)*
Presenteeism	0.077	-0.545	0.143	14.586	<0.001***
Absenteeism	0.080	-0.224	0.185	1.472	0.115
Presenteeism x Absenteeism	0.083	0.050	0.054	0.865	0.313

***Significant at the 0.001 level

Table 3. Pattern of SA/SP by health condition

	N (298)*	A_LP_L (n = 125)	A_HP_L (n = 48)	A_LP_H (n = 63)	A_HP_H (n = 62)	p
Stress, depression/anxiety	58	26%	12%	24%	38%	<.05
Hand/wrist problems	18	28%	6%	28%	39%	ns
Lower back pain	95	24%	13%	27%	36%	<.05
Neck or shoulder pain	62	19%	13%	35%	32%	<.05
Arthritis	12**	8%	17%	33%	42%	ns
Migraine	60	30%	10%	30%	30%	ns
Colds/Flu	180	34%	16%	24%	26%	<.05
Gastrointestinal	52	17%	21%	21%	40%	ns
Allergies	46	17%	17%	33%	33%	ns
Heart/circulatory	19**	26%	5%	16%	53%	<.05
Asthma	15**	20%	20%	40%	20%	ns

*N is less than total sample as some participants failed to provide all pieces of data required

**Cells contained less than 5

Table 4. Correlations between Presenteeism (SP), Absenteeism (SA), and psychosocial factors

		SP	SA
Demands	Is your workload irregular so that the work piles up?	-0.153**	-0.045
	Do you have too much to do?	-0.154**	-0.090
	Are your work tasks too difficult for you?	-0.214**	-0.149**
	Do you need more training to help you perform your work tasks?	-0.081	-0.113*
	Are your skills and knowledge useful in your work?	0.134*	0.077
	Is your work challenging in a positive way?	0.154**	0.031
Role expectations	Have clear goals and objectives been defined for your job?	0.089	-0.022
	Do you know exactly what is expected of you at work?	0.163**	0.010
	Do you receive incompatible requests from two or more people at work?	-0.207**	-0.119*
Control	Can you influence the amount of work assigned to you?	0.158**	0.044
	Can you set your own work pace?	0.198**	0.057
	Can you decide when you are going to take a break?	0.233**	0.028
	Can you influence decisions that are important for your work?	0.060	-0.045
Predictability at work	Do you know what kind of tasks to expect a month from now?	0.109	0.010
	Are there rumours concerning changes at your workplace?	-0.135*	0.011
Mastery of work	Are you content with your ability to solve problems at work?	0.122*	0.079
Social interactions / Support	If needed, can you get support and help with your work from your co-workers?	0.080	0.041
	If needed, can you get support and help with your work from your supervisor?	0.121*	0.089
	Are your work achievements appreciated by your supervisor?	0.193**	0.046
	Can your friends/family be relied on for support when things get tough at work?	0.004	0.033
Leadership	Does your immediate supervisor encourage you to participate in important decisions?	0.145*	0.088
	Does your supervisor help you develop your skills?	0.102	0.024

Psychosocial item scale: 1=Always, 2=Often, 3=Sometimes, 4=Rarely, 5=Never

*Correlation is significant at the 0.05 level (2-tailed)

**Correlation is significant at the 0.01 level (2-tailed)

Table 5. Regression analysis predicting health based on Presenteeism and the Nordic Psychosocial and Social Factors at Work constructs

	β	*Standard error*	*Wald*	*p*
Presenteeism	-0.500	0.139	12.885	<0.001***
Demands	0.002	0.150	0.000	0.989
Role expectations	0.032	0.152	0.043	0.835
Control	0.070	0.149	0.219	0.640
Predictability at work	0.071	0.137	0.267	0.606
Mastery of work	0.076	0.142	0.286	0.593
Social interactions / support	0.436	0.181	5.786	0.016*
Leadership	-0.102	0.163	0.390	0.532

Nagelkerke R^2=0.136

*Significant at the 0.05 level

***Significant at the 0.001 level

Table 6. Regression analysis predicting health based on Presenteeism and the Nordic Psychosocial and Social Factors at Work interactions

	β	*Standard error*	*Wald*	*p*
Presenteeism	-0.483	0.176	7.515	0.006**
Demands	0.213	0.126	2.840	0.092
Presenteeism x Demands	0.017	0.091	0.033	0.856
Nagelkerke R^2 = 0.088				
Presenteeism	-0.540	0.157	11.891	0.001**
Role expectations	0.244	0.121	4.061	0.044*
Presenteeism x Role expectations	-0.062	0.115	0.295	0.587
Nagelkerke R^2 = 0.093				
Presenteeism	-0.625	0.174	12.976	<0.001***
Control	0.295	0.128	5.437	0.021*
Presenteeism x Control	-0.132	0.098	1.810	0.179
Nagelkerke R^2 = 0.102				
Presenteeism	-0.664	0.167	15.703	<0.001***
Predictability at work	0.223	0.119	3.500	0.061
Presenteeism x Predictability at work	-0.167	0.117	2.031	0.154
Nagelkerke R^2 = 0.101				

Presenteeism	-0.528	0.142	13.866	<0.001***
Mastery of work	0.226	0.124	3.293	0.070
Presenteeism x Mastery of work	0.032	0.117	0.076	0.783
Nagelkerke R^2 = 0.090				
Presenteeism	-0.476	0.158	9.132	0.003**
Social interactions / support	0.444	0.124	12.858	<0.001***
Presenteeism x Social interactions / support	0.097	0.162	0.358	0.550
Nagelkerke R^2 = 0.126				
Presenteeism	-0.535	0.144	13.810	<0.001***
Leadership	0.259	0.121	4.600	0.032*
Presenteeism x Leadership	0.005	0.107	0.002	0.964
Nagelkerke R^2 = 0.097				

*Significant at the 0.05 level

**Significant at the 0.01 level

***Significant at the 0.001 level

Table 7. Top 5 Presenteeism Health Conditions and proportion having received treatment

Health Condition (ranked according to combined impact, prevalence x duration)	% having received treatment or intervention
1. Stress, anxiety or depression	22%
2. Hand / wrist problems	35%
3. Lower back pain	54%
4. Upper back, neck or shoulder pain	59%
5. Arthritis	69%

List of Figures