

Effort–reward imbalance and relational injustice at work predict sickness absence: The Whitehall II study

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Abstract

Objectives: Sickness absence is a major occupational health problem, but evidence for associations between potentially modifiable psychosocial work factors and sickness absence is still scarce. We studied the impact of relational justice and effort–reward imbalance on subsequent rates of sickness absence. **Methods:** The Whitehall II prospective cohort study of British civil servants, 10,308 men and women, was established between 1985 and 1988. Indicators of effort–reward imbalance and the relational component of organizational justice were constructed from questions included at baseline. Participants were classified into three groups (low, intermediate, and high) for both effort–reward imbalance and relational justice. Short (≤ 7 days) and long (> 7 days) spells of sickness absence during 1985–1989 and 1991–1995 were used to study immediate and longer term effects of work

characteristics. **Results:** After adjustment for age, employment grade, and baseline health, men and women with low relational justice had increased risks of long spells of sickness absence of 14% and 28% in comparison to men and women experiencing high levels of justice. Similar effect sizes (25% and 21%) were found for high vs. low effort–reward imbalance. Both work measures also predicted short spells of sickness absence. Effort–reward imbalance (men and women) and relational justice (women only) each predicted long spells of sickness absence independently of the other. **Conclusions:** Both relational justice and effort–reward imbalance are important determinants of sickness absence. Workplace interventions to improve these aspects of working conditions have the potential to reduce levels of sickness absence.

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Introduction

Sickness absence is an important occupational problem that has a marked impact on productivity and on costs of health insurance. In the United Kingdom, total days lost due to sickness absence are estimated to cost the economy over £13 billion and about 6.8 working days are lost per employee [1]. In the United States, the total days lost due to sickness absence are estimated to represent 3–7% of the regularly scheduled workdays [2,3], signifying a loss of

approximately 550 million workdays each year for the industry [4]. These figures are compatible with those in other western countries [5]. Sickness absence has also been shown to be a good indicator of overall health status. In particular, long spells of sickness absence (> 7 days) are closely associated with ill health, medical conditions, and subsequent mortality [6–8]. Not surprisingly, efforts to identify modifiable determinants of sickness absence are increasing, and in this research, psychosocial factors at work have received growing attention. However, prospective empirical evidence for associations between psychosocial factors at work, as defined by conceptual models that identify its stressful components, and sickness absence is still scarce.

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Two such models, the effort–reward imbalance model [9] and the model of organizational justice (and specifically its component of relational justice) [10,11] are particularly promising in this context as they have been shown to predict reduced health as well as reduced commitment and motivation towards work.

The effort–reward imbalance model of work stress applies the notion of reciprocity between efforts and rewards to the workplace setting. According to this model, failed reciprocity in terms of high efforts and low rewards elicits strong negative emotions in combination with sustained autonomic activation and has adverse long-term consequences for health [12]. In addition, recurrent reward frustration reduces commitment and motivation of employees and increases withdrawal behavior [13]. Rewards may include money, career opportunities, including job security, and the experience of esteem and recognition for achievements. Effort–reward imbalance at work is frequent in employees with limited alternative choice in the labour market, in those exposed to heavy competition, and in overly committed people.

The organizational justice model concerns fairness of treatment at work and has also been linked to health and motivation [14–18]. An important aspect of justice, relational justice, involves the extent to which supervisors consider employees' viewpoints, are able to suppress personal biases, and take steps to deal with subordinates in a fair and truthful manner. Low justice in such managerial treatment is assumed to reduce employee motivation and cooperation and increase psychological distress and risk of stress-related morbidity.

This article compares the relative contribution of two work stress models, effort–reward imbalance and organizational (relational) justice, towards predicting sickness absence. Using a longitudinal study design, with data from the Whitehall II cohort of British civil servants, we explore these associations separately for short (≤ 7 days) and long (> 7 days) spells of sickness absence, as long spells of sickness absence have been found to be stronger predictors of mortality and morbidity [7,8] and the risk factors may also be different for short and long spells of absence [19]. Furthermore, because the health effects of working conditions may differ in the short and long term, we study immediate and longer term effects of these work stress models on short and long sickness absence spells, using absence data from two follow-up periods. Importantly, gender-specific analyses of these associations are provided.

Methods

Study participants

Nonindustrial civil servants aged 35–55 years working in the London offices of 20 civil service departments were invited to participate in the Whitehall II study [20].

Between 1985 and 1988, participants attended a screening examination and completed a self-report questionnaire (Phase 1). Altogether 10,308 civil servants (6895 men and 3413 women) were examined, giving an overall response rate of 73%. Ethical approval for the Whitehall II study was obtained from the University College London Medical School committee on the ethics of human research.

Measurement of effort–reward imbalance

The Siegrist effort–reward imbalance questionnaire [21] was not available at Phase 1 so an indicator of effort–reward imbalance was derived from existing questions (see Appendix). Details of the derivation and testing of this measure have been published previously [22]. Extrinsic effort was measured by five items (Cronbach's $\alpha=.72$), and rewards by 10 items (Cronbach's $\alpha=.75$). Effort–reward imbalance was defined as the ratio of the score for effort to the score for reward so that a high ratio indicates high efforts and low rewards. Participants were divided into three equally sized groups based on the distribution of this ratio.

Measurement of relational justice

We constructed an indicator of relational justice [10] with face validity using five items (Cronbach's $\alpha=.71$) from Phase 1 of the Whitehall II cohort (see Appendix) [16]. Participants were divided into three groups based on the distribution of scores, the bottom third indicating a low level of justice, the middle third an intermediate level, and the top third a high level of justice.

Sickness absence

Computerized sickness absence records were obtained from civil service pay centres for 9179 (89%) of the 10,308 participants. For absences of 7 calendar days or less, civil servants were able to complete their own certificate and explain the absence. For absences longer than 7 days, a medical certificate was required. Sickness absence records were checked and any overlapping or consecutive spells of sickness absence were merged after taking account of weekends and public holidays. For each employee, we calculated the number of long spells (> 7 days) and the number of short spells (1–7 days) for two periods subsequent to the measurement of work characteristics, an immediate follow-up (1985–1989) and a later follow-up (1991–1995).

Covariates

Employment grade was obtained by asking participants for their civil service grade title. The Civil Service identifies 12 nonindustrial grade levels on the basis of salary. For

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