Psychosocial factors and economic recession: the Stormont Study

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Background
Little research has explored changes in workers’ psychosocial hazard exposures, work-related stress and stress-related absence associated with the onset of unprecedented severe economic recession. Knowledge of these could inform psychosocial risk management measures appropriate to austere economic times.

Aims
To examine civil servants' psychosocial hazard exposures, work-related stress and stress-related absence during a period of economic recession, relative to levels prior to the onset of this period.

Methods
Analyses compared the findings of two surveys of employees of the Northern Ireland Civil Service conducted in 2005 (n = 17 124), prior to the onset of recession, and in 2009 (n = 9913), during a period of economic recession.

Results
Psychosocial hazard exposures were significantly worse during the recession than prior to it. These results are considered in relation to UK government exposure targets. Work-related stress and absence ascribed to work-related stress were significantly greater during recession than prior to it.

Conclusions
This study demonstrates adverse changes in psychosocial hazard exposures, work-related stress prevalence and stress-related sickness absence associated with the onset of an unprecedented economic recession. Its findings indicate the need for a concerted focus on psychosocial risk management activities during austere economic times as a means by which to promote worker health and minimize sickness absence.

Key words
Civil servants; Management Standards Indicator Tool; psychosocial hazards; recession; work-related stress.

Introduction
Little is known about changes in psychosocial hazard exposures, work-related stress (i.e. stress caused or made worse by work) and stress-related absence associated with the onset of severe economic conditions.

When considering the organization of work in relation to workers’ health researchers have focused on the work context (i.e. job characteristics) and organizational context (e.g. management structures). This focus may be due to the dominance of a restricted set of theoretical models of work-related stress that emphasize contextual features of the work environment [1]. Less attention has been paid to upstream factors located externally, including the national economy [1]. Neglect of the external context is surprising given its demonstrated association with worker health [2,3]. Such studies support a model of economic stress which posits that workers’ perceptions of the work environment are likely to be derived not only from the personal and organizational context but also from the external macroeconomic context [4]. Negative job attitudes, work withdrawal and impaired health may result from economic stress [5]. Macroeconomic forces, including the regional, national or international economic situation, can affect workers directly (e.g. in terms of individuals’ reactions to the economic outlook) and indirectly (e.g. through changes in organizational policies introduced in reaction to the economic situation, such as pay freezes and job losses) [4].

UK evidence appears consistent with theory. Workforce surveys during times of economic recession indicate that workers typically perceive the economic situation as directly impacting on psychosocial working conditions and mental health [6]. Taken together, theory and evidence generate the following hypothesis:

Psychosocial hazard exposures will be significantly greater during an economic recession than prior to...
the appearance of initial signs of impending recession (Hypothesis 1).

Given the role of psychosocial hazard exposures in the aetiology of work-related stress [7], it is reasonable to predict that employees questioned directly about the stressfulness of their job will report significantly higher levels of work-related stress and sickness absence self-ascribed to work-related stress during times of greater economic stress, hence the following hypotheses:

Work-related stress will be significantly greater during an economic recession than prior to the appearance of initial signs of impending recession (Hypothesis 2).

The proportion of employees who have taken time off work in the last year owing to work-related stress, and the mean number of sick-days attributed to work-related stress, will be significantly greater during an economic recession than prior to its onset (Hypothesis 3).

Over almost three decades, the Whitehall II study (http://www.ucl.ac.uk/whitehallII) has produced a wealth of data on psychosocial risk among civil servants in London, England; however, no parallel studies have explored such issues in the Northern Ireland context, rendering uncertain the extent to which the Whitehall II findings might be generalized to the Northern Ireland Civil Service (NICS). Furthermore, despite calls for research that is 'relevant to the issues and challenges of our time' [8] in terms of a focus on the implications of economic recession for work-related psychosocial risk [8,9], there remains a paucity of evidence in this regard both in general terms and specifically in relation to the civil service. In response to these knowledge gaps, this study examines changes in psychosocial hazard exposures, perceived work-related stress and stress-related sickness absence among a large sample of NICS employees, in the context of a severe economic recession. The study seeks to highlight the importance of psychosocial risk management during austere times and to contribute to the emerging literature on the external context as it relates to worker health.

**Methods**

Participants were employees of the NICS. The research was commissioned and ethical approval was granted by the NICS Workplace Health Committee as part of the Stormont Study that is tracking a large cohort of employees through their career with the NICS and beyond.

To assess as many employees as possible efficiently, a quantitative survey was developed. At initial assessment (May 2005), surveys were distributed to all NICS employees. This took place prior to the appearance of initial signs of impending economic crisis. The first warning sign of the UK’s 2009 economic recession is generally acknowledged to be the bankruptcy protection application filed in the USA by New Century Financial in April 2007.

Follow-up data collection occurred in the first quarter of 2009 during the official period of recession. The commonly accepted definition of an economic recession and that used by the UK government is that of two consecutive quarters of negative economic growth. On the basis of this definition, the UK economy entered recession in January 2009 and emerged in January 2010. Surveys were distributed to employees from a random selection of NICS departments.

A series of interviews was conducted with senior staff to establish that no substantive organizational events, development or change had occurred in the period between the two waves of data collection that might otherwise explain differences found in the variables at the two data collection points.

All variables were measured using a single self-report anonymous questionnaire. In addition to basic demographic information, data were collected on the following.

The 35-item Management Standards Indicator Tool [10] was used to assess exposure to seven dimensions of the psychosocial work environment. Responses are given on a 5-point scale: 1 (never), 2 (seldom), 3 (sometimes), 4 (often) and 5 (always). Low scores are indicative of high (and potentially harmful) exposures. An example of an item is ‘I am clear what is expected of me at work’. The seven sections address job demands (eight items; initial assessment \( \alpha = 0.86 \); follow-up assessment \( \alpha = 0.88 \)), job control (six items; initial assessment \( \alpha = 0.80 \); follow-up assessment \( \alpha = 0.84 \)), managerial support (five items; initial assessment \( \alpha = 0.87 \); follow-up assessment \( \alpha = 0.89 \)), peer support (four items; initial assessment \( \alpha = 0.80 \); follow-up assessment \( \alpha = 0.83 \)), relationships (four items; initial assessment \( \alpha = 0.78 \); follow-up assessment \( \alpha = 0.82 \)), role (five items; initial assessment \( \alpha = 0.82 \); follow-up assessment \( \alpha = 0.85 \)) and change (three items; initial assessment \( \alpha = 0.80 \); follow-up assessment \( \alpha = 0.81 \)). The Cronbach’s alpha values provide an indication of the internal consistency (reliability) of each section of the questionnaire, i.e. the extent to which the items within each section correlate with the others in that section, and demonstrate that reliability was consistent with that found in other large-scale studies which have used the Management Standards Indicator Tool [11–14].

This was measured using a single-item ‘How stressful do you find your job?’ Responses were given on a five-point scale, from ‘not at all stressful’ (1) to ‘extremely stressful’ (5). Single-item measures offer an expedient approach to data collection in the organizational context [15]. The approach is also useful where the research objective is to obtain a ‘snapshot’ of a topic rather than detailed diagnostic information. Although single-item measures of psychological constructs are sometimes assumed to have low reliability and validity, if the meaning of the construct is clear to the respondent, a single-item approach may be adequate [16]. The attributes of single-item measures of work-related
stress have been demonstrated in a number of studies in recent years [17–23], suggesting an effective and efficient alternative to the more complex case definitions typically employed by researchers [24]. This was measured using a single item: ‘In the last year how many working days were you absent from work because of work-related stress?’

Bivariate correlations were performed to give some preliminary insight into relationships between the study variables. Differences in psychosocial hazard exposures, work-related stress and sickness absence attributed to work-related stress between initial and follow-up assessment were examined using unrelated t-tests. Data were screened prior to analysis for the accuracy of scores, missing data, outliers and violations of the assumptions of the analysis. Statistical analyses were undertaken using PASW Statistics 18 [25].

Results
In 2005, survey questionnaires were sent to 33 462 NICS employees resulting in 17 124 completed and usable responses (51% response rate). In 2009, 9913 surveys were returned from 24 710 employees (40% response rate). Response rates by demographics are presented in Table 1.

Bivariate correlations (Table 2) revealed significant positive associations between exposure to each of the seven psychosocial hazards, significant negative correlations between psychosocial hazard exposures and work-related stress and significant negative correlations between psychosocial hazard exposures and sickness absence attributed to work-related stress. High scores in relation to psychosocial hazard exposures indicate low levels of exposure; thus, the results of the latter two sets of relationships are in the expected direction.

Table 3 shows that exposures to six of seven categories of psychosocial hazard were significantly greater (worse) at follow-up assessment (during recession) than at initial assessment (pre-recession). Reports of potentially harmful aspects of managerial support were greater at follow-up than at initial assessment, but not to a significant degree. Overall, these findings offer support for Hypothesis 1.

For each of the seven psychosocial hazards, Table 3 shows the mean score drawn from the UK Health & Safety Executive’s (HSE) benchmark data set. Scores on the demands and relationships dimensions were better than the benchmark data set mean at both initial and follow-up assessment. Scores on the remaining five categories of psychosocial hazard were worse than the benchmark data set mean at both initial and follow-up assessment. The HSE recommends that organizations should aspire to achieve psychosocial hazard exposure scores that are consistent with the top 20% of organizations represented in its benchmark data set. These advisory targets are shown in the final column in Table 3. With the exception of job demands, exposures to each category of psychosocial hazard failed to reach governmental advisory targets at initial assessment (pre-recession). At follow-up assessment, exposures on all seven dimensions failed to reach government targets.

Following Smith et al. [21], caseness for perceived work-related stress was set at the ‘very stressful’ (fourth point on a five-point scale) threshold. Table 4 shows that 18.5% of respondents at initial assessment met or exceeded this threshold as did 26% at follow-up assessment, indicating a statistically significant increase in caseness between initial and follow-up assessment (P < 0.001), supporting hypothesis 2.

At initial assessment (pre-recession), 6.0% of respondents indicated they had taken time off work in the last year because of work-related stress. The equivalent figure at follow-up assessment (during recession) was 7.5%, representing a statistically significant (P < 0.001) 25% increase. The mean number of days of absence attributable to work-related stress at initial assessment was 2.01 (SD = 15.04). The equivalent figure at follow-up assessment was 2.72 (SD = 18.3), representing a statistically significant (P < 0.001) 35% increase, thereby supporting hypothesis 3.

Discussion
Our study showed exposure to psychosocial hazards to be greater during economic recession compared to beforehand. Pre-recession, exposure on six dimensions was worse than governmental advisory targets (except for job demands); during recession exposure on all seven dimensions was worse than governmental targets. Perceived work-related stress was significantly greater during the economic recession than beforehand. Finally, the proportion
of employees who had taken time off work in the last year owing to work-related stress, and the mean number of sick-days attributed to work-related stress, were significantly greater during the economic recession than before it. The findings highlight the need for a focus on psychosocial risk management as a means to promote worker health in times when organisations might be tempted to focus on survival rather than improving the psychosocial work environment.

The study is limited by anonymity in questionnaire responses that prevented a prospective cohort analysis. Despite this, the large number of responses to both surveys, the relatively short gap between survey administrations and a tendency in the civil service for long tenure make it likely that the majority of respondents completed the questionnaire at both time points, thereby permitting robust group-level conclusions among a relatively stable participant sample. The large sample size and high response rate (for an organizational study concerned with psychosocial issues) also limits the possibility of a healthy worker effect, i.e. the possibility that non-respondents were more likely to be ‘unhealthy’ or, in this case, suffering from the effects of work-related stress. Nevertheless, the response rate at follow-up assessment (40%) was lower than that achieved at initial assessment (51%) and the proportion of respondents under the age of 25 at initial assessment was higher (11%) than at follow-up (6%). These differences might suggest the possibility of certain groups of workers being less likely to respond to

Table 2. Correlations among study variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Demands</td>
<td>0.38</td>
<td>0.40</td>
<td>0.50</td>
<td>0.48</td>
<td>0.66</td>
<td>0.62</td>
<td>0.40</td>
<td></td>
</tr>
<tr>
<td>2. Control</td>
<td>0.40</td>
<td>0.48</td>
<td>0.66</td>
<td>0.40</td>
<td>0.47</td>
<td>0.55</td>
<td>0.42</td>
<td></td>
</tr>
<tr>
<td>3. Managerial support</td>
<td>0.42</td>
<td>0.41</td>
<td>0.52</td>
<td>0.56</td>
<td>0.35</td>
<td>0.28</td>
<td>0.13</td>
<td></td>
</tr>
<tr>
<td>4. Peer support</td>
<td>0.42</td>
<td>0.41</td>
<td>0.52</td>
<td>0.56</td>
<td>0.35</td>
<td>0.28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Role</td>
<td>0.42</td>
<td>0.41</td>
<td>0.52</td>
<td>0.56</td>
<td>0.35</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Relationships</td>
<td>0.42</td>
<td>0.41</td>
<td>0.52</td>
<td>0.56</td>
<td>0.35</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Change</td>
<td>0.42</td>
<td>0.41</td>
<td>0.52</td>
<td>0.56</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Perceived work-related stress</td>
<td>0.42</td>
<td>0.41</td>
<td>0.52</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Absence ascribed to work-related stress</td>
<td>0.42</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

All correlations significant at $P < 0.01$ (two-tailed). Correlations in parenthesis refer to the follow-up (2009) survey.

Table 3. Comparison of psychosocial hazard exposures at initial assessment (2005; $n = 17,169$) and follow-up assessment (2009; $n = 9,913$)

<table>
<thead>
<tr>
<th>Psychosocial hazard dimension</th>
<th>Initial assessment (2005), mean (SD)</th>
<th>Follow-up assessment (2009), mean (SD)</th>
<th>$t$ (d.f.)</th>
<th>$P$</th>
<th>HSE benchmark data set mean scores</th>
<th>HSE advisory targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demands</td>
<td>3.39 (0.72)</td>
<td>3.23 (0.74)</td>
<td>17.63 (20334)</td>
<td>0.001</td>
<td>3.10</td>
<td>3.29</td>
</tr>
<tr>
<td>Control</td>
<td>3.46 (0.72)</td>
<td>3.32 (0.74)</td>
<td>14.82 (20116)</td>
<td>0.001</td>
<td>3.47</td>
<td>3.72</td>
</tr>
<tr>
<td>Managerial support</td>
<td>3.44 (0.87)</td>
<td>3.42 (0.88)</td>
<td>1.26 (27033)</td>
<td>NS</td>
<td>3.46</td>
<td>3.65</td>
</tr>
<tr>
<td>Peer support</td>
<td>3.65 (0.75)</td>
<td>3.62 (0.74)</td>
<td>2.85 (27033)</td>
<td>0.01</td>
<td>3.78</td>
<td>3.89</td>
</tr>
<tr>
<td>Relationships</td>
<td>4.0 (0.76)</td>
<td>3.91 (0.79)</td>
<td>10.38 (20059)</td>
<td>0.001</td>
<td>3.85</td>
<td>4.04</td>
</tr>
<tr>
<td>Role</td>
<td>4.07 (0.72)</td>
<td>3.96 (0.72)</td>
<td>13.45 (27033)</td>
<td>0.001</td>
<td>4.18</td>
<td>4.31</td>
</tr>
<tr>
<td>Change</td>
<td>3.0 (0.88)</td>
<td>2.95 (0.09)</td>
<td>5.00 (20365)</td>
<td>0.001</td>
<td>3.04</td>
<td>3.24</td>
</tr>
</tbody>
</table>

Table 4. Perceived work-related stress

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all stressful</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Mildly stressful</td>
<td>34</td>
<td>29</td>
</tr>
<tr>
<td>Moderately stressful</td>
<td>35</td>
<td>37</td>
</tr>
<tr>
<td>Very stressful</td>
<td>14</td>
<td>19</td>
</tr>
<tr>
<td>Extremely stressful</td>
<td>4</td>
<td>7</td>
</tr>
</tbody>
</table>

All differences between initial and follow-up assessments are significant at $P < 0.001$.
the follow-up questionnaire and of younger workers having left the workforce, perhaps owing to lower resilience to psychosocial hazards.

Of particular note are job grade and tenure. Tenure was assessed in the 2009 survey though not in the 2005 survey and, as such, is not reported on in the current study. Data provided to the authors by the Northern Ireland Statistics and Research Agency (NISRA) indicate that tenure in the NICS is typically long: human resource records revealed that 39% of current staff (at January 2011) had been in the employ of NICS for >20 years and 62% for >10 years. By contrast data from the GB Civil Service provided to the authors by the Office for National Statistics indicate 43% of employees have worked for the organization for <9 years, whereas 33% of NICS employees have done so.

The study is also limited by the absence of data on particular occupational characteristics that are typically collected in large-scale studies and which facilitate cross-study comparisons. Although data on these constructs might be desirable from a scientific perspective, the surveys reported in this study were designed for organizational rather than academic purposes and information on grade and tenure was not collected due to concerns about compromising respondent anonymity and ensuring brevity in the questionnaire to maximize the response rate.

The findings mirror those of the UK government’s Psychosocial Working Conditions (PWC) surveys. These are administered annually to a representative sample of the working population in Britain (excluding Northern Ireland), and measure psychosocial hazard exposure and perceived work-related stress using the same instruments as the current study. It is reasonable to suggest that consistency between this study and the PWC surveys in terms of changes over time will reflect the status of factors external to the organizations applying to the nation as a whole. PWC data shows that in the period covered by the two NICS surveys, psychosocial hazard exposures remained constant overall [26]. Improvements were identified across all seven psychosocial hazard dimensions in the 2007 PWC survey; however, the 2008 and 2009 surveys failed to show a continuation of that trend, suggesting the presence of a salient event with nationwide impact. In line with this, psychosocial hazard exposures reported in the current study were greater in 2009 than in 2005 in all seven dimensions. It is probable that the influence of the recession on psychosocial hazard exposure was greater in this study population than elsewhere in Britain because its effects were particularly severe in Northern Ireland. This can be seen, for example, in domestic house prices: by 2009 house prices in the province had fallen by between 28% and 34%, the most pronounced of any UK region [27].

In the current study, 18.5% of respondents to the 2005 survey and 26% to the 2009 survey reported that their work was very stressful or extremely stressful, representing a 7.5% rise. This pattern is consistent with that produced by the PWC series. Prevalence in the 2005 PWC survey was 15.1% [28] compared to 16.7% in 2009 [26], representing a 1.6% rise. As per psychosocial hazard exposure, it is notable that the extent of the increase in reported work-related stress was considerably greater within the NICS than across Britain as a whole.

It is possible that other external factors might have exerted an influence on the variables under investigation. For example, in the period between surveys constitutional developments occurred in Northern Ireland that may have influenced work environment perceptions, not least the Provisional IRA’s 2005 declaration of an end to its campaign of violence along with the beginning of its arms decommissioning programme and the restoration of devolved government to Northern Ireland in 2007. However, the fact that changes identified in the current study mirror those identified across Britain suggests that factors in the national rather than regional context were primarily responsible. Another limitation is that the sample was restricted largely to white collar workers in government employment; the results may therefore not be generalizable to other occupations and employment sectors.

Scores on the demands and relationships dimensions were better than the HSE benchmark data set mean at both initial and follow-up assessment. This appears inconsistent with scores for each of the remaining five psychosocial hazard categories and might be explained in terms of civil service culture; empirical investigation of whether this might be the case is warranted. There is currently considerable interest in gender differences in reports of psychosocial hazard exposures and work-related stress. These issues as they relate to the current data sets will be reported in a forthcoming paper.

Job security is likely to moderate the effects of economic stress; studies in various countries have shown that job security is perceived as being higher in the public than the private sector [29]. Ferrie et al. [30] reported on the effects of changes in job security on health and health-related behaviours among UK civil servants, but the study lacked a private sector comparison group preventing conclusions on whether job security has differing status and operation in the public and private sectors. The questions of whether UK civil servants perceive their job security as being higher than UK private sector employees and whether job security perceptions moderate the effects of economic stress await empirical investigation. This knowledge could usefully inform organizational stress management activities targeted at civil servants.

This study has demonstrated adverse changes in psychosocial factors associated with the onset of economic recession, thereby advancing our knowledge on the association between the economic climate and work-related stress. The study also offers the first large-scale examination of psychosocial issues in UK civil servants beyond the
Key points

- This study demonstrates adverse developments in psychosocial hazard exposures, work-related stress prevalence and stress-related sickness absence associated with the onset of an unprecedented economic recession.
- The findings point towards the importance of a concerted focus on psychosocial risk management activities during austere economic times as a means by which to promote worker health and minimize sickness absence.

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Northern Ireland Civil Service.

Conflicts of interest
None declared.

References


