



The psychosocial hazards of academic work: An analysis of trends

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The psychosocial hazards of academic work: An analysis of trends

Abstract

This study examines the psychosocial hazards experienced by academic staff working in UK institutions over time. A risk assessment framework developed by the Health and Safety Executive (HSE) was used to measure seven key hazards: demands, control, support from managers and colleagues, relationships, role and change management. Data were obtained from three waves of a national survey of academic staff across the UK (2008, n = 6,203; 2012, n = 7,068; 2014, n = 3,952). Mean scores for each hazard were compared with HSE benchmarks from the UK working population and changes over the three waves were examined. Apart from job control, none of the benchmarks was met and the risk associated with demands, manager and peer support, role and change was particularly high. An increase in most of the psychosocial hazards was found over time, particularly for job demands, control, role and relationships, showing clear cause for concern. How the findings could be used to monitor the wellbeing of academic staff over time and develop targeted interventions is considered.

Keywords: work-related stress; academics; benchmarks; psychosocial hazards

Introduction

The university sector worldwide has undergone intense and wide-ranging change over the last twenty years or so. There is evidence that academic staff in particular experience significant levels of stress from various aspects of their work (Kinman and Court 2008; Mudrak, Zabrodska, Kveton et al. 2018; Pujol-Cols and Lazzaro-Salazar, 2018; Reevy and Deason 2014; Winefield, Boyd, Saebel, and Pignata 2008). Research examining the

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3 structure and function of higher education (HE) has highlighted a major shift in the nature of
4 academic work brought about by increased student numbers with a more 'consumer-driven'
5 approach to their studies, increased pressure to undertake and publish research with
6 'significance' and 'reach', more rigorous teaching and learning policies and processes, and
7 greater demand for entrepreneurial activity (Biron, Brun, and Ivers 2008; Kinman 2001;
8 Lynch 2017). Many have argued that these changes have resulted in a marketized university
9 system (Nixon, Scullion, and Hearn 2018). The introduction of indicators for external scrutiny
10 and audit of academics' activities, most notably the Research Excellence Framework and
11 the Teaching Excellence Framework, has also contributed to the stress they experience due
12 to the increased workload involved in preparing submissions, reduced autonomy regarding
13 their research and teaching activities, and feelings of rejection arising from unfavourable
14 decisions about the quality of outputs (Smith, Ward & House 2011; UCU 2013). The
15 growing reliance on league tables that assess the 'performance' of universities in diverse
16 areas, such as student satisfaction, retention, employability and environmental and ethical
17 performance, has also increased the pressure on staff and lowered morale (Locke, Verbik,
18 Richardson, and King 2008; Mathieson 2015).

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Research conducted in the UK and internationally has identified a range of stressors
associated with core aspects of academic work, such as teaching and research, and the
growing demands of the role. As these studies conceptualise and measure stressors in
different ways, however, it is difficult to compare their findings. Moreover, studies of job-
related stress in academic staff have typically relied on cross-sectional data and sampling
has ranged from single institutions or disciplines to international consortium projects.
Perhaps more importantly, as the pace of change in UK HE institutions has been so rapid
and wide-ranging, insight into academics' perceptions of their working conditions is required
on a regular basis in order to identify the conditions that are most hazardous to their
wellbeing.

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3 This study aims to address the limitations of previous research by adopting a
4 benchmarking approach to measuring key psychosocial hazards in UK universities. It utilises
5 the Health and Safety Executive (HSE) Management Standards Indicator Tool (MacKay,
6 Cousins, Kelly, Lee, and McCaig 2004) to assess the level of risk to wellbeing across three
7 waves of data collected across the UK. The study reports data across seven key
8 psychosocial hazards for each wave, comparisons with HSE benchmarks are made and
9 changes over time are examined. Recommendations for interventions arising from the
10 findings are also made.
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23 *The stressors of academic work*

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26 Previous studies have highlighted a range of stressors associated with the nature,
27 organisation and pace of academic work. There is evidence that academics experience high
28 levels of demand from various aspects of their work. Quantitative overload, or the inability to
29 do the tasks required in the time available is a particular problem (Barkhuizen & Rothmann
30 2008; Biron et al. 2008; Johnson, Willis, and Evans 2019; Tytherleigh et al. 2005). Studies of
31 academics in several countries have also found that they work long hours in order to meet
32 the demands made upon them (Bentley and Kyvik 2012; Kinman 2014; Bentley and Kyvik
33 2012; Tytherleigh et al. 2005). Work overload has been associated with several negative
34 outcomes in academic staff, including work-life conflict (Fontinha, Van Laar, and Easton
35 2019; Kinman 2014; Winefield, Boyd, and Winefield 2014) and mental health problems
36 (Barkhuizen and Rothmann 2008; Kinman 2019; Viljoen and Rothmann 2009).
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50 Role conflict and role overload have also been identified as key stressors for
51 academic staff (Kinman 2001; Long, Nothcoate, Barnes, and Williams 2019). Conflict can
52 arise within as well as between the key elements of academic work, such as teaching,
53 research and administration (Teichler and Höhle 2013), as well as with wider roles that may
54 include external income generation and partnership management activities (Musselin 2007).
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3 UK academics report higher levels of administrative load than many of their counterparts
4 internationally (Bentley and Kyvik 2012) and this has been identified as a particularly
5 powerful source of stress (Collins and Parry-Jones 2000). Research findings show strong
6 relationships between role conflict among academic staff and a range of negative outcomes
7 such as emotional exhaustion, mental health problems, work-life conflict and intention to quit
8 (Biron, Brun, and Ivers 2008; Hogan, Hodgins, Kinman, and Bunting 2014; Viljoen and
9 Rothmann 2009).

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Early studies of academic staff found that high job control and a supportive, collegial culture protected them from work-related stress and the negative effects of any stressors that were experienced (Gmelch, Wilke, and Lovrich 1986). Job control reflects the ability of an individual to manage and organise their own work, set their pace of work and take breaks. It also refers to the capacity to make decisions about the type and nature of work undertaken (Boyd, Bakker, Pignata et al. 2011). Autonomy at work has been linked to many positive outcomes such as motivation, performance and job involvement (Hausser, Mojzisch, Niesel, and Schulz-Hardt 2010) and perceptions of control among academics has also been found to reduce the risk of burnout and health problems and enhance work-life balance and retention (Kinman and Jones 2008; McClenahan, Giles, and Malet 2007; Taris, Schreurs, and Van Iersel-Van Silfhout 2001).

Academic staff have traditionally enjoyed high levels of autonomy over their teaching and research (Musselin 2007). More recently, however, research conducted in different countries has linked changes to the management and governance of academic work to perceptions of reduced autonomy and increased managerial control (Henkel 2005, Kolsaker 2008; Lee 2017). Studies of UK academics provide some evidence that levels of autonomy have reduced in several areas of work (Kinman, Jones, and Kinman 2006; Tytherleigh et al. 2005). This may be particularly damaging for academic staff due to its strong protective effects. A longitudinal study of Australian academic staff (Boyd, Bakker, Pignata, Winefield,

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3 Gillespie, and Stough 2011) found that low job autonomy, along with high job demands,
4 predicted mental health and job commitment over a three-year period.
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8 Although academic work is often seen as a solitary pursuit, staff collaborate with
9 others extensively both within and across institutions, countries and disciplines. These
10 relationships have traditionally been characterised by collegiality, where staff work in self-
11 directed teams, sharing knowledge and resources to achieve a common purpose with little
12 hierarchical input (Deem 1998; Kinman et al. 2006; Tytherleigh et al. 2005). Collegiality is
13 often considered the cornerstone of a university (Sahlin and Eriksson-Zetterquist 2016) and
14 it can be measured directly, through perceptions of culture, or indirectly, via satisfaction with
15 key relationships with peers, managers and students. Social support is one of the most
16 powerful resources in the workplace; it can protect employees from the negative effects of
17 job demands and is positively associated with mental and physical health, job satisfaction
18 and retention (Harvey et al. 2017; Nieuwenheijsen et al. 2010). It has been argued that
19 changes in the nature of social relationships in academic work are characterised by
20 increased competition and decreased cooperation between academics via the introduction of
21 an output centred, target culture (Deem, Hillyard & Reed 2007); increased performativity and
22 monitoring via a manager-centric system (Kolsaker 2008) and a shift from students and
23 academics working cooperatively to develop knowledge to a consumerist, service-driven
24 relationship (Nixon et al. 2018). This suggests that perceptions of support from managers
25 and colleagues may have eroded over time with strong potential to impair wellbeing among
26 academic staff.
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49 Examinations of the management and leadership of academic work in several
50 countries suggest that that most staff believe they work in performance-driven organisations
51 dominated by top-down management practices (Deem et al. 2008; Watts 2017). There is
52 also evidence that satisfaction with communication within UK universities is particularly low;
53 nearly 60 percent of academics sampled in an international comparative study felt ill-
54 informed about what was happening in their university and only 25 percent believed that the
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3 leadership of their organisations was competent (Teichler and Hohle 2013). National surveys
4 of academic staff in the UK (Kinman et al., 2006) identified negative trends in the perception
5 of management-related stressors over time. A comparison of the data across both surveys
6 found that satisfaction with communication and management's sensitivity to the needs of
7 staff decreased significantly between 1998 and 2004 and there was also some evidence that
8 satisfaction with influence over decisions also reduced. Tytherleigh and colleagues' (2005)
9 study of 13 academic institutions in the UK found that perceived commitment from the
10 organisation was negatively associated with mental and physical health problems, with
11 academic staff reporting the lowest levels of commitment from their organisation of the
12 different occupational groups surveyed. Additionally, over 50 percent of the sample as a
13 whole were concerned that their universities were 'changing for change sake' (Tytherleigh et
14 al. 2005, p.56). This suggests that communication and change management was a particular
15 problem in UK universities that may have further deteriorated over time.

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Research reviewed above indicates that academic staff may be at high risk of a range of psychosocial hazards related to their work and there is some evidence that the risk may be increasing. As discussed earlier in this paper, however, the current body of work is challenging to review systematically due to diverse approaches to measurement and sampling. Many studies have been conducted in single institutions and may therefore not be representative of the wider population of academics, and others include staff from different job categories. Fundamental differences in working conditions, the nature of the work performed and the pattern of stressors and strains experienced (Fontinha, Easton, and Van Laar 2019; Johnson, Willis, and Evans 2019) indicate that academic and non-academic employees should be studied separately. To our knowledge, no studies have attempted to examine the working lives of academics in the UK at a national level using a consistent risk-assessment approach over time. This study uses the Health and Safety Executive's Management Standards approach to examine these issues, drawing on data obtained from academic staff working in UK institutions at three points in time: 2008, 2012 and 2014.

The Health and Safety Executive Management Standards approach (HSE MS)

This method was developed in response to a growing awareness of the costs of ill-health resulting from work-related stress (HSE, 1999). A risk-assessment approach is utilised, where stress is recognised as a major threat to the health and safety of employees and stressors are measured and managed at source like any physical workplace hazard. The Management Standards framework is predicated on a set of standards of good management practice (known as benchmarks) that establish the extent to which organisations protect the wellbeing of their staff by preventing stress from occurring at source. The Management Standards Indicator Tool (MSIT: Mackay et al. 2004) is used to assess the levels of hazard associated with seven critical predictors of employee wellbeing and performance: demands, control, support from managers and colleagues, relationships, role and change management. The MSIT has been used in many different sectors and organisations and is considered valid and reliable and psychometrically sound (Brookes, Limbert, Deacy, O'Reilly, Scott, and Thirlaway 2013; Edwards and Webster 2012, Edwards, Webster, Van Laar, and Easton 2008; HSE 2019). Alongside the development of the hazard categories, the HSE established target 'states to be achieved' (Mackay et al. 2004). These were based on the strength of evidence linking exposure to each of the hazard categories to mental and physical ill-health. The tool utilises a traffic light system based on published benchmarks in order to help organisations prioritise where change should be targeted (see Table 1).

Table 1 about here

Method

The data reported in this paper were obtained from three cross-sectional surveys in 2008, 2012 and 2014. A link to each of the surveys was distributed electronically to

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3 members (academic and academic-related staff) of the University and Colleges Union (UCU)
4 at the time of each survey. Members were invited to complete the survey anonymously.
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8 Only full-time academic staff who held a permanent contract were included in the
9 sample for each wave of the survey. Staff who were on temporary or hourly-paid contracts
10 were removed from the analysis due to very low response rates. The final sample size and
11 gender profile for each wave are detailed in Table 2. The sample broadly represented the
12 wider population of full-time academic staff in the UK in terms of gender profile at each time
13 point when compared to HESA data (HESA 2008; 2012; 2014).
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24 Table 2 about here
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29 The HSE Management Standards Indicator Tool (MSIT) comprises 35 items within
30 each of the hazard categories detailed above. Items are scored on 5-point Likert scales
31 indicating the extent of agreement. Mean scores were calculated across all items for each of
32 the seven subscales, to compare scores with the HSE management standards benchmarks
33 and examine any differences across each wave of data collection. Higher scores on all items
34 indicate higher levels of wellbeing. Table 3 provides details of the number of items in each of
35 the subscales, example items and Cronbach's alpha ranges across the three waves. The
36 internal validity of each of the subscales were moderate to good across each wave.
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49 Table 3 about here
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54 **Results**

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56 Mean scores for each of the MSIT hazards were calculated for each wave of data
57 collection (see Tables 4, 5 and 6). The means for each dimension were compared against
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3 the HSE benchmark. The findings for each wave are discussed separately below and
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5 comparisons are made over time.
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8 In 2008, six out of seven of the hazard categories failed to meet the benchmarks set
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10 by the HSE. Only job control met the 85th percentile of benchmarked data. Relationships at
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12 work achieved a score equivalent with the 25th percentile data, indicating that this is an area
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14 where there is 'clear need for improvement'. The findings show that psychosocial risks
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16 associated with job demands, support from managers and peers, role and change were
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18 particularly high for academic staff, with these dimensions failing to achieve mean scores
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20 found in 95% of the benchmark data. Following HSE guidelines, this suggests that urgent
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22 action is required.
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28 Table 4 about here
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34 The mean scores for six out of the seven categories reduced between 2008 and
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36 2012, indicating increasing risks associated with most of the psychosocial hazards
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38 assessed. Risks associated with demands were subject to a particularly steep rise over the
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40 four-year period, with 99% of benchmarked organisational data achieving more favourable
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42 scores for the management of job-related demands. For control and relationships, an
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44 increase in risk was also found. Mean scores for peer support, role and change decreased
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46 marginally between 2008 and 2012 (indicating a slight rise in the levels of risk) but remained
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48 broadly in line with the findings in 2008.
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54 Table 5 about here
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3 The findings of the 2014 survey highlight a further increase in risk for six out of the
4 seven hazard categories. The mean score for control continued to fall between 2012 and
5 2014, clearly showing further deterioration. Control was the only category to meet the
6 benchmark in 2008, but it was re-categorised from 'doing very well' to 'clear need for
7 improvement' during the study period. This is the second lowest benchmark defined by the
8 HSE, highlighting clear cause for concern. Further reductions in mean scores for demands,
9 peer support, manager support, role and relationships indicate increasing risk, emphasising
10 that 'urgent action is required'.
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23 Table 6 about here
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29 One-way Analysis of Variance (ANOVA) tests were performed to examine the
30 strength of the differences in mean scores for each hazard category across the three data
31 collection points. Cohen's *d* calculations were performed on each set of comparators to
32 identify the effect size. A 'large' effect size is demonstrated by 0.8, a 'medium' effect size by
33 0.5 and a 'small' effect size by 0.2 (Cohen, 1977). Details are provided in Table 7.
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43 Table 7 about here
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49 Significant reductions in scores in four out of seven hazard categories were found
50 between 2008 and 2012 (demands, control, relationships, role and change; all $p < .001$).
51 Inspection of the effect sizes demonstrated that the difference between the mean scores for
52 job demands in 2008 and 2012 was large, with a small effect size found for changes in levels
53 of job control. Although statistically significant, the differences in mean scores for the role
54 and change categories between the two time periods failed to meet the threshold for a
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3 meaningful effect. Mean scores for support from manager and peers showed no significant
4 change over the two data collection points. These findings suggest that demands and control
5 were the key areas of risk for academic staff between 2008 and 2012.
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10 Comparing the mean scores for each of the hazard categories between 2012 and
11 2014, a statistically significant difference was found for control, support, support from
12 managers and colleagues and role (all $p < .001$). Large effect sizes were found to support
13 increases in risk associated with role and relationships over time, while demands and control
14 remained key causes for concern. Fig. 1 shows the profile of scores for each hazard for the
15 three data collection points.
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Fig. 1 about here

32 Discussion

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35 The findings of this multi-wave study indicate that the work-related wellbeing of
36 academic employees in the UK is generally poor and has deteriorated over time. The utility
37 of using a benchmarking approach to examine changes in levels of psychosocial risk has
38 been supported. The use of this framework ensures that the results from each wave of
39 survey data can not only be tracked at sector level over time, but also compared against
40 nationally recognised benchmarks.
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48 Except for job control, none of the HSE's standards of good practice for managing
49 work-related wellbeing were met at any of the three data collection points. Scores for
50 demand, manager and peer support, role and change were particularly poor compared to
51 benchmark data across all waves. Most of the hazards, particularly those relating to
52 demands, role, relationships and change, deteriorated further over the study period,
53 indicating clear cause for concern. Although the overall level of satisfaction with job control
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3 was initially high, a downward trend emerged over time. Overall, evidence was found that
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5 wellbeing among UK academic staff regarding key aspects of their work was poorer than
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7 national benchmarks (HSE Management Standards User Manual, n.d.), suggesting that
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9 urgent action is required.
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12 The rapid and wide-ranging changes outlined in the introduction may help explain the
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14 deteriorating wellbeing of academic staff. In terms of increased demands, an overall growth
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16 of 17% in student numbers was documented during this time, whereas academic staffing
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18 levels only rose by 10% (HESA 2018). It is therefore unsurprising that perceptions of
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20 demand relating to workload, working hours and pace of work had intensified. Other factors,
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22 such as increased scrutiny of teaching and research, greater student expectations for
23
24 personalised guidance and support, more pressure to undertake and publish research, and
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26 growing expectations for commercial activity, will also have contributed to the increased
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28 demand observed over the study period. Moreover, the increasing need for academics to
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30 meet externally set output criteria and comply with quality assurance requirements will also
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32 have intensified their administrative burden. Academic employees are particularly
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34 vulnerable to intra-role conflict (Biron et al. 2008) and the increase in role stress documented
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36 over time is likely to compound the risk to their wellbeing posed by high demand conditions.
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41 As well as increased demand, perceptions of support from managers and colleagues
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43 reduced over the study period. The benefits of a supportive organisational culture for health
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45 and job satisfaction are widely recognised (Stansfeld and Candy 2006). Mutual support and
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47 positive working relationships can protect wellbeing by not only reducing strain at source but
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49 also mitigating the negative impact of demanding work (Viswesvaran, Sanchez, and Fisher
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51 1999). Working in a sector that has become increasingly competitive and noncollegial is
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53 likely to have eroded perceptions of support from managers and peers. Line managers have
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55 a particularly powerful influence on the wellbeing of their staff (Donaldson-Feilder, Yarker,
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57 and Lewis 2008), so the major deterioration found in support from this source gives serious
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59 cause for concern. Deteriorating relationships at work were also observed more generally,
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3 characterised by an increased risk of interpersonal conflict and bullying over time. There is
4 evidence that bullying in universities has become more common, linked to rising workload
5 pressures, role ambiguity, competitiveness and threats to professional status (Clark,
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7 Olender, Kenski, and Cardoni 2013; McKay, Arnold, Fratzl, and Thomas 2008). Bullying is
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9 also likely to thrive under conditions of poor leadership and organisational climate (Bjorklund,
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11 Vaez & Jensen, 2020), further highlighting the role of current working conditions in eroding
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13 satisfaction with working relationships in higher education.
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19 Academic employees expect a high degree of control over their working lives and
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21 lack of autonomy can be a major source of strain (McClenahan et al. 2007). As with support,
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23 control can protect wellbeing directly and help offset the negative effects of job demands
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25 (Boyd et al. 2011; Kinman and Jones, 2008). Although the level of control reported by
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27 participants exceeded the HSE recommended level at all waves of data collection, it
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29 deteriorated significantly over time. A shift from a culture of consensual decision-making,
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31 co-operation and shared values across the sector towards a non-participative management
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33 style (Fanghanel 2011; Lee 2017; Musselin 2018) is likely to have eroded academics'
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35 perceptions of autonomy. Change is essential for progress, but little opportunity for staff to
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37 shape change initiatives can threaten their sense of autonomy and professional identity
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39 (Karp & Helgo 2008). Academics' satisfaction with the communication and management of
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41 change was considerably lower than recommended levels in the first wave of data collection
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43 and deteriorated further over the study period. It is therefore crucial to consider ways to
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45 enhance opportunities for employee voice in informing future change as well as a
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47 consideration of the potential impact of any change initiatives on their wellbeing.
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52 The findings of this study show that academics are at high risk of work-related stress
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54 from a range of sources. It should be noted that each of the psychosocial hazards assessed
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56 are reliably linked with key outcomes such as mental and physical health problems, impaired
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58 job performance, absenteeism and attrition (Mackay et al. 2004; Ravalier, McVicar, and
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60 Munn-Giddings 2013). Interventions are therefore urgently required to protect the wellbeing

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3 of academic staff and ensure the healthy functioning of UK universities. The few studies that
4 have evaluated strategies to support wellbeing in the sector are limited, as they typically
5 focus on students, sample all categories of university staff, and/or be limited to single
6 institutions or small groups of participants (Fernandez, Howse, Rubio-valera et al. 2016;
7 Guthrie, Lichten, van Belle et al. 2017).

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14 It is widely acknowledged that attempts to tackle work-related stress at source are
15 more effective than those that seek to improve individual stress management skills (Nielsen
16 and Noblet 2018). Nonetheless, most of the intervention studies conducted in the HE sector
17 focus at the individual level, for example health literacy and fitness, mindfulness and
18 executive coaching (Fernandez et al. 2016; Hayter et al. 2011; Koncz 2016). While these
19 techniques can be effective, it is crucial to tackle the working conditions that underpin work-
20 related stress in academic employees for lasting improvement to wellbeing. The findings of
21 this study can help address the structural causes of stress in the sector in order to reduce
22 the future risk to health, job performance and retention. They indicate that reducing demand,
23 improving working relationships and managing change more effectively should be prioritised,
24 but how the different areas of work activity interact should be considered. Rising demands
25 and role stress are likely to reduce opportunities for support and impair the quality of working
26 relationships. The time and effort required to meet the increasing demands from competing
27 roles documented in this study will also reduce opportunities for academics to offer support
28 and engage in mutually fulfilling relationships with colleagues. Moreover, poorly managed
29 change with little consultation is likely to exacerbate the negative effects of job demands and
30 role stress, erode perceptions of job control and discourage employees from expressing their
31 views.

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53 This study has highlighted changes in psychosocial risk profiles in the HE sector and
54 identified priorities for change, but some limitations should be acknowledged. Firstly, it was
55 not possible to establish a response rate, as the link to the study was disseminated by
56 different methods. Secondly, although sample sizes for all three waves of data collection are
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3 substantial, perceptions of psychosocial hazards were obtained at the aggregate level only
4 and it was not possible to match responses to individual academics over time. Thirdly,
5 potential explanations for the steady increase in the perception of many psychosocial
6 hazards could be suggested, but causality cannot be established. Future research could
7 adopt a longitudinal approach, possibly using diary methodology, to explore academic
8 employees' perceptions of change in key aspects of their work over time and the implications
9 for indices of wellbeing such as health, job satisfaction and performance.
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19 Several areas for future research have been highlighted by the findings of this study.
20 Although the HSE measure includes key psychosocial hazards, such as demands and
21 control, these are very general. Previous research indicates that more job-specific hazards,
22 such as student expectations and learning capabilities, are profound sources of strain
23 (Hamilton 2019) so future research could supplement the HSE questionnaire with measures
24 that capture demands relating to teaching, research and commercial activity. There is
25 evidence that individual difference and job-level variables can influence academics'
26 experiences of work-related stress (Winefield and Jarrett 2001), but this study did not
27 examine the effects of age, gender, grade, institution type and mode of employment on
28 levels of psychosocial risk over time. It seems particularly important to gain insight into the
29 experiences of academics who are on fixed-term and hourly paid contracts. Such contracts
30 have become increasingly common in universities in the UK and many other countries
31 (HESA 2018), but staff are frequently under-represented in studies as they are frequently
32 difficult to access.
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49 It is particularly important for regular audits to be conducted at a sector level in order
50 to provide insight into the work-related wellbeing of academic staff and identify the changes
51 that might have led to improvements or deterioration. The final wave of data collection for
52 the present study was in 2014 and a further wave is urgently required. There is no reason to
53 believe that wellbeing will have improved and may even have deteriorated in line with the
54 continual changes experienced across UK universities. Adopting a well-validated risk
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3 assessment approach, such as the HSE standards, is clearly important at a sector level, but
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5 it can also provide a framework for institutions and their employees to work together to
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7 formulate and prioritise well-targeted interventions. Organisations can show their
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9 commitment to supporting staff wellbeing by a continuous process of improvement in
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11 diagnosing, monitoring and managing the sources of work-related stress. The importance of
12
13 autonomy, respect and professional identity to the wellbeing of academic staff highlighted in
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15 previous research suggests that participatory approaches will be particularly helpful in
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17 identifying opportunities to reduce stress.
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Table 1: HSE benchmark levels and action required

Traffic light colour	Percentile	Action
Red	Below 20 th percentile	Urgent action is required
Yellow	Above 20 th but below 50 th percentile	Clear need for improvement
Blue	Scores are above average but below 80 th percentile	Good, but still room for improvement
Green	Scores at, above or close to 80 th percentile	Very good – maintain

Table 2: Study samples

	2008	2012	2014
Sample size	6,203	7,068	3,952
% Female	46	53	53

Table 3: Details of hazard categories and Cronbach alpha ranges

Hazard Category	No. of items	Example item	Cronbach's α ranges for 3 waves
Demands: e.g. workload, pace of work, working hours	8	I have unachievable deadlines	.85 - .87
Control: e.g. autonomy over working methods, pacing, timing	6	I have a say in my own work speed	.85 - .87
Manager support: e.g. feedback, encouragement	5	My line manager encourages me at work	.86 - .90
Colleague support: e.g. assistance and respect from peers	4	If work gets difficult, my colleagues will help	.86 - .89
Relationships: e.g. interpersonal conflict, including bullying	4	Relationships at work are strained	.84 - .86
Role: e.g. role clarity, how work fits into organisational aims	5	I am clear what is expected of me at work	.83 - .88
Change: e.g. how change is managed and communicated	3	When changes are made at work, I am clear how they will work out in practice	.81 - .83

Table 4: mean scores for hazard categories, HSE benchmarks and percentiles (2008)

Hazard category	Mean	HSE benchmark mean	HSE Percentile
Demands	2.53	3.10	5
Control	3.75	3.47	85
Manager support	2.86	3.46	<5
Peer support	3.34	3.78	<5
Role	3.72	4.18	<5
Relationships	3.57	3.85	25
Change	2.50	3.04	5

Table 5: mean scores for hazard categories, HSE benchmarks and percentiles (2012)

Hazard category	Mean	HSE benchmark mean	Percentile
Demands	2.40	3.10	1
Control	3.59	3.47	65-70
Managerial support	2.89	3.47	<5
Peer support	3.35	3.78	<1
Role	3.65	4.18	<5
Relationships	3.48	3.85	10-15
Change	2.30	3.04	5

Table 6: mean scores for hazard categories, HSE benchmarks and percentiles (2014)

Hazard category	Mean	HSE benchmark mean	Percentile
Demands	2.38	3.10	5
Control	3.48	3.47	55
Manager support	2.69	3.46	<5
Peer support	3.24	3.78	<1
Role	3.48	4.18	<5
Relationships	2.53	3.85	<5
Change	2.32	3.04	<5

Table 7: Changes in hazard dimensions across waves

	2008 - 2012	Change	<i>D</i>	2012 - 2014	Change	<i>D</i>
Demands	2.53 – 2.40	-.13*	1.5	2.40 – 2.38	-.02	.03
Control	3.75 – 3.59	-.15*	.20	3.59 – 3.48	-.11*	.16
Manager support	2.86 – 2.84	-.02	.02	2.84 – 2.69	-.15*	.16
Peer support	3.34 – 3.35	.01	-.01	3.35 – 3.24	-.12*	.15
Relationships	3.53 – 3.48	.05	.05	3.48 – 2.53	-.95*	1.07
Role	3.72 – 3.64	-.08*	.06	3.65 – 3.48	-.16*	1.23
Change	2.50 – 2.30	-.20*	.18	2.30 – 2.32	+.02	-.02

* $p < .001$

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Figure 1: Changes across hazard categories by data wave

