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**Psychometric stress risk assessments: proceed with caution**

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### **Abstract**

#### **Purpose**

Despite extensive psychometric research on psychosocial assessment tools, comparatively little explores the practical application and evaluation of these tools for prioritising workplace psychosocial risks. This paper addresses this gap by illustrating the use of one popular, freely available measure in an applied risk assessment context, alongside qualitative data, highlighting questions and challenges for organisations.

#### **Methodology**

1425 employees from a UK public-sector organisation completed the Management Standards Indicator Tool (MSIT), General Health Questionnaire, and open-text questions about stress-related and positive aspects of work. Three approaches to analysing MSIT data were adopted: descriptive statistics, multiple regression, and risk calculation, complemented by analysis of open-text qualitative data.

#### **Findings**

Demands and change were ranked prominently by each method, however, there were major inconsistencies; e.g. relationships ranked first using one method but sixth of seven by another. Qualitative comments broadly reflected quantitative analyses, with demands mentioned most frequently, but highlighted issues and nuances not covered by the MSIT.

#### **Research implications/limitations**

Only a selection of potential approaches to analysis are considered here, future research to support employers with analysis and evaluation of quantitative risk assessment data would be valuable.

#### **Implications**

Risk-assessors' choice of analysis could have major implications for where employers direct resources, supporting existing guidance to avoid sole reliance on quantitative surveys for risk assessment.

#### **Originality**

This paper builds on the necessary - but not sufficient - psychometric foundations of risk assessment tools, integrating qualitative data, illustrating questions and challenges in applying them for their stated purpose.

## 1 Introduction

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4 Despite the well-established rationale for preventative stress-management interventions, outcomes have been  
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6 inconsistent (Richardson & Rothstein, 2008) with much of this discrepancy attributed to the implementation  
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8 process (Biron *et al*, 2012). However, unless risks to well-being are accurately evaluated, even well-delivered  
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10 interventions may miss key issues, risking wasted time and resources. But how do organisations decide which  
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12 are most problematic or harmful?  
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16 Risk assessment aims to understand and express the level of risk, by taking a systematic, stepwise approach  
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18 (Society for Risk Analysis. 2018), and the UK's Health and Safety Executive's (HSE) Management Standards  
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20 approach provides advice to guide employers through the stages of this process  
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22 (<https://www.hse.gov.uk/stress/standards/index.htm>); from risk identification (assessing who can be harmed  
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24 and how), to risk evaluation (the process of comparing risk analysis results against risk criteria to determine  
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26 the significance and acceptability of the risk) (SRA, 2018), followed by the development of action plans and  
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28 ongoing review. This paper considers both the assessment and evaluation stages, aiming to illustrate the extent  
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30 to which analytic choices may influence the selection of priority psychosocial risks, based on a widely used  
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32 psychometric tool, and the role of qualitative data in supplementing and informing quantitative findings.  
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37 Risk assessment and evaluation is a complex process so, to make the identification and evaluation of potential  
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39 work-related stress risks more accessible to employers, the HSE developed the Management Standards  
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41 Indicator Tool (MSIT) (Cousins *et al*, 2004). The MSIT is a freely available 35-item questionnaire aimed at  
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43 managers and those responsible for employee wellbeing within organisations (HSE, 2007), providing  
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45 quantifiable information about seven key organisational psychosocial stressors: *change, control, demands,*  
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47 *manager support, peer support, relationships* and *role clarity*. These factors were drawn from extensive  
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49 reviews of existing psychometric tools (e.g. Cox, 1993; Rick *et al*, 2001), theoretically underpinned by Job  
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51 Demands-Control (JDC; Karasek, 1979) and Job Demands-Control-Support models (DCS; Johnson & Hall,  
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53 1988). These highlight job demands, control, and support as key psychosocial work features relating to work  
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55 *content*, while the MSIT also incorporates three empirically supported job *context* factors (Cox *et al.*, 2009);  
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57 namely, role clarity, relationships, and change.  
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1 The MSIT has been well-received for its ease of use and accessibility (e.g. Cox *et al*, 2009), with reliability  
2 and validity supported across a range of occupations and national contexts (Brookes *et al*, 2013; Edwards &  
3 Webster, 2012; Toderi *et al*, 2013; Vaamonde & Giacobino, 2023); e.g. translated into 18 languages, it forms  
4 a key component of the Italian Workers' Compensation Authority (INAIL) approach (Di Tecco *et al*, 2015;  
5 Persechino *et al*, 2013). However, while identifying the prevalence of psychosocial stressors is necessary, it  
6 is not sufficient: risks also need evaluating in order to prioritise them.  
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10 Additionally, the interconnectedness of psychosocial stressors (e.g. Elovainio *et al*, 2022) adds to the  
11 complexity of interpreting findings. For example, Schaufeli (2017) notes the MSIT and other risk assessment  
12 tools (e.g. Copenhagen Psychosocial Questionnaire III; COPSOQ, Burr *et al*, 2019; Nordic Questionnaire for  
13 Psychosocial & Social Factors at Work, Lindström *et al*, 2000) measure the extent to which stressors are  
14 present, but not the theoretical paths or interactions by which stressors may affect outcomes. Accordingly,  
15 while tools like the MSIT may effectively identify frequency of exposure to stressors, it is unclear how to use  
16 their output to prioritise risks and target interventions, presenting a particular challenge for employers who  
17 may not have expertise in this area. Despite the MSIT's well-validated psychometric properties, it is less  
18 apparent how organisations may use and interpret their data to make intervention-related decisions. Use of  
19 psychometric instruments to assess psychosocial conditions is well-established, yet research is lacking  
20 regarding their utility for prioritising risks in practice (e.g. Burr *et al*, 2019; Metzler *et al*, 2019) - including  
21 the MSIT more specifically (e.g. Brookes *et al*, 2013). Therefore, this paper reports its use in an applied risk  
22 analysis context, comparing priorities highlighted by the MSIT with open-text qualitative data.  
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26 The HSE is explicit in its guidance to employers that the MSIT should form only one component of a  
27 comprehensive stress-risk assessment, and that no questionnaire can cover all work-related stressors (Cousins  
28 *et al*, 2004), emphasising the importance of integrating data from a range of sources such as focus groups and  
29 employee consultations. Nonetheless, research suggests employers still place excessive emphasis on the easy-  
30 to-administer MSIT (Gaskell *et al*, 2007) and are less likely to use more resource-intensive sources (Di Tecco  
31 *et al*, 2015; Mellor *et al*, 2011). Indeed, these challenges apply to psychosocial risk evaluation and stress-  
32 management more generally and are not unique to the MSIT (e.g. Jimmieson *et al*, 2021; Schuller, 2020).  
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1 Consequently, if employers are using psychometric tools in this way, what are the implications for risk  
2 assessment outcomes? The quantifiable data these tools provide, combined with the reassurance for employers  
3 that they come from a reputable source, may give non-experts undue confidence in their output. Therefore,  
4 this paper focuses on a selection of approaches organisations can adopt when gathering and analysing MSIT  
5 data, and the extent to which their analytic choices at that stage could affect conclusions.  
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16 The HSE provides a spreadsheet-based analysis tool and the free, base version, of the spreadsheet presently  
17 produces descriptive statistical output, such as mean scores. These have tended to show relatively little  
18 variation in the rank-order for the seven MSIT risk factors, across a range of occupational groups and settings,  
19 with *change* and *demands* consistently among the ‘highest’ ranked stress-risk factors (e.g. Bevan *et al*, 2010;  
20 Basu *et al*, 2016; Payne & Kinman, 2019; Ravalier *et al*, 2017). However, MSIT’s subscale scores are not  
21 standardised and are therefore not comparable, so one cannot say that *relationships* are less of a risk than  
22 *change*, based on its higher score alone - nor do the HSE advocate using the data in this way. Therefore,  
23 although frequencies and mean scores tell us something in relation to risk identification, they are limited in  
24 risk analysis contexts, regarding the severity or likelihood that a stressor is problematic. This raises questions  
25 about their utility in identifying priorities, so how might organisations move beyond this raw data?  
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43 Rick *et al*. (2001) caution against focusing solely on measuring hazards and assuming consequent  
44 psychosocial harm; instead, they encourage organisations measure both. This suggests alternative approaches  
45 are required – including relevant outcome measures – if the MSIT is to be used to prioritise potential risks.  
46 The inclusion of additional measures to capture relevant outcomes, such as symptoms of psychological ill-  
47 health that are integrated within some other tools (e.g. COPSOQ), allows further quantitative assessment of  
48 the relative influence of the seven MSIT risk factors, providing more detailed coverage of workplace stressors  
49 and employee psychological health (Brookes *et al*, 2013). Multiple regression is an established statistical  
50 approach for analysing relationships between a relevant outcome variable (e.g. psychological health) and  
51 multiple predictors simultaneously, widely used in MSIT and comparable research (e.g. Kinman *et al*, 2016;  
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1 Metzler *et al*, 2019). Alternatively, the risk calculation approach (Clarke & Cooper, 2004) handles data  
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3 differently and was devised explicitly in relation to psychosocial risk management contexts, it incorporates  
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5 both frequency of exposure to the stressor (mean subscale score) and probability of harm (correlation with  
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7 relevant outcome measure).  
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11 Crucially, Metzler *et al* (2019) found that both of these methods suggested different priorities, in what is - to  
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13 the best of the authors' knowledge - the only published study to compare outcomes from different analytic  
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15 methods in a risk assessment context. They assessed psychosocial conditions in a German manufacturing  
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17 company, finding that four quantitative methods (subscale means; benchmark values; multiple regression, and  
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19 Clarke & Cooper's risk calculation approach) each suggested different priorities. Kop *et al's* (2016) review  
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21 and taxonomy of psychosocial work environment questionnaires show the differing scope and content of  
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23 psychosocial work environment scales, but their scoring methods tend to produce descriptive output which  
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25 still require selection of analytic method or interpretation. Consequently, while Metzler and colleagues'  
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27 findings are based on the German version of the COPSQ (Nübling *et al*, 2005), this is also relevant to MSIT  
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29 and many other comparable validated tools.  
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35 The possibility of priorities being a function of analytic method, rather than the most problematic issues,  
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37 carries important implications for any organisation employing quantitative instruments to evaluate stress-risks  
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39 – particularly when the MSIT was designed for use within organisations, by managers and others with stress  
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41 management-related responsibilities (HSE, 2007). It therefore also suggests the value of research to  
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43 understand and support these elements of the process, to maximise their efficacy.  
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48 There are further limitations to taking an exclusively quantitative approach to such complex and subjective  
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50 phenomena; for example, we cannot assume a standardised questionnaire will cover all relevant stressors in a  
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52 particular setting (Menghini & Balducci, 2021), or that a one-size-fits-all psychometric instrument used in  
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54 isolation will explain the most important local and contextual issues (Mellor *et al*, 2011). Indeed, Metzler *et*  
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56 *al's* (2019) finding underlines HSE recommendations to draw on a wider range of information avoiding over-  
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58 reliance on psychometric instruments for identification and evaluation of risks. Yet employers' tendency to  
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60 omit 'time-consuming' or 'resource intensive' employee consultations (e.g. Gaskell *et al*, 2007, Mellor *et al*,

2011) suggests that where best-practice is unfeasible, more pragmatic approaches may be required. Consequently, given the potential value of combining qualitative and quantitative methods (Nixon *et al*, 2011), supplementing quantitative surveys with open-ended questions may represent a realistic compromise. Our research incorporates both, to consider how qualitative data might inform and compare with conclusions drawn from psychometric assessment. While we focus on the MSIT here, Burr *et al* (2019) call for similar research regarding the practical application and evaluation of psychosocial stressors in relation to the COPSOQ. Therefore, given the number of available related psychometric instruments and their acknowledged limitations, this study has implications beyond the MSIT itself.

The use of qualitative data via open-text survey questions is acknowledged as no panacea, however; it lacks the depth and the opportunities for clarification or follow-up on ambiguous responses that are available with interviews or focus groups. Nonetheless, open-text questions may provide an expedient method for enhancing employee responses in quantitative surveys, when more resource-intensive methods truly are unfeasible, enabling elaboration on survey items as well as identification of unaddressed issues (O'Cathain & Thomas, 2004). Consequently, this study reports the MSIT's use in evaluating priority psychosocial stressors, in an applied risk assessment context, supplemented by a measure of psychological ill-health. We compare findings from three quantitative approaches to the analysis of MSIT data and the priorities suggested by each; namely, 1) mean MSIT subscale scores, 2) multiple regression, 3) Clark and Cooper's (2004) risk calculation approach, complemented by analyses of qualitative survey-based responses.

## Method

This survey was conducted in September 2014, within a UK local authority employing 4675 staff and yielded cross-sectional MSIT data from the risk-assessment stage of an organisation-wide employee well-being intervention programme. Contextually, the initiation of this programme and survey followed senior management concerns about the effects of a prolonged period of national budget cuts and subsequent downsizing on employees' psychological health. The risk-assessment phase was intended to identify and evaluate priorities to support planning of relevant interventions. Employees were permitted time by their

1 employer to complete the measures during scheduled working hours, participation in the survey was voluntary,  
2 while confidentiality and anonymity of data was emphasised (ethical approval was granted by University  
3 ethics committee). The risk assessment itself used a broader range of measures and sources of data, but this  
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8 paper focuses on the MSIT and the qualitative data described here.  
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11 The MSIT was intended to support identification and prioritisation of issues for potential intervention (see  
12 table I for example items). It uses a five-point scale from 1 = 'never' to 5 = 'always' and 1 = 'strongly disagree'  
13 to 5 = 'strongly agree'. The MSIT user manual suggest scores are calculated so higher scores reflect more  
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Edwards and Webster (2012) found subscale reliabilities ranging from .81 (*change*) to .89 (*manager support*).

**[Table I: Management Standards Indicator Tool (MSIT) subscales and example items]**

The outcome variable - General Health Questionnaire (GHQ-12; Goldberg & Williams, 1988) - is a self-report  
screening tool identifying common symptoms of poor mental health, well-validated in workplace settings  
(Stride *et al*, 2008), including in relation to the MSIT (Guidi *et al*, 2012). Respondents consider their  
experience over the previous month in relation to 12 statements, e.g. 'Have you been feeling reasonably happy,  
all things considered?' Likert scale responses are scored from 0 = 'less than usual' to 3 = 'much worse than  
usual', with higher scores indicating poorer psychological health.

### **Qualitative data**

An open-text question – "What is the most stressful aspect of your role?" - was intended to align with the  
MSITs focus on stressors, enabling employees to raise issues not covered by the quantitative survey, and to  
expand on those that were (O'Cathain & Thomas, 2004), as well as corroborating the quantitative data. Given  
the aim of the survey – to aid the organisation to prioritise psychosocial issues for action – this question asked  
respondents to identify aspects that were *most* stressful, rather than listing all that were potentially  
problematic; although employees were able to share more if they wished. The MSIT also includes subscales  
assessing the presence or absence of positive features of the psychosocial work environment (e.g. manager



support), consequently we also included a further open-text question allowing respondents to highlight any potential positive aspects of work: “*What does [the organisation] currently do well with regard to staff wellbeing?*”.

To interpret MSIT data and identify priorities for action, we used four approaches as outlined previously: -

- 1) Mean subscale scores to rank frequency of exposure to psychosocial stress-risks.
- 2) Multiple regression to highlight the relative importance of the seven stress-risk factors as predictors of poorer psychological health, in which each MSIT subscale score was entered simultaneously into the regression equation, with GHQ-12 as the dependent variable.
- 3) Calculation of risk approach, by Clarke and Cooper (2004), which considers both the frequency of exposure to stressors and the correlation between stressor and stress-related outcome (e.g. GHQ-12) to determine overall risk. The calculation = mean subscale score \* (correlation  $r^2$  \* 100). Subscales were scored such that higher mean scores indicated greater frequency of exposure, so higher overall scores indicate greater risk.
- 4) Analysis of qualitative comments categorised by the first author, using template analysis (King, 2012); the coding template was based on the MSIT’s seven stress-risk factors, with further categories added and defined in response to additional themes raised by participants. As an open-text question, respondents could potentially indicate more than one stressor, so one comment could incorporate or refer to more than one.

## Results

The sample of 1425 (31% response rate) was predominantly female and full-time. Chi-square tests for goodness-of-fit between the sample and the overall workforce indicated the ratio of men and women was not significantly different (sample = 69%; workforce = 71%;  $\chi^2(1) = 1.83, p > .05$ ), although the ratio of full/part-time participants differed significantly (sample = 79%; workforce = 65%;  $\chi^2(1) = 129.25, p < .001$ ). Statistical analyses were conducted using SPSS (version 20). Descriptive statistics, correlations, and scale reliabilities for MSIT subscales and GHQ-12 are shown in table II. All correlations were statistically significant ( $p < .001$ ), and based on mean subscale scores, *change* (M = 2.98; SD = 0.89), *demands* (M = 2.85;

SD = 0.69) and *control* (M = 2.49; SD = 0.75) were the most frequent issues facing employees (see table 2); while *role clarity* (M = 1.92; SD = 0.70) was the least.

**[Table II. Descriptive statistics and correlations for MSIT subscales and GHQ-12]**

Comparison of the rank order of risk priorities arising from the four approaches taken is shown in Table III. There was some similarity in priority given by each approach; *demands* (always in the top two) and *change* (ranked first by two methods), with *peer support* consistently ranked as lower priority. However, *relationships* (i.e. strained relationships, bullying, and harassment) were ranked differently across approaches (ranging from 1<sup>st</sup> to 6<sup>th</sup>).

**[Table III. Ranking of psychosocial risks according to method of analysis]**

Multiple regression highlighted *relationships* ( $\beta = -.22; p < .001$ ), *demands* ( $\beta = -.20; p < .001$ ) and [lack of] *role clarity* ( $\beta = -.19; p < .001$ ), respectively, as the strongest predictors of GHQ-12 score. *Change* and *control* were also statistically significant contributors (see table IV), although all effect sizes were relatively modest with little difference between the top three. Overall, the seven MSIT subscales explained 31% of the variance in GHQ-12 (adjusted  $R^2 = .31$ ).

**[Table IV. Multiple regression showing contribution of MSIT factors to GHQ-12 score]**

Using the risk calculation approach (table V), *change* (risk calculation score = 53.64) and *demands* (39.90) were ranked first and second, respectively. However, the latter had a similar 'risk' score to *manager support* and *relationships*. *Control* was ranked as the lowest risk factor (14.94).

**[Table V. Calculation of risk factor using Clarke and Cooper method]**

**Qualitative data**

“What is the most stressful aspect of your role?”

1 Qualitative data (table VI) regarding the most stressful aspects of their role were provided by 70% of  
2 respondents (993 comments). Of the seven MSIT-related factors, job demands attracted the most comments  
3 (47% of respondents to the question), followed by change (16%), while peer support received the fewest  
4 comments (2%). Note, some respondents indicated more than one stressor in their comments, hence total  
5 percentage adds up to over 100%.  
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13 Of the comments referencing work demands, there were three subthemes. Researchers have previously  
14 distinguished between quantitative and qualitative demands (e.g. Karasek, 1979), and these were represented  
15 by two of the subthemes. Quantitative demands - pace and volume of work – were most common, with many  
16 specifying the impact of ongoing budget reductions and additional duties previously carried out by posts  
17 subsequently lost in the cuts. Qualitative demands - challenging or emotional nature of the work – were also  
18 represented, e.g. supporting vulnerable people; dealing with abusive customers; or managers trying to support  
19 staff, deal with staff conflict, or deliver changes within their teams.  
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30 Notably, there was an additional theme related to demands, with approximately a third of demands-related  
31 comments included reference to expectations: whereby employees needed to reduce their own (e.g. pay), yet  
32 perceiving this was not reflected in comparably reduced expectations of them. Although this could be  
33 considered distinct from ‘demands’ itself – and there are parallels to psychological contract breach (e.g.  
34 Collins & Beauregard, 2020) - the comments covered by this category were all made in reference to workloads,  
35 highlighting the additional pressure this perceived mismatch caused.  
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45 Numerous comments recognised the impact of nationwide budget cuts on the availability of resources and the  
46 difficulties these had caused the organisation. However, the second most frequently raised issue related to  
47 how these changes had been managed, with lack of communication and a feeling of not being consulted or  
48 listened to being common themes. Additionally, when consultation about changes were referenced, some staff  
49 felt this was a formality, echoing findings of Smollan (2015) where consultation was viewed as insincere.  
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57 The fourth most frequently mentioned stressor was line management, ranging from lack of support, feedback  
58 or recognition regarding work/performance, to more overtly negative behaviours and overall ‘management  
59 style’ (e.g. disrespectful way of speaking to staff).  
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1 The further utility of qualitative data emerged around job insecurity and senior management support, not  
2 covered by MSIT. The former was particularly salient in an organisation experiencing ongoing cutbacks and  
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4 was fourth most frequently raised stressor (10%). Lack of recognition from senior managers was reported in  
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6 6% of qualitative comments as impacting negatively on morale.  
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11 Aside from categories not covered by the MSIT, ranking of the top risks via this qualitative approach was  
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13 similar to that obtained using the MSIT mean and risk calculation approaches. However, qualitative data  
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15 suggested line managers were among the most frequently cited stressors, which contrasts with findings from  
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17 the multiple regression analysis.  
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21 *[Table VI. Categories and themes (frequency and percentage) from qualitative responses to the question*  
22 *‘What is the most stressful aspect of your role?’]*  
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27 **Open-text question: “What does [the organisation] currently do well with regard to well-being?”**  
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29 There were fewer responses compared to the ‘most stressful’ question, with 481 comments (33% of  
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31 respondents) (see table VII). However, several positive aspects were reported, including existing support  
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33 provision, such as Occupational Health, Counselling, and Physiotherapy. Flexible working options were also  
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35 valued by as helping to balance both home and work responsibilities, while manager support was the third  
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37 most frequently cited positive aspect. In numerous cases, where good support from immediate line managers  
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39 was mentioned, it was contrasted with a perceived lack of support from senior managers or the organisation  
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41 as a whole. Furthermore, despite the cuts and uncertainty, 40 respondents mentioned positive aspects of their  
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43 employment terms and conditions/work policies, while supportive sickness absence policies, carers leave, and  
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45 annual leave entitlement were all recognised.  
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52 *[Table VII. Summary of most frequent themes in response to the question “what do [organisation] do*  
53 *well with regard to staff wellbeing?]*  
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## 57 Discussion

58 Data were collected to assess and evaluate baseline levels of the psychosocial environment and inform  
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60 priorities and target interventions as part of a new long-term organisational well-being strategy; the key aim

1 of the paper is to illustrate practical issues of analysis and interpretation when handling survey data in this  
2 context, and the comparability and role of qualitative data in relation to it.  
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8 The survey identified demands and change-related stressors as the main work-related issues, with managers  
9 also notable, but to a lesser extent across the analyses. While there was some alignment between the methods  
10 of prioritising stressors, inconsistencies emerged: for example, multiple regression ranked *relationships* as the  
11 highest priority, whereas mean scores placed it sixth out of seven. These discrepancies could significantly  
12 alter conclusions and subsequent actions, emphasising the rationale for raising this as a critical issue at the  
13 analysis stage. Furthermore, this is not unique to the MSIT, mirroring Metzler *et al's* (2019) findings using  
14 the COPSOQ in a different occupational context, where different methods of analysing stress-risk survey data  
15 also produced different conclusions.  
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29 The rank order of MSIT mean subscale scores also replicated previous research (e.g. Basu *et al*, 2016; Kinman  
30 *et al*, 2016), with *demands* and *change* ranked highest. Although mean scores indicate the perceived frequency  
31 of exposure, these do not imply comparable levels of severity because stressors are not necessarily equivalent  
32 (Clarke & Cooper, 2004). Using the GHQ-12 as an outcome variable allowed analysis of relationships between  
33 stress-risks and symptoms of psychological ill health. Here, *relationships* emerged as the strongest predictor,  
34 with four other MSIT subscales also reaching statistical significance, albeit with modest effect sizes.  
35 Meanwhile, Clarke and Cooper's (2004) Risk Calculation approach has the advantage of accounting for both  
36 frequency and severity of stress-risks, with the risk 'score' focusing on relative comparison between risks  
37 within a workplace. Here, the two most frequently mentioned stressors – *change* and *demands* - matched  
38 those from both qualitative and ranked mean data. Metzler *et al* (2019) have highlighted this as a promising  
39 approach worthy of further research., but as with other approaches there are no currently defined cut-off points  
40 for classifying potentially problematic risks.  
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59 Given the existing literature highlighting the impact of line managers on employees' psychological health –  
60 both positive (e.g. NICE, 2015) and negative (e.g. Skakon et al, 2010) – it was surprising that *manager support*

1 did not significantly predict GHQ-12 scores in our multiple regression analyses. This finding echoes previous  
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3 research (Guidi et al, 2012), but also contrasts with our qualitative findings. Considering the complex  
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5 interrelations within the psychosocial work environment (e.g. Elovainio et al, 2022), this discrepancy may  
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7 reflect conceptual or statistical issues regarding how stressors affect strain-related outcomes; for instance,  
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9 managers may be responsible for other aspects such as communicating change or clarifying team-members'  
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11 roles, which can lead to statistical overlap between these MSIT subscales. In other words, this shared variance  
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13 may obscure managers' influence on other features of the psychosocial environment when only considering  
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15 the relative effect size of the *manager support* subscale alongside all MSIT variables in multiple regression  
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17 analyses.  
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21 This suggests one advantage of the Risk Calculation approach as it reduces overlap between predictors and  
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23 therefore simplifies interpretation. However, when stressors are highly correlated, treating them as completely  
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25 independent could mean these risk scores may overestimate their cumulative impact. Thus, the strengths and  
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27 limitations of regression versus the Risk Calculation approach are essentially the inverse of each other. This  
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29 underscores the need to understand the strengths and limitations of different methods and their implications  
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31 for outcomes and their interpretation. Consequently, whichever analyses are used, it is therefore vital to be  
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33 aware of the underlying theory and how stressors and outcomes relate to each other.  
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40 Schaufeli (2017) emphasises that measures of the psychosocial environment should be theoretically grounded  
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42 and – taken together – our findings suggest a need for deeper understanding regarding the scope of subscales,  
43  
44 their commonalities, as well as pathways leading to outcomes. For example, the Job Demands-Resources  
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46 model proposes that demands and resources affect wellbeing outcomes via two different routes; job demands,  
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48 via the strain pathway, and job resources – such as manager or peer support – mediated via a motivational  
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50 pathway (Bakker & Demerouti, 2017). As such, the simple regression model applied here, and in numerous  
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52 other MSIT-based studies, is unlikely to reflect the way these psychosocial factors influence wellbeing-related  
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54 outcomes. Furthermore, qualitative data also highlights both the breadth and nuance that would be missed if  
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56 interventions relied solely on psychometric instruments for risk assessment.  
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1 Although managers were not prominent in quantitative data, qualitative data suggested otherwise. The MSIT  
2 assesses only positive managerial behaviours, so poorer scores indicate their absence, not accounting for  
3 negative aspects. However, our qualitative data pointed to excessive pressure from managers as a stressor.  
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8 Nonetheless, we also noted comments across both open-text questions, emphasising managers' value in  
9 supporting employees and not only their potential to function as stressors.  
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13 Qualitative data also expanded on other aspects the MSIT was not designed to cover; for example, although  
14 the pace and amount of work was most cited stressor in the qualitative data, another key theme indicated the  
15 nature of the work (i.e. qualitative demands). Additionally, there was also a perceived mismatch between job  
16 demands and recognition of the extra efforts staff were expending due to the context of reduced staffing and  
17 resources. Quantitative work demands came through strongly as a priority across the different analyses and  
18 the open-text data, seemingly a result of 'doing more with less' due to fallout from budget cuts. However, the  
19 qualitative data also suggested potential for both increasing recognition as well as considering how  
20 expectations may be managed in relation to those demands.  
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32 The degree to which these are 'risks' cannot be directly compared with MSIT findings here, but from a  
33 theoretical perspective, Effort-Reward Imbalance (ERI; Siegrist, 1996) suggests their impact. It could be  
34 argued that the MSIT contains elements of ERI, with *demands* and *manager support*, at least partially  
35 analogous to ERI's *effort* and *reward* constructs respectively, although ERI has been shown to explain  
36 additional variance beyond the DCS model (Mark & Smith, 2012), which informed the MSIT's development.  
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38 Jachens and Houdmont (2019) also find a combination of these models was more effective in estimating  
39 psychological distress than either model alone. Moreover, open-text data also identified senior  
40 management/organisation-level support – not covered by the MSIT - and lack of awareness of realities of  
41 frontline work, indicating that a potential Effort-Reward Imbalance stemmed from *both* line-manager and  
42 senior management. Therefore, only targeting the former could miss a key factor. The MSIT is designed to  
43 evaluate organisational stressors rather than individual differences (e.g. ERI's "Overcommitment" factor) but  
44 taking our qualitative findings as indicative of an imbalance does suggest that some measure of Organisational  
45 Justice (Greenberg, 1987) could add value to the MSIT, particularly given its potential causal influence on  
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1 ERI and other psychosocial work factors (e.g. Elovainio *et al*, 2022). This also echoes findings from an expert  
2 panel, and calls for the MSIT to incorporate higher-level organisational factors (Cox *et al*, 2009).  
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6 Additionally, while the pace and amount of work were mentioned most frequently in qualitative data,  
7 supporting its prominence in quantitative analyses, respondents also highlighted qualitative work demands  
8 such as managing the emotional aspects of work, also not covered by the MSIT. Such distinctions are crucial,  
9 particularly in public-facing occupations, and both the potential imbalance between demands and recognition,  
10 as well as the distinction between qualitative and quantitative demands, suggest potential local issues not  
11 apparent from the MSIT findings alone.  
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21 Management of change was evident across the different analyses and qualitative data, which cited  
22 communication, and lack of employee participation in relation to it. Frequent organisational change can itself  
23 lead to strain (Smollan, 2015) and this was a context of ongoing budget and staffing cuts. Consequently, this  
24 was also an area that our data suggested would be worthy of prioritising for intervention, particularly given  
25 that employee perceptions of the change process can reduce some of the adverse psychological effects, and –  
26 given resource constraints – their potential amenability to relatively simple communication interventions (e.g.  
27 Greenberg, 2006).  
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38 While the MSIT itself remains unchanged since its initial release (HSE website, 2023;  
39 <https://books.hse.gov.uk/Stress-Indicator-Tool>), additional question sets, assessing work/home interface and  
40 monitoring, have since been developed (Earle & Cunnah, 2020) to assess impacts of the blended nature of  
41 work, available to purchase from the HSE. More broadly, the pace of change means that the challenges of  
42 digitalisation are already hard-wired into the way we work, often without adequate consideration for employee  
43 health (Kirchner & Ipsen, 2023). This also signifies a challenge for psychosocial measures to ensure they  
44 adapt to suit the way we work.  
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## 57 **Strengths/Limitations**

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1 For a survey of this kind, response rates should be sufficient so that actions are based on issues experienced  
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3 by a sizeable proportion of the workforce (Semmer, 2006). However, despite organisational plans to maximise  
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5 survey awareness and participation, the survey only reached 31% of the workforce sampled. Although not  
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7 untypical for this kind of research (e.g. Anseel *et al.*, 2010), the response rate did mean that even with effective  
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9 interpretation, findings were based on a minority of staff. Although it is beyond the scope of this article to  
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11 detail the factors influencing the response rate, it was noteworthy that external pressures and enforced  
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13 organisational change during this period meant coordination and extensive plans for promotion and follow-up  
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15 to corroborate survey findings were adversely affected due to competing demands on key organisational  
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17 figures in the process. This only serves to highlight the importance of context, and that risk assessment does  
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19 not take place in a vacuum.  
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25 It was also notable that – unlike Metzler and colleagues (2019) - analysis here took place at the organisational-  
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27 rather than departmental-level, despite a diverse range of staff roles and functions (e.g. social care, customer  
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29 service). Nonetheless, the organisation wished to ensure that any potential interventions were rolled-out to all  
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31 staff, and so organisation-level analysis aligned with that. Role-specific or departmental-level analyses can  
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33 help to facilitate more tailored, localised interventions (Maneotis & Krauss, 2015). However, this broader  
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35 level of analysis can still be important as organisational-level stressors may be more influential than role-  
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37 specific factors, even across disparate high-stress occupations (Clarke & Cooper, 2000).  
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41 The MSIT was supplemented with a well-validated outcome measure, GHQ-12, although as a general measure  
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43 of psychological strain it may also be affected by non-work factors not assessed here. Consequently, work-  
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45 specific outcome measures or more proximal indicators of the effect of psychosocial conditions on employee  
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47 psychological health, may be more appropriate in this context. For example, Metzler *et al* (2019) employed  
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49 a range of relevant work, stress, and wellbeing-related outcome measures, aggregated in the analysis to  
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51 provide a broader analytic overview. Although further research is needed to evaluate its efficacy and validity  
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53 in a risk assessment context, it is worthy of further exploration.  
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58 The complexity of evaluating and interpreting stress-risks means that reaching definitive conclusions is  
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60 challenging, hence initial plans to gain post-survey feedback on findings from employees. We previously

1 highlighted that organisational change – prominent in our analyses – impacted the survey process, illustrating  
2 how the intervention process may be affected by the very issues they are aiming to assess and address. These  
3 limitations only emphasise the need for research to inform such a complex and context-dependent process.  
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## 8 **Recommendations and conclusions**

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12 Conclusions from analysis of MSIT data may differ depending on the method used, which is a key finding.  
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14 While this may not surprise those with relevant expertise, tools such as the MSIT are aimed at those who may  
15 have less specialist knowledge. Despite HSE guidance that the MSIT should not be the sole source of  
16 information for a risk assessment, variations in awareness and adherence to this guidance (e.g. Weinberg *et*  
17 *al*, 2019) raise questions regarding how widely organisations follow this advice. Based on the data presented  
18 here, our findings support the HSE's warning that reliance on a single psychometric questionnaire, whether  
19 MSIT or any other, is insufficient.  
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29 Academic research may not fully account for implementation-related challenges faced by practitioners, and  
30 there is a need to bridge the academic-practice gap (Potter *et al.* 2022). This paper has aimed to contribute by  
31 applying a widely used and well-researched tool to a real-world context, something lacking in the literature;  
32 we compared different analytic approaches, while also highlighting the value of even relatively limited  
33 qualitative data in informing decisions. Qualitative data was more than merely complementary, it provided  
34 important insight informing conclusions and potential recommendations.  
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44 When it comes to practice, the process evaluation literature has emphasised the importance of tailoring  
45 interventions to local contexts (Nielsen & Randall, 2013). Consequently, the accuracy of risk evaluation plays  
46 an important role because interventions must be tailored to the right things; unwittingly prioritising less-  
47 problematic issues risks disappointing outcomes by leaving key issues untouched. Notwithstanding resource-  
48 related challenges affecting feasibility of more in-depth employee involvement noted here and elsewhere (e.g.  
49 Mellor *et al*, 2011), employee participation is recommended from a risk assessment perspective, allowing  
50 greater insight into local issues. Furthermore, they also grant employees a greater sense of voice and  
51 instrumentality in the process (Wood, 2008), associated with intervention success (e.g. Sørensen & Holman,  
52 2014). We recognise that open-text survey questions represent comparatively limited participation, compared  
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1 to focus groups or interviews, but they do provide more opportunity and insight than allowed within the  
2 constraints of a solely quantitative survey. Therefore, the addition of open-text questions and appropriate  
3 guidance for employers may be worthy of future inclusion and further research.  
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9 Two methods of analysis reported here required an outcome variable - which the MSIT does not currently  
10 include - and the addition of a stress-related or other relevant outcome measure is as important a consideration  
11 in research as it is in practice. Furthermore, the use and synthesis of a range of analyses – of which this paper  
12 describes only a selection – may also be more appropriate than relying on a single one, with other methods  
13 such as odds-ratios (e.g. Bevan *et al*, 2010) or risk matrices (e.g. Taibi *et al*, 2022) as additional options.  
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Furthermore, some psychometric instruments include benchmark data for comparison with local data  
(Edwards & Webster, 2008; Nübling & Hasselhorn, 2010); indeed, this was originally part of MSIT's analysis  
tool, although concerns about the applicability of benchmarks across diverse contexts (Bevan *et al.*, 2010;  
Metzler *et al.*, 2019) led to their removal from the MSIT and benchmarks were unavailable during this study.  
Since this study was conducted, benchmarking functionality has been reintroduced in an updated version of  
the MSIT analysis tool, although at the time of writing, a paid license is required for more than 50 employees.  
Nonetheless, the reference values themselves are available (e.g. Edwards & Webster, 2012), so research  
evaluating the applicability of these or other industry-specific benchmarks across industries, in addition to the  
collection and validation of up-to-date benchmarking data would also be useful to support the use of the MSIT.  
In line with the HSE, we too conclude it would be inappropriate to place undue confidence in the quantitative  
findings alone. Currently the MSIT and other psychometric tools are useful to provide internal pre-  
intervention benchmarks and monitor progress within an organisation over time, but as an initial risk  
assessment tool it remains unclear if, or how, organisations should use measures such as this to prioritise  
psychosocial stressors. There are many methods potentially available, but insufficient understanding may  
only serve to introduce error into an already complex process. The withdrawal and subsequent reintroduction  
of the benchmarking data from the MSIT analysis tool further underlines the challenges in identifying priority  
risks using descriptive statistics. The HSE's recommendation to supplement quantitative data with other  
sources should therefore be heeded - it is clear this added important additional insight here. Finally, guidance

for employers to analyse and interpret MSIT data would have considerable potential to enhance the utility of this well-established, popular, and freely available HSE tool.

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## Psychosocial risk assessment: proceed with caution

### Tables

Table I: Management Standards Indicator Tool (MSIT) subscales and example items

MSIT subscale (No. of items)	Example item
Demands (8)	<i>I have to neglect some tasks because I have too much to do</i>
Control (6)	<i>I can decide when to take a break</i>
Manager support (5)	<i>I am given supportive feedback on the work I do</i>
Peer support (4)	<i>If work gets difficult, my colleagues will help me</i>
Relationships (4)	<i>Relationships at work are strained</i>
Role (5)	<i>I am clear what is expected of me at work</i>
Change (3)	<i>Staff are always consulted about change at work</i>

Table II. Descriptive statistics and correlations for MSIT subscales and GHQ-12 (higher scores indicate poorer conditions)

Variable	Mean (SD)	1	2	3	4	5	6	7	8
1. GHQ-12	13.78 (6.41)	(.92)							
2. Change	2.98 (0.89)	.43	(.79)						
3. Demands	2.85 (0.69)	.38	.34	(.84)					
4. Control	2.49 (0.75)	.25	.35	.17	(.84)				
5. Manager support	2.47 (0.91)	.40	.68	.30	.38	(.90)			
6. Peer support	2.16 (0.70)	.33	.56	.29	.30	.65	(.83)		
7. Relationships	2.13 (0.73)	.43	.47	.36	.27	.57	.58	(.76)	
8. Role	1.92 (0.70)	.40	.55	.23	.25	.50	.45	.36	(.84)

Note:  $n = 1,425$ ; all correlations significant at  $p < 0.001$ ; alpha coefficients shown on diagonal

Table III. Ranking of psychosocial risks according to method of analysis

MSIT subscale	Mean score	Multiple regression $\beta$	Clarke & Cooper risk calculation	Qualitative data (Number of comments in parentheses)
Change	1	4	1	2 (164)
Demands	2	2	2	1 (467)
Control	3	5	7	6 (23)
Manager support	4	7	3	3 (97)
Peer support	5	6	6	7 (21)
Relationships	6	1	4	4 (62)
Role	7	3	5	5 (45)

Note: Ranking of 1 = highest risk; ranking of 7 = lowest risk

1 Table IV. Multiple regression showing contribution of  
2 MSIT stress risks to GHQ-12 score  
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MSIT subscale	GHQ-12
Relationships	.22***
Demands	.20***
Role	.19***
Change	.14***
Control	.07**
Peer support	-.06
Mgr. support	.03
<b>Summary statistics</b>	
Multiple R	.32
Adjusted R <sup>2</sup>	.31
<i>F</i>	92.41***

16 \*\*\* p < .001; \*\* p < .01; \* p < .05;  
17 (Standardised beta coefficients shown)  
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Table V. Calculation of risk factor using Clarke and Cooper method.

Variable	Subscale mean (higher scores indicate greater frequency of exposure to stressor)	Correlation $r^2$ between subscale and GHQ-12	Step 4) Overall 'risk factor' Mean subscale score * (correlation $r^2$ * 100) Higher = more risk
1.Change	2.98	.18	53.64
2.Demands	2.85	.14	39.90
3.Manager support	2.47	.16	39.52
4.Relationships	2.13	.18	38.34
5.Role	1.92	.16	30.72
6.Peer support	2.16	.11	21.60
7.Control	2.49	.06	14.94

note: Calculation of risk factor = mean subscale score \* (correlation  $r^2$  \* 100)

Table VI. Categories and themes (frequency and percentage) from qualitative responses to the question ‘What is the most stressful aspect of your role?’ (993 comments, 70% of respondents)

Category (number of comments and % of total)	“What is the most stressful aspect of your role?” Illustrative themes
<b>Quantitative job demands</b> (467 comments; 47% of respondents)	<ul style="list-style-type: none"> <li>• The volume/pace of work</li> <li>• High expectations/targets, but fewer staff/resources</li> </ul>
<b>Change, and how it is managed</b> (164 comments; 16%)	<ul style="list-style-type: none"> <li>• Lack of communication/follow-up</li> <li>• Constant changes and uncertainty</li> <li>• Consultation feeling like a tick-box exercise</li> </ul>
Qualitative job demands (148 comments; 15%)	<ul style="list-style-type: none"> <li>• Supporting vulnerable people</li> <li>• Dealing with angry customers</li> </ul>
Job insecurity (103 comments; 10%)	<ul style="list-style-type: none"> <li>• Uncertainty about the future, living in a constant state of anxiety</li> <li>• The budget cuts, and knowing there are more on the way</li> </ul>
<b>Line managers</b> (97 comments; 10%)	<ul style="list-style-type: none"> <li>• Unapproachable, lack of support and encouragement</li> <li>• Pressure from managers</li> <li>• Lack of supervision/appraisals</li> </ul>
<b>(Poor) relationships</b> (62 comments; 6%)	<ul style="list-style-type: none"> <li>• Lack of respect between colleagues</li> <li>• Staff negativity</li> </ul>
Senior management (62 comments; 6%)	<ul style="list-style-type: none"> <li>• Lack of visibility/not approachable</li> <li>• Lack of understanding from senior management about realities of frontline work</li> <li>• Constantly changing senior management priorities</li> </ul>
<b>Role clarity</b> (45 comments; 5%)	<ul style="list-style-type: none"> <li>• Being unclear about role and what is expected</li> <li>• Unclear objectives, constant change without any real understanding of why</li> </ul>
Lack of recognition (29 comments; 3%)	<ul style="list-style-type: none"> <li>• Lack of appreciation of how hard staff are working under difficult circumstances</li> <li>• Feeling that job is not understood or valued by the organisation</li> <li>• Criticism for failure to hit targets, rather than praise for hard work</li> </ul>
Physical environment (25 comments; 3%)	<ul style="list-style-type: none"> <li>• Hot-desking &amp; open office</li> <li>• Lack of parking</li> <li>• Poor lighting/heating</li> </ul>
<b>Control</b> (23 comments; 3%)	<ul style="list-style-type: none"> <li>• Difficulty managing time due to reliance on other people</li> <li>• Lack of flexibility in hours</li> </ul>
<b>Peer support</b> (21 comments; 2%)	<ul style="list-style-type: none"> <li>• Colleagues not helping enough</li> <li>• Constantly chasing up responses from colleagues</li> </ul>

Note: table shows themes with 20 or more comments stressors in bold text indicate categories covered by the MSIT; some respondents specified more than one stressor so totals add up to more than 100%

Table VII. Summary of most frequent themes in response to the question “what do [organisation] do well with regard to staff wellbeing? (481 comments, 33% of respondents)

Category (& number of comments)	Illustrative themes/quotes
The support available to staff (153 comments; 32% of respondents)	<ul style="list-style-type: none"> <li>• A good range of support available. E.g. Occupational Health, counselling, smoking cessation, physiotherapy services</li> </ul>
Flexible working options (86 comments; 18%)	<ul style="list-style-type: none"> <li>• Flexible working hours arrangements really helpful/valued</li> <li>• Helps with work-life balance</li> <li>• Helpful with meeting deadlines/targets</li> </ul>
<b>Manager support.</b> (80 comments; 16%)	<ul style="list-style-type: none"> <li>• Immediate line manager is always supportive</li> <li>• Line manager is easy to talk to</li> <li>• Regular one-to-ones/supervision to raise/discuss issues</li> </ul>
Terms & conditions (40 comments; 8.3%)	<ul style="list-style-type: none"> <li>• Annual leave entitlement</li> <li>• Good sickness/absence policy &amp; carers leave</li> <li>• Pension</li> </ul>
<b>Peer support/colleagues</b> (26 comments; 5.4%)	<ul style="list-style-type: none"> <li>• Supportive colleagues</li> <li>• Colleagues are the biggest resource</li> </ul>

Note: Table shows themes with more than 20 comments; some participants indicated more than one factor