'Management Standards' and work-related stress in the UK: Policy background and science

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In the late 1990s, the Health and Safety Commission, as the lead authority in the UK responsible for Health and Safety at Work, conducted an extensive consultation exercise to elicit views about how work-related stress should be tackled. The Commission subsequently decided that regulation was not justified and opted for an approach with four strands. One of these was to work with stakeholders to develop clear, agreed standards of good management practice. This paper describes and discusses the rationale behind a standards-based approach that is essentially based on a method of controlling hazards. The Management Standards approach uses a taxonomy of six stressors that has evolved out of extensive research carried out on behalf of the UK's Health and Safety Executive (HSE) and in conjunction with stakeholders, and a three-phase risk assessment methodology. Further developmental work on the standards (which are to be subjected to public consultation) and associated measurement tools is described in a companion paper in this issue of *Work & Stress* (Cousins, Mackay, Clarke, Kelly, Kelly, & McCaig, 2004). The emphasis is on prevention towards reducing stress in the UK working population. We review current thinking on models of work stress, consider evidence linking workplace psychosocial factors and various health and organizational outcomes, and examine the effectiveness of organizational interventions. We argue that the literature supports an approach that aims to move organizational states (represented by the current situation) to more desirable ones (represented by the six Management Standards), and that this is an effective 'population' based approach to tackling workplace stress and promoting individual and organizational health.

1. Introduction

The Health and Safety Executive (HSE) is the UK body responsible for policy and operational matters related to occupational safety and health. Data given in a Health and Safety Executive report (HSE, 1999a) estimated that work-related stress costs UK employers about £353 million to £381 million *per annum* (in 1995/1996 prices) and society between £3.7 to £3.8 billion. Since these calculations were done, the estimated number of days lost due to stress has more than doubled (Jones, Huxtable, Hodgson, &

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Price, 2003). In response to these data, there was widespread agreement that action was necessary. The Health and Safety Commission (HSC) as the *overall* body responsible for the oversight of health and safety matters in the UK, has taken the lead in tackling work-related stress, and as part of that lead has set targets for the overall reduction in the burden of occupational health in the UK.

A strategy was agreed by the Commission in December 2000. This followed on from a public consultation exercise in the form of a Discussion Document entitled 'Managing stress at work' (HSE, 1999b) carried out between April and July 1999. The Discussion Document set out a number of challenges and possible approaches, including proposals for an Approved Code of Practice (ACoP; a quasi-regulatory approach that requires more formal compliance than adhering to guidance) and invited ideas for solutions. Almost all of the respondents to this exercise agreed that stress at work is a health, safety and welfare issue and one that should be dealt with under the existing UK regulatory framework. Almost all respondents thought that more needed to be done to tackle stress and many wanted an ACoP telling them how to go about it. The Commission decided that uncertainties about means of enforcement for such an approach precluded putting an ACoP in place at that time, but determined to keep the need for an ACoP under review in the future. HSC also recognized that there were a number of scientific and practical difficulties in making recommendations towards stress management. These barriers included, first, disagreements about terminology and theory, second, that there were few studies on the effectiveness of interventions, and third, that line managers had little motivation to take action (Daniels, 1996).

The issue for HSC was to devise a programme that would be effective in reducing work-related stress in the face of these obstacles. Consequently, work-related stress was adopted as an HSC 10-year priority programme. One of the aims of this Stress Priority Programme was to develop clear, agreed standards of good management practice for a range of stressors. The idea behind the use of an approach based on standards was that, as a well-established health and safety control measure, it would help employers to be clear about what was expected of them. It would also allow employers to monitor their performance in managing work-related stress both in terms of employee health and well-being and the enhancement of organizational effectiveness.

In preparing plans to implement this strategy, HSE identified a number of challenges that needed resolving before fully-fledged standards could be issued. These included the following.

- What is meant by a standard? (A process of managing the issue, an outcome to be achieved, or both).
- How to ensure that the standards will be applicable to a broad range of employers.
- Devising a taxonomy for the key stressors and the interrelationships between them.
- The process by which standards would be developed, including the key role of stakeholders.
- The mechanisms by which organizations could measure their performance against the standards.

This paper does not attempt to cover all the relevant literature that pertains to these issues, nor is it meant to be a review of all the facets of work stress. Its aim is to summarize the existing HSE approach to stress, describe how this has been developed and explain the thinking, rationale and scientific underpinning behind the development of the UK Management Standards for stress—within the context of the challenges noted above—from both a practical and a theoretical perspective. In the paper we discuss the basis for the

existing guidance and discuss the development of a taxonomy for work-related stressors. We then briefly review the basic concepts of risk management. Discussion then concentrates upon the general evidence, from a number of disciplines, linking psychosocial factors to harm and specific instances linking particular stressors to ill-health and related outcomes. We then develop the idea of standards in terms *of organizational states to be achieved* and discuss how these may be linked to conformance. We conclude with a discussion of how organizational interventions may bring about improvements in performance—the aim being to shift the working population under consideration to a more desirable or better state. A companion paper in this issue of *Work & Stress* by Cousins, Mackay, Clarke, Kelly, & McCaig (2004) considers some of the practical issues underlying the development and evaluation of the standards and the associated indicator tools.

The flow diagram shown in Figure 1 shows how the developments described in these two papers fits into the overall strategy for tackling work-related stress in the UK. The re-drafted standards are the subject of a public consultation campaign running during the summer of 2004 to further test their acceptability, and the final version will be published at the end of 2004. Their status will be that of guidance. That is, they will not be legally enforcible, but will help employers and others to comply with their duty under the law.

2.   The guidance-based approach to work-related stress

In the late 1980s the HSE undertook a prioritization exercise entitled *Health Risk Reviews* that resulted in ranking the leading causes of occupational ill-health. In this list, work-related stress was ranked second in importance and impact after musculoskeletal disorders. In response to these new priorities, the HSE commissioned a review of the literature on work-related stress (Cox, 1993) to inform its work on tackling the problem. Its terms of reference were to provide an overview, within the conceptual framework implied by current health and safety legislation, of the scientific literature relating to the nature, and health effects, of work stress and to the nature, and effectiveness, of stress management programmes.

Cox (1993) took as his starting point an existing model of stress based on the transactional approach (Cox & Mackay, 1981). He emphasized that there exists a growing consensus on the definition of stress as a psychological state with both cognitive and emotional components. There is now good agreement on the key features of the stress process (Cooper, Dewe, & O'Driscoll, 2001). In particular there is the notion that stress entails a sequence of events that include the presence of demands, a set of evaluative processes through which those demands are perceived as significant (in terms of threat, and in terms of its impact on individual resources or requiring of the individual something other than normal functioning), and the generation of a response that typically affects the well-being of the individual. One may also add over and above the importance of individual (subjective) appraisal and perception, the importance for the individual of failing to cope (Lazarus & Folkman, 1984) with demands and the consequences of failure to cope (Sells, 1970). More recent thinking suggests that organizational systems should incorporate the ability to enhance personal resources such as self-efficacy, which may be important for taking advantage of, for example, increased autonomy brought about by a work redesign intervention and coping with change generally. However, to summarize, the key feature of all of these models is the importance of a perceived imbalance or discrepancy between preferred or desired levels of particular environmental features and actual or reported levels themselves (Warr, 1990).
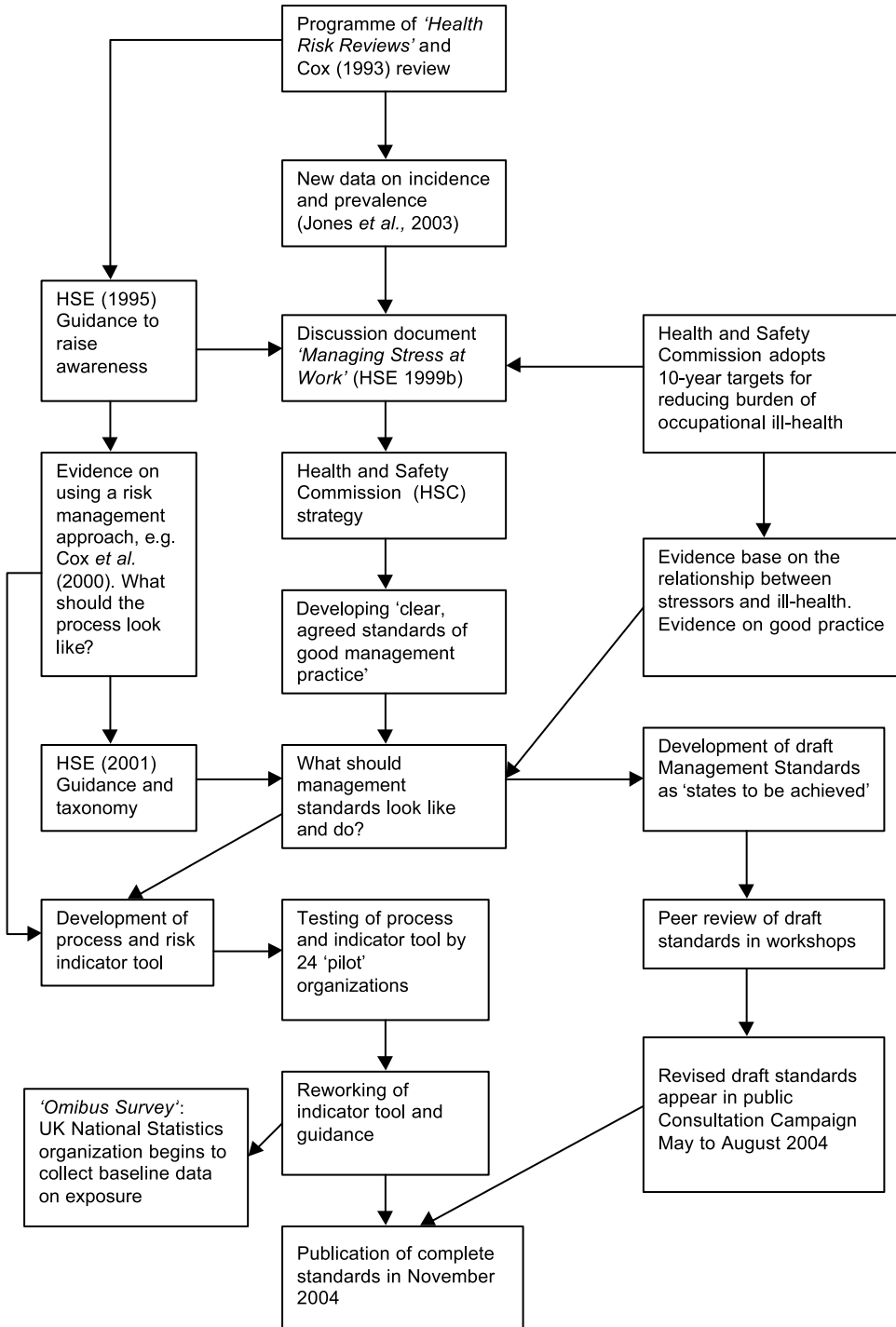
Programme of *'Health Risk Reviews'* and Cox (1993) review

New data on incidence and prevalence (Jones *et al.*, 2003)

HSE (1995) Guidance to raise awareness

Discussion document *'Managing Stress at Work'* (HSE 1999b)

Health and Safety Commission adopts 10-year targets for reducing burden of occupational ill-health

Evidence on using a risk management approach, e.g. Cox *et al.* (2000). What should the process look like?

Health and Safety Commission (HSC) strategy

Evidence base on the relationship between stressors and ill-health. Evidence on good practice

Developing 'clear, agreed standards of good management practice'

HSE (2001) Guidance and taxonomy

What should management standards look like and do?

Development of draft Management Standards as 'states to be achieved'

Development of process and risk indicator tool

Testing of process and indicator tool by 24 'pilot' organizations

Peer review of draft standards in workshops

'Omibus Survey': UK National Statistics organization begins to collect baseline data on exposure

Reworking of indicator tool and guidance

Revised draft standards appear in public Consultation Campaign May to August 2004

Publication of complete standards in November 2004

Figure 1.   Flow diagram indicating how the Management Standards have been developed and how they fit within the Health and Safety Commission's work plan and strategy on work-related stress.

The Cox (1993) review also integrated physical and psychological stressors and developed a hazard-based taxonomy centred on aspects of job content and job context; it also introduced the concept of a control cycle approach to risk management. These ideas formed the basis for subsequent HSE guidance, *Stress At Work—A Guide for Employers* (HS(G)116; HSE, 1995) which gave a series of basic messages emphasizing that excessive pressure from extreme demands may lead to an employee's inability to cope, and introduced the concept of jobs that are 'do-able', achieved through a combination of job design and effective training leading to better 'person–job fit' (Caplan, 1987). Subsequently this approach has been further developed and incorporated into frameworks for intervention (Cox, Griffiths, Barlowe, Randall, & Rial-Gonzalez, 2000; Cox, Randall, & Griffiths, 2002).

The taxonomy developed from Cox's research, in conjunction with the findings of other HSE-funded studies, formed the basis for the approach adopted in the development of draft standards for the good management of work-related stress, which have been named 'Management Standards'. Also, following the publication of the 1999 Discussion Document (HSE 1990b), HSE held a series of workshops at which the issue of a practicable taxonomy was discussed. The HSE then reviewed all existing taxonomies and how to examine how individual stressors combined. As a result of this research, outputs from the workshops and subsequent discussions a grouping of seven stressor areas was agreed. These formed the basis of HSE guidance *Tackling Work-related Stress* (HS(G)218; HSE, 2001) and are as follows.

- *Demands* (including such issues as workload, work patterns and the working environment).
- *Control* (how much say the person has in the way they do their work).
- *Support* (which includes the encouragement, sponsorship and resources provided by the organization, line management and colleagues).
- *Relationships at work* (which includes promoting positive working practices to avoid conflict and dealing with unacceptable behaviour).
- *Role* (whether people understand their role within the organization and whether the organization ensures that the person does not have conflicting roles).
- *Change* (how organizational change (large or small) is managed and communicated in the organization).
- *Culture* (the way in which organizations demonstrate management commitment and have procedures which are fair and open).

In the subsequent work on the standards the separate topic of culture was dropped because it underpins the approach to each of the others. Thus aspects of culture are incorporated into each of the remaining six.

The guidance in *Tackling Work-related Stress* (HSE, 2001) introduced some basic concepts of risk assessment, using a simple '5 steps' approach—an approach suggested for any health & safety hazard—see *Five Steps to Risk Assessment* (INDG163 (rev.1); HSE, 1998), and recommended that this approach be adopted when tackling work-related stress. These steps are 1: look for the hazards; 2: decide who might be harmed and how; 3: evaluate the risks and decide whether the existing precautions are adequate; 4: record your findings; 5: review your assessment and revise if necessary.

3.   Hazard, harm and risk in relation to work–related stress

In this section we briefly review, particularly for those not familiar with the UK approach, the basic concepts of risk management and discuss the evidence linking psychosocial factors to health outcomes.

3.1. *Basic concepts*

3.1.1. *Hazards:* The term *hazards* refers to those features (either physical or psychosocial or in combination) of the workplace that have the potential to lead to harm or unwanted consequences. In particular, psychosocial factors are concerned with the design, organization and management of work. In the context of the present paper they do not refer to individual differences such as personality or behavioural or social factors, coping style, negative affectivity, family or socio-economic status. Cox (1993) gives a definition of psychosocial hazard as aspects of job content, work organization and management, and environmental, and organizational conditions that have the potential for psychological and physical harm. In the case of work–related stress the nature of the exposure characteristics are likely to be varied and complex.

3.1.2. *Harm:* This refers to the type and nature of impact upon employees' health. Harm may be acute or chronic and relates both physical and psychological outcomes or functioning. In terms of importance, physical outcomes commonly associated with stress at work include heart disease and the metabolic syndrome (Brunner, Hemingway, Walker, Page, Clarke, Juneja, Shipley *et al.*, 2002); important mental health outcomes include anxiety and depression. Such manifestations may have different levels of severity, from minor incapacity to severe impairment. Recent evidence indicates that the physical and psychological consequences of stress in the workplace may have common biological pathways (McEwan, 2000). Apart from individual health impacts, harm may also refer to outcomes that affect the organization, such as sickness absence, error and impaired efficiency.

3.1.3. *Risk:* This refers to the likelihood that exposure to a hazard will lead to harm. The aim of any preventive strategy must be to keep exposures well below a level at which harm is manifest.

A preventive strategy will have elements comprising both surveillance and control measures. To design these properly it is important to have an understanding about the relationships between hazard, harm and risk.

3.2. *Evidence of links between psychosocial hazards and harm*

There now exist a number of systems that set out a series of criteria for gauging the strength of evidence supporting associations between risk factors and disease, and categories for rating the quality of scientific evidence for the effectiveness of an intervention (Shekelle, Woolf, Eccles, & Grimshaw, 1999). These range from evidence drawn from systematic reviews of randomized clinically controlled trials to opinions of respected authorities, clinical experience, descriptive studies, or reports of expert committees. In the case of work–related stress, studies that convincingly demonstrate an *association* between work factors and ill-health are extremely plentiful. However, interpretation of these data has been hampered by numerous well-documented methodological problems (Mackay & Cooper, 1986; Kasl & Cooper, 1987) with the result that *causation* (i.e. that a particular work factor

led to a particular health outcome) is difficult to demonstrate. This is important because if the associations are not causal, interventions targeting psychosocial exposures are unlikely to lead to improvements in population health (Macleod & Davey Smith, 2003). Commentators examining these approaches from a public health (McPherson, 2001) and an organizational health perspective (Griffiths, 1999) suggest that the medical-clinical and natural science paradigm implied in these rating systems may not be appropriate for judging interventions in the (working) population and, more particularly, the absence of such high quality data in the public health sphere should not be an excuse not to take action (HM Treasury, 2004).

Evidence about the nature of causal links between psychosocial hazards and particular types of harm can be found in two broad but related lines of evidence. First, from empirical studies of those doing 'work', usually in real-life working conditions and, second, from studies of biological pathways and mechanisms. In the context of human studies, data have accumulated from a number of settings based largely upon, but not wholly confined to, epidemiological settings (Mackay, 1984). These include laboratory studies (Frankenhaeuser, 1981), simulated work environment (Cox, Cox, Thirlaway, & Mackay, 1982), field studies (Parkes, Mendham, & von Rabenau, 1994), clinical reports (Broadbent, 1981) and data from case study material (Parker & Williams, 2001).

3.2.1. *Biological evidence:* There is now much evidence that demonstrates that there are a multitude of biological processes that mediate the pathways between stress and various disease states (both physical and psychological). Good overviews of this literature can be found in Brunner (2002), McEwan (2000) and Sapolsky (2003). Briefly, the main candidate mechanisms for the link between psychosocial factors and certain health end-points include the following.

- Homeostatic and allostatic changes in response to stress (Sterling & Eyer, 1998).
- Neuroendocrine changes (Frankenhaeuser, 1981) and alterations of autonomic function (O'Connor, White, & Bundred, 2000).
- Development of the metabolic syndrome and insulin resistance (Brunner, 2002).
- Disturbances in blood coagulation (Brunner, 2002).
- Inflammatory and immune responses which mediate the susceptibility to infection (Ader, Cohen, & Felten, 1995; Cohen, Tyrrell, & Smith, 1991; Cohen *et al.*, 1998).
- Psychological mechanisms such as anxiety, hypervigilance and risk taking (Mann, 1992; Janis & Mann, 1977).

3.2.2. *Epidemiological and psychosocial evidence:* Specifically in connection with the psychosocial risk factors representing the taxonomy outlined earlier, there are data on each of these mechanisms to support a link between work and dysfunction. These adverse health outcomes include mental health (de Jonge *et al.*, 2001), general physical health (Parkes, Mendham, & von Rabeneau, 1994), immune functioning (Sapolsky, 2003) and blood pressure levels (Fox, Dwyer, & Ganster, 1993; Landsbergis, Schnall, Schwartz, Warren, & Pickering, 1995; O'Connor *et al.*, 2000; Van Egeren, 1992).

Early conceptualizations of work stress emphasized that there is a discrepancy between skills and abilities, and job demands, and between employee goals and values. The result is a lack of (Person-Environment) fit which contributes to overload, role ambiguity and conflicting role demands (Caplan, 1987). Person-Environment fit concepts, especially role ambiguity and role conflict, have been investigated in numerous studies. Further development of this approach identified the importance of interpersonal relationships at

work. Such relationships result from difficulties with supervisors, co-workers, subordinates and increasingly, customers.

Subsequently, Karasek's (1979) Demand/Control model focused on the interaction between the objective demands of work and the decisions latitude of employees in meeting those demands (Karasek & Theorell, 1990). Further elaboration of this model also recognizes the importance of support from supervisors and co-workers (Karasek, Triantis, & Chaudhry, 1982). The key role of support had been, for some time, the focus of an extensive research programme linking social support to health outcomes (House, 1981). Since these landmark studies, considerable new data have accumulated in the literature linking job-related factors to individual and organizational outcomes, together with empirical attempts to combine the two approaches into an 'integrated' approach (Baker, Israel, & Schurman, 1996).

In the remainder of this sub-section we briefly review some selected studies that link each of the six stressor areas listed in section 2 with a range of health outcomes.

Analyses of data from the Whitehall 2 studies (Stansfeld, Head, & Marmot, 2000) found that high job *demands* was a predictor of poor health functioning and psychiatric disorder, and that lack of *control* was moderately associated with risk of alcohol dependence. Work social support and control over work had a protective effect on mental health and health functioning and reduced the risk of spells of sickness absence (Stansfeld *et al*., 2000). A subsequent study, examining physical health outcomes (Head, Martikainen, Kumari, Kuper, & Marmot, 2002), found that high job demands, low decision latitude and effort reward imbalance were all related to increased incidence of coronary heart disease. These effects were not explained by conventional risk factors such as smoking or blood pressure. Adverse changes in levels of work characteristics, particularly social support at work, predicted worsening mental health functioning for men and women. Although the effects of change in work characteristics on physical health and coronary heart disease were modest, there was evidence to support a longer-term influence on physical functioning and longstanding illness (Head *et al*., 2002).

Several reviews of large volumes of research testing the demands-control model have been published (Fox, Dwyer, & Ganster, 1993; Schnall, Landsbergis, & Baker, 1994; Van der Doef & Maes, 1999). These indicate that there is some empirical support for Karasek's (1979) hypothesis that job demands, especially those of high workload, interact with control perceptions to explain physical and medical health outcomes. The evidence, however, tends to be derived from cross-sectional studies. There remains the argument that demands and control still exert an important influence on (stress) outcomes in their own right, and that their impact is not solely in their interaction. This position is supported by large-scale prospective epidemiological studies, which tend to find main effects of demand and control on health rather than interactions (Stansfeld *et al*., 2000). Not least for pragmatic reasons, HSE is only providing recommendations based on the main effects of demands and control in the Management Standards, at least at present.

In the organizational research literature *social support* is defined as the availability and quality of an employee's relationship with supervisors, co-workers, family and friends and the amount of positive consideration and task assistance received from them (Cohen & Willis, 1985; Fusilier, Ganster, & Mayes, 1986; Kottke & Sharafinski, 1988). Social support, especially from supervisors, has a beneficial effect on worker performance and well-being (Ganster, Fusilier, & Mayes, 1986) and in some conceptualizations is seen to buffer the effects of stress on ill-health (Frese, 1999), thereby contributing to lower healthcare costs (Manning, Jackson, & Fusilier, 1996). In a meta-analysis study the availability of social

support was found to moderate the stress or strain relationship, mitigate the influence of perceived stressors, or reduce the level of strain (Viswesvaran, Sanchez, & Fisher, 1999).

Selye (1974) suggested that having to live with other people is one of the most stressful aspects of life. This is also true of *working relationships*, for being 'at work' typically means significant interaction with other people, whether colleagues, bosses or subordinates. These relationships can be a major source of both stress and support (French & Caplan, 1972; Makin, Cooper, & Cox, 1996). Arnold, Cooper, & Robertson (1998) note that poor relationships have been defined as those which include a lack of trust, little support, and low interest in listening and attempting to tackle workplace problems. Quick and Quick (1984) identify five specific interpersonal stressors that arise from the demands of social system relationships at work: status incongruence, social density, abrasive personalities, leadership style, and group pressure. Associated with the above variables is workplace bullying and workplace violence, which are commonly recognized as being extremely distressing to victims. While there is a dearth of studies that clearly delineate the association of 'relationship' variables to stress and health outcomes, we observe that 'stress cases' that have been presented to the courts typically include some relationship difficulties underpinning the basic complaint. Moreover, Mayhew and Chappell (2003) argue that bullying and violence have both personal and organizational costs. Specifically, they draw on supporting evidence to assert that around 40% of victims do not turn to anyone at all for support, but as the bullying continues, victims reduce their commitment, and then leave the organization.

Similarly, Birman (1999) has reported that bullying is a significant contributor to the shortage of nurses, and Quine (1999) warned that there may be a high price paid by healthcare organizations that ignore complaints of bullying in early stages. This is unlikely to be specific to the healthcare sector.

Role ambiguity originally referred to the unpredictability of the consequences of one's own role performance. Later models have extended the definition to include the lack of information needed to perform the role, and the typical measure of this construct assesses both the unpredictability and information deficiency regarding role behaviours. Numerous studies have demonstrated a persistent link between substantiated role ambiguity in the job and high levels of psychological strain (O'Driscoll & Beehr, 1994; Schaubroeck, Cotton, & Jennings, 1989). Similarly role conflict, which reflects incompatible demands on the person, has a detrimental effect on both self-reported strain (O'Driscoll & Beehr, 1994) and physiological indicators of it (Kahn & Byosiere, 1990).

Organizational change is now a pervasive feature of organizational life. Undoubtedly, the way changes (both major and minor) are managed, and the appropriateness of the methods used, have a major influence on the perceptions and experiences of people involved. Reports of associations between stress and change are underpinned by the fact that organizations can and do experience great difficulties in managing change effectively. There are plenty of examples in the literature of change programmes that have gone drastically wrong (Burnes & Weekes, 1989; Cummings & Huse, 1989; Kanter, Stein, & Jicj, 1992; Kelly, 1982a,b). Stress ensues because many organizational changes are forced by the need to 'rationalize', in other words to reduce staffing levels, and thus these are accompanied by job insecurities and the increased burden of fewer people to do more work. There are now emerging various models of change management, although most of these essentially build on the work of Kurt Lewin in the USA in the 1940s and 1950s. With respect to the association of organizational change and stress, HSE's Management Standards' approach strongly advocates that change management programmes should include bottom–up consultation with employees from start to finish, as promoted by Clarke (1994).

3.3. *Further supporting evidence from the literature*

3.3.1. *Systematic reviews:* The very many published studies of links between workplace psychosocial stressors and health and related outcomes have been the subject of a number of recent systematic reviews (de Lange, Taris, Kompier, Houtmann, & Bongers, 2003; Rick, Thomson, Briner, O'Reagan, & Daniels, 2002; Van der Doef & Maes, 1999). The second of these was commissioned by the HSE to examine the science base to support the generation of HSEs Management Standards, which will be described later. That review looked at demands, control, support and aspects of relationships in the UK working population, the effects of these stressors on health, well-being and performance, the mechanisms by which these stressors have effects on outcome measures and the extent to which organizational activities may reduce negative impacts or enhance health. As perhaps would be expected, they concluded that there is insufficient evidence to answer each of these questions with complete satisfaction. In relation to the development of standards they say,

given the importance of context, and the relative lack of evidence that applies across all contexts, any standards that are developed also need to encourage a bottom–up approach to understanding how stressors cause problems in each particular organisation or part of an organisation, and what can be done locally to address these issues. A bottom–up approach is particularly relevant in this context, given the broad range of work characteristics which could be important in modern work settings (Rick *et al*. 2002, p. 163).

Recent HSE-funded work on organizational interventions describes both process–based approaches (Cox *et al*., 2002) and standards–based approaches (Briner, Amati, & Lardner, 2003) for achieving a bottom–up approach. The key feature of both of these studies is that they emphasize the criticality of employee involvement throughout the process.

3.3.2. *Studies involving changes in job design:* To be sure that a putative psychosocial risk factor actually is involved in the causal chain of disease development, it is necessary to show that eliminating or reducing exposure to the risk factor will lower the likelihood of the disease (Pickering, 2001). There have been a series of high quality case studies (Parker, Jackson, Sprigg, & Whybrow, 1998) that have examined the impact of organizational interventions in the shape of job re-design (typically using quasi-experimental designs) on health and organizational measures. All these studies contain data on important job characteristics (e.g. control, variety, demands, role conflict), on psychological morbidity (via the General Health Questionnaire (GHQ; Goldberg, 1978)) on job-related strain and on job satisfaction. In summary, these studies show that where job design is introduced within the context of the working system and with active employee involvement (which is a prerequisite), significant improvements in mental health can accrue. However, in one case study, that in a sense represents a change from a more desirable to a less desirable state, involving the reintroduction of a repetitive moving line (thus decreasing autonomy and skill variety), a significant impairment in mental health resulted.

Studies using a natural experimental design in student nurses on different types of ward environment (Parkes, 1982) and a fully experimental design on workload reduction in driving examiners (approximating to a randomized control trial; Parkes, Anastiasades, & Broadbent, et al., 1986) both showed significant changes in mental health.

3.3.3. *Direct and indirect effects in relation to psychosocial hazards:* What are the mechanisms by which psychosocial factors exert their effect? Two pathways may be discerned (Brunner, 2002). First, an indirect one by which stressors impinge on the propensity to engage in behaviours (smoking, exercise, drug usage, absence behaviour, specific food intake), which

may aid coping in the short term but may have longer term adverse health consequences. Second, a direct pathway in which physiological changes are brought about in response to perceived psychological challenge or threat (see section 3.2.1). In reality, the pathways are not mutually exclusive but a concentration on one or the other has implications for interventions in terms of health policy. The physiological changes brought about by low control environments may lead to attempts to down regulate (dampen) the unwanted bodily responses through inappropriate coping behaviours. High demand jobs may include long working hours, which will impinge on free time that could have been devoted to exercise or at least recuperation (Brunner, 2002).

Empirical data from a number of studies, including the Whitehall 2 study (Head *et al.*, 2002) support the hypothesis that both these pathways are important mediators between the psychosocial work environment and health, and that coping styles involving, for example, alcohol misuse are related to psychosocial factors such as control.

4. The validity of a risk assessment approach to work–related stress

The European approach to health and safety is one that encapsulates the notion of primary prevention—exemplified by the 'hierarchy of control' approach specified in the British Management of Health and Safety at Work Regulations (HSE, 2000). A key feature of the hierarchy of control approach is that collective protective measures must be given priority over individual protective measures. It has been cogently argued that the basic equations and language of health and safety management and the application of control measures (such as standards) can, in fact, be used for practical workplace action (Cox, 1998). However, this approach has not met with universal agreement. For example, Rick and Briner (2000) have suggested that because of the essentially psychological nature of the stress process—in particular the uncertainty about the relationship between hazard and harm—a risk assessment and risk management approach as applied to physical hazards may not always be appropriate.

Earlier we referred to the importance of distinguishing between the current state of the organization and some required or desired state. The preferred or desired states can be regarded on the one hand as reflecting an internal, perceived situation, but can also be seen to reflect a more 'objective' view of the working environment. This more 'objective' view drawn from, for example, the demands-control literature referred to earlier may be seen as the starting point for the specification of a minimum set of requirements for particular work characteristics and thus as *a state to be achieved*. The organizational psychology and job design literature provides good evidence of what might be incorporated in such a state. The actual or reported levels can be seen as the current situation, as perceived by the work group, and can be obtained by a *risk assessment process*, which allows a comparison to be made between the current and desired state of affairs based on aggregated data of a group from the workforce.

There are many ways in which these data could be captured, but there is good evidence that standard risk assessment methodologies adapted for psychosocial hazards are appropriate. However, any assessment must be informed by the current evidence base for the six most critical stressor areas (as in the taxonomy described earlier), together with a bottom-up approach that is able to capture local concerns and context.

Risk assessment also ensures that the employer's response in managing risk is commensurate with that risk. Current principles of risk assessment require that they should be 'suitable and sufficient' rather than perfect or ideal. A key feature, particularly in relation to the assessment of work stressors, is the importance of worker participation and

involvement. The concept of risk assessment and management is very well developed for physical hazards; less so for psychosocial ones, but with modification, we argue, the basic principles can still apply. A risk assessment should try to identify, for a defined employee group with an acceptable degree of certainty, and in some detail, any significant (non-trivial) sources of stress relating to its work and working conditions, that can be shown to be relevant to the health and well-being of that group or of the organization.

5.   The concept of management standards for work–related stress

The use of technical standards is a well established method of facilitating control of risks to health and safety. Standards vary in type—from specifications of performance goals to guidance on operational practice to design criteria for industrial products. They may be generic or specific. They are sometimes referred to in HSE's published guidance and, occasionally, use of standards is required in regulations and codes of practice.

There have been numerous attempts to try to define desirable working conditions both in terms of minimum or optimal requirements. These can be found for instance in the literature on job enrichment (Gardell, 1981; Parker & Williams, 2001; Warr, 1990), job satisfaction (Locke, 1976) and work stress (Kasl, 1992).

The concept of defining desirable states for particular job design domains has been advanced by Landy (1992) in the form of *standards* based upon recommendations of an APA/NIOSH panel on work design and stress (Keita & Sauter, 1992). Apart from these few references, no further specific literature about management standards for stress exists. However, the use of standards in specifying desirable (not stressful) working conditions has been successfully accomplished in the case of mental workload (ISO 10075, 1994) and display screen equipment (ISO 9241, 1992) and in the UK there is an existing human resource management standard (Investors in People 2004), which is described in the Investors in People website and specifies desirable (organizational) states to be achieved. The same approach has been successfully used to develop internal company management standards for work–related stressors in an offshore environment (Briner *et al.*, 2003).

5.1. *HSE's approach to standards for work-related stress*

Taking into account the literature, and following discussions and expert advice, HSE decided to adopt a standards–based approach to stress management. The approach was not intended to be legally enforceable, but to assist employers in complying with their legal duties under the law. The basis of their standards–based approach is to compare desired states with actual or current states. It was seen as the key to developing HSE's approach to work–related stress, by being both conceptually valid and also meeting the expressed needs of the potential users. There are six Management Standards, each of which has a title and a 'platform statement' that represents conformity with that standard. This is represented as the percentage of the workgroup who agree that a certain state of affairs exists. This is then followed by a list of particular 'states to be achieved'.

As an example, the Platform Statement for Demands (in the pre-public consultation draft of the standards) is:

- [85% of] Employees indicate that they are able to deal with the demands of their jobs, and
- Systems are in place for individuals' concerns to be raised and addressed.

A number of fundamental principles were used to generate the 'states to be achieved' for each of the proposed Management Standards. First, that there is a corpus of knowledge drawn largely from the job design (and redesign) literature that enables key features of particular work characteristics that have an impact on health and well-being to be defined. Second, deficiencies in the structure of particular jobs or roles can be identified by suitable risk assessment or task analysis methodologies. Third, that such deficiencies can be understood by job holders. Fourth, there exist reasonable practical steps that can be taken to achieve significant improvements in the design and content of jobs—either by minimizing the psychosocial risk inherent in them or by building in desirable features known to promote health and well-being and employee effectiveness. We therefore drew on the extensive literature on job design, especially as it applies to the prevention of workplace stress, and where there was high quality case study material to support such an approach (Parker *et al*., 1998).

From a usability aspect, in initial trials, organizations that were willing to 'pilot' the standards emphasized that each of them should be succinct (no more than one A4 page) and written in language that could be easily interpreted by line managers and their staff. The form and content of the first draft of the six Management Standards are available from the first author on request. While the Management Standards would be necessarily generic, they would need to be supported by an implementation process that allowed them to be adaptable and relevant to local circumstances.

5.2. *Indicator tool*

To enable organizations to measure their performance with respect to the 'states to be achieved' a process and risk indicator tool was developed (Figure 1): that is, for each of the Management Standards a series of questions were derived which allowed organizations to judge their current state based on responses from individuals within their group. The design of this indicator tool is therefore based on capturing employee's perceptions of their work situation, and thus reflecting current understanding of the stress process within the organization. Studies of the acceptability of the standards and the performance of the indicator tool are described in the companion paper to this one (Cousins *et al*., 2004).

It was envisaged that the Management Standards would apply principally to teams and work groups that were small, but of sufficient size to allow a meaningful response to the Indicator Tool. The Management Standards, as they are written, also incorporate some of the principles set out earlier in that they are responsive to personal appraisal of the situation, and encourage participation, involvement and dialogue. They are also written in a way that encourages users to think about the mechanisms by which hazards might be linked to harm, and thus point to opportunities for improvement.

6. Assessing conformity with the standards

To allow organizations to gauge their performance, and to encourage continuous improvement, the Management Standards methodology has a threshold, expressed as a percentage, within the platform statement for each standard. This threshold is the percentage of the work group concurring that the organization meets the 'states to be achieved' (the Standard). The Indicator Tool is put forward as one way of measuring performance against the standard. Achieving this threshold is considered to indicate that management practices within the organization conform to good practice with regard to preventing the occurrence of work-related stress.

The rationale underlying this approach derives from a number of sources. Health and safety standards in relation to other types of exposures, such as physical or ergonomic hazards, do not always set out to protect 100% of the population from harm, as there is a recognition of the effects of biological variability in the population. The exact percentages will depend on the severity of the consequences, the strength of the evidence, and the ease with which control measures can be applied.

The use of percentages as 'cut-offs' for judging level of risks derived from risk assessment data has been widely explored in the literature (Cox et al., 2000). Information derived from workplace surveys (e.g. a table showing cross-case study comparisons in Jackson, and Parker, 2001, p. 198) that have collected ratings of work characteristics show that it is uncommon to find total agreement either that stressors/hazards do not exist, i.e. that the desired state exists for all of workgroup (100% agreement) or that a hazard is always present for all of a workgroup. As a rule, populations see particular factors having both negative, and positive, benefits on health (Guest & Conway, 2002).

Any percentage that is specified as indicating conformity should be used as a guide to good practice, that is, it should be 'informative', rather than an absolute 'normative' requirement. The aim is to shift the population to a more desirable or better state. The aim is not to focus on particular individuals who might be considered to represent a high risk by virtue of the fact that they disagree with many items in a risk assessment questionnaire. Note, however, that separate consideration has to be given as to how to support individuals who may be thought to be at high risk of negative outcomes, following the use of the Management Standards process.

There should be a logical rationale for any percentage cut-offs that are chosen to indicate conformity. It does have to be recognized, however, that there is insufficient relevant quantitative information on which to base these percentages at the present time. This is likely to change in the future, and any percentages selected by the HSE can be modified following testing and in the light of these new data.

Examples of standards using a percentage cut-off can be found in the standard dealing with child-resistant containers (ISO 8317, 2003) (85% of the test population should not be able to open a container within a specified time) and in the ISO standard for the performance requirements for the legibility of display screens (ISO 9241-3, 1992) (perceived to be flicker free for 90% of test participants). Also in the ergonomics field, the anthropometric approach to physical design of workplaces often uses data that enables the majority of a population to be accommodated (those above the 5th and below the 95th percentile, for example) (Pheasant, 1987).

The Management Standards (pre-public consultation) are of two types:

1. Those concerned with *job content*; Demands, Control and Support. There is strong evidence linking these three stressors to health outcomes. The working population is widely exposed to them and it is reasonable to conclude that they are more amenable to successful intervention. The specified target percentage for these three has been set, in the first instance, at 85% (see below).
2. Those concerned with *job context*; Roles, Relationships and Change. There is less evidence in the literature linking these to ill-health outcomes (Rick, 2003). The measures that could be used to influence them are likely to be more complex and slower to have any impact. In the light of this, the specified percentage for these has been initially set at 65%.

The figure of 85% was derived, in part, from the large Bristol, *Stress and Health at Work (SHAW)* population study that examined the scale of perceived stress at work (Smith, Johal,

Wadsworth, Davey Smith, & Peters, 2000). The results of that study revealed that approximately 20% of the sample reported that they had high or extremely high levels of stress at work. It was felt that a reasonable target to aim for with the initial introduction of the Management Standards was a reduction in the prevalence of these headline data by 5%, so that only 15% remain exposed in the first instance, hence the target percentage of 85% in three of the Management Standards. For the purposes of the testing of the standards in pilot studies, a lower figure of 65% was specified for the remaining three Management Standards. It is recognized that this figure of 65% cannot be justified empirically and that there may be concern that a significant minority of a population may remain exposed when the Management Standard might be deemed to have been met. In a sense, it was pragmatically derived after careful consideration by those in HSE familiar with the aims of the draft standards. Both the percentages may be changed following the public consultation campaign.

7. The use of interventions to enhance conformity with the management standards

There are now a number of extensive reviews on the effectiveness of different types of interventions, often based on the three-level model of primary, secondary and tertiary prevention, and guidelines on their design and evaluation (Parkes & Sparkes, 1998). The majority of the studies in the literature have developed intervention strategies aimed specifically at the worker (Jordan *et al*., 2003; Semmer, 2003). However, increasingly organizations appear to be using a comprehensive approach involving employees and middle management, and gaining top management commitment.

The Management Standards as currently conceived are largely concerned with primary prevention (in terms of job redesign, skill enhancement, competencies, etc.). Each standard has elements relevant to the other levels of prevention; secondary prevention in terms of, for example, management systems and, to an extent, a focus on individual as opposed to group concerns (tertiary prevention) (cf. Cooper, Dewe, & O'Driscoll, 2001; Cox, 2000) about levels of prevention.

Each standard represents a desirable state to be achieved. The actual state is derived from the assessment process using an appropriate methodology (for instance, HSE's Indicator Tool) together with discussions among employees within focus groups, as initiated by the organization. Guidance on this will be provided by HSE. Action is then planned on the basis of these discussions. Interventions will need to be tailored to the particular context and needs of the group at that particular time. HSE has published a number of studies concerned with the effectiveness of organizational interventions (Cox *et al*., 2000; Jordan *et al*., 2003; Parker *et al*., 1998) and has issued some new guidance, in case study format, to help organizations implement control measures (HSE, 2003).

Taken together the totality of evidence drawn from the evaluation of organizational interventions presents a mixed picture and we cannot yet give an unequivocal 'Yes' to the question 'Do organizational interventions work?' (Parkes & Sparkes, 1998). While it is possible to draw perhaps unnecessarily pessimistic conclusions (Briner & Reynolds, 1999; Reynolds, 2000) there are many positive findings, many null effects, but not many negative ones—although intervening in complex organizations will always run the risk of the last of these (Semmer, 2003). Where studies have employed strong designs, focused on a significant work stress problem, and used a range of different outcome measures, the most encouraging results have been obtained.

In the context of the Management Standards successful interventions have been demonstrated for workload reduction (Meijman, Mulder, van Dormolen, & Crermer, 1992; Parkes *et al*., 1986); job control (skill variety and autonomy; Parker *et al*., 1998); support (Heaney *et al*., 1993); role conflict and role ambiguity relationships (O'Driscoll & Beehr, 1994), and organizational change (Schweiger & Denisi, 1991). In terms of organizational outcomes, positive effects of organizational interventions on sickness absence have been found by Kompier and Kristensen (2000), Kvarnstrom (1992), and Terra (1995).

8.   Discussion of main issues

In this paper we have argued that a Management Standards approach is appropriate for the control of work–related stress. *Management* implies that risks arising from particular deficiencies in aspects of the working environment can be systematically addressed by a combination of well-established risk management methodologies adapted for the psychosocial work environment, coupled with contemporary human resource management approaches. Notwithstanding concerns to the contrary (Rick & Briner, 2000) we now have good evidence from theory and practice that such an approach is valid (Cox *et al*., 2000; Jordan *et al*., 2003).

The term *Standard* implies a set of principles agreed by consensus that can be applied to enhancing health and safety by identifying hazards and reducing associated risks. Standards do not in themselves impose any obligations of adherence. The pre-public consultation Management Standards represent a logical development of HSE's existing approach—that is, they should be seen within the context of statutory regulatory controls for health and safety. We have shown from the literature and from systematic reviews, and from consideration of both epidemiological and biological studies, that there exists sufficient data to establish links between psychosocial risks and poor health and organizational outcomes. However, as in many areas of health and safety, the data are incomplete; there is better evidence for some risk factors and some types of harm than others. Any new approach based on risk assessment and prevention must take these uncertainties into account.

Each of the six Management Standards consists of a series of statements that, together, define a desirable state to be achieved. These are necessarily generic and thus represent a 'top-down' approach. The methodology that accompanies the standards allows the user to compare their current situation with the desirable state as set out in the six standards.

A key feature of this approach is that user participation and involvement in the risk assessment *process* is crucial and that employee knowledge and experience drives behaviour and, in part, their health. Exposure to potential harm is evaluated by the degree of consensus among employees, which ensures that the identification of a particular stressor is reliable *for that particular group, at that particular time, and in that particular context,* and gives an indication of the size of the problem and prevents the inclusion of trivial problems. This enables a prioritization process to be carried out by the organization and actions, based on appropriate interventions, to be taken forward.

This activity is done at the local level and relies almost exclusively on active participation of the work group or team to use the Management Standards process (Cousins *et al*., 2004) in diagnosing any problem in their specific, local context. This 'bottom–up' aspect of the approach is seen as crucial and, again, is advanced on the basis of extensive case study material (Briner *et al*., 2003). This approach also takes into account the fact that the use of interventions inevitably implies some degree of change. Worker involvement and participation should encompass the bolstering of personal resources

(through appropriate training and personal development) to cope with such change so that anxieties can be allayed and resistance avoided.

In the development and use of the Management Standards, the importance of organizational interventions to reduce risks is explicitly recognized and is congruent with the philosophy of the *Management of Health and Safety at Work Regulations* (1999). Some have seen the evidence on the effectiveness of organizational interventions as problematic (Reynolds, 2000). However, altogether the studies reported in reviews of the literature convey the impression that work-related interventions do have the potential for positive effects. Nevertheless, it is hard to predict specifically which changes are likely to occur and at what point following the initial intervention. However, it is reasonable to suggest that the aim is a balance of effects, as in continuous improvement, rather than an expectation of dramatic and uniformly positive impact. Interventions must be seen within the context of what is possible and practicable in complex organizations, and, again, this is a strong argument for a 'bottom-up' approach.

Overall, the strategy behind the use of the standards and subsequent interventions is that they should be applied to working *populations* rather than being a strategy based on identifying and treating 'high risk' individuals, which has previously been the most widely used approach. The population strategy attempts to control the determinants of incidence of disease, to lower the mean level of risk factors and to shift the whole population in a favourable direction (from an actual to a desired state). This idea is predicated on the fact that a large number of people exposed to a small risk may generate a greater population burden than a small number exposed to a conspicuous risk and, conversely, if large populations are exposed, a small change in a risk factor may bring substantial improvements in the health of the working population (Rose, 1992). This is the underlying prevention strategy used for devising the Management Standards. Organizational interventions do not need to be demonstrated to be particularly powerful or conspicuous for significant improvements to be obtained, especially where from a public health perspective criteria for what is acceptable and effective differ from clinical medicine and the requirements of natural science (Griffiths, 1999; McPherson, 2001).

Each of the standards has within it a 'platform statement' defining how conformance with the standard is achieved. At the present time this statement refers to the percentage of the workgroup assessed that agree that the particular conditions or states are present or achieved.

The justification for the use of a percentage approach is that it allows organizations to judge their current performance across the range of standards and thus allow prioritization, and it also enables re-assessment following intervention. It recognizes that unanimity of agreement would be impossible to achieve in all instances (in other words all those assessed agreeing that the desired state existed). It also links to assessment in that it has been argued that, because most stressors are chronic in nature, both the identification of major stressors and the assessment can best be made in terms of the level of consensus (percentage agreement) on the presence of the stressor. The specification of the percentages is based partly on expert judgement and partly on the use of this threshold approach in other, but similar, spheres of standardization. Inevitably the actual use of the Management Standards will need to be tailored to the needs of individual users and workplaces, and this requirement is built into our approach. Reaction to this approach to setting standards for work-related stress is addressed in the companion paper (Cousins *et al.*, 2004).

It is possible that alternative approaches could be adopted based on acceptable ranges rather than a percentage cut-off, or by using population data for benchmarking purposes. If the percentage concept remains, it is likely that it will be modified following the widespread

implementation of the Management Standards and it may lead to industry sector based norms. We believe that this approach is both practical, and valid, and will go a long way to meeting HSE's aims of reducing work-related stress.

Notes

The revised Management Standards that are the subject of the 2004 public consultation campaign can be viewed at: www.hse.gov.uk/stress.

All six standards are shown in detail in the companion paper by Cousins *et al.*, on practical developments of the standards, which is published in this edition of *Work & Stress*.

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