

*Supported or stressed while being assessed? How motivational climates in UK university workplaces promote or inhibit researcher well-being*

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# Supported or stressed while being assessed? How motivational climates in UK University workplaces promote or inhibit researcher well-being

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## Abstract

Academic culture now places high expectations on researchers to demonstrate research productivity alongside teaching, leadership and knowledge exchange. In two studies of researchers across career stages in UK higher education institutions (HEIs), we examined workplace climate within academic departments as (1) supportive of researchers' needs for autonomy, competence and relatedness, (2) publish-or-perish focused and (3) hyper-competitive. In Study 1 (multiwave from 2018 to 2020), need support predicted researchers' lower turnover intention 2 years later, even when controlling for concurrent need support, and career and economic conditions. In Study 2, need support correlated with academic well-being (lower job strain and turnover intention, greater job satisfaction) in a nationwide sample of 2951 researchers. Study 2 found that need support related to improved, and a hyper-competitive motivational climate related to undermined, well-being. Results were mixed for publish-or-perish climate. Performative demands can have deleterious effects on researcher well-being.

## KEYWORDS

higher education, motivation, research assessment, research evaluation, research excellence framework, research policy, self-determination theory, workplace well-being

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## 1 | INTRODUCTION

The university research environment places high expectations on its researchers to demonstrate research productivity and quality alongside teaching, leadership and knowledge exchange. This is symptomatic of broader developments in academic management, where an expansion of target, audit and evaluation regimes and an over-reliance on a narrow range of performance metrics (Wilsdon, 2015) frame debates about the 'health' of research cultures, power-play and hyper-competition (Muller, 2018; Pardo-Guerra, 2022). In the UK, such discussions are closely linked to a national assessment exercise—the Research Excellence Framework (REF)—which audits research performance (Deem, 1998; Strathern, 2000). The REF involves a comprehensive evaluation and benchmarking of research performance every 5–7 years, the results of which are used to allocate around £2 billion of public research funding to HEIs each year (Wilsdon, 2015). Within this context, there is an expectation for academics to entrepreneurially perform in an environment which is often felt to be over-regulated and constrained (Chubb & Reed, 2017). While this is a UK phenomenon, the use of metrics to assess research performance is ubiquitous within the international academic community (Boyd & Smith, 2016).

The extent to which such workplace demands have detrimental effects on researcher well-being—namely, perceived job strain (experience that the job is stressful), job satisfaction (happiness with one's position) and turnover intention (an individual's intention to leave their work)—depends on the *workplace climate*, understood in terms of the supportive and competitive norms and feedback as well as the incentive structures that exist within their immediate workplaces (i.e. their academic departments; Weinstein et al., 2021). With increasing professional demands, heightened in recent years by the Covid-19 pandemic, it may be especially important that institutions and departments motivate researchers in supportive ways (Smith & Ulus, 2020).

Responding to internal and external expectations for high-quality research outputs and impacts, academic workplaces may neglect to support psychological needs for researcher autonomy (feeling a sense of choice and a voice at work), relatedness (feeling close to others at work) and competence (feeling effective at work; Weinstein et al., 2021), develop a more competitive environment within their departments (Kramer, 1999; Watermeyer, 2019), or strive to drive behaviour as a result of adopting 'publish-or-perish' expectations from external incentive frameworks (Moosa, 2018). However, little empirical research has been conducted to test these workplace climates in the higher education research setting, and to determine their implications for well-being.

In this paper, in longitudinal and cross-sectional studies, we test the notion that workplace climates influence workplace well-being (job satisfaction, job strain and turnover intention). We apply a theory-informed approach and argue that three need supports (researcher autonomy, relatedness and competence; Weinstein et al., 2018) that are available at varying degrees within workplace climates are consequential for well-being in academic life. Furthermore, in the particular context of the REF, we consider how 'publish-or-perish' and Hyper-competition may contribute to academic well-being. In Study 2, we also test specific motivational strategies used in academic departments that may shape those workplace climates, and, in turn, well-being. This conceptual model is presented in Figure 1.

### 1.1 | Academic workplace climates

This research was designed to test the well-being outcomes of a number of workplace contexts based on expectations laid out by self-determination theory (SDT; Ryan & Deci, 2006), a meta-theory of human motivation that argues that optimal motivation is internalized and emanates from the self and one's own values and interests, and that this motivation can be undermined by pressuring or coercive external forces that orient end goals towards satisfying these external demands (Deci & Ryan, 2000). According to SDT, and four decades of research based upon these premises, individuals experience well-being when their optimal motivation is

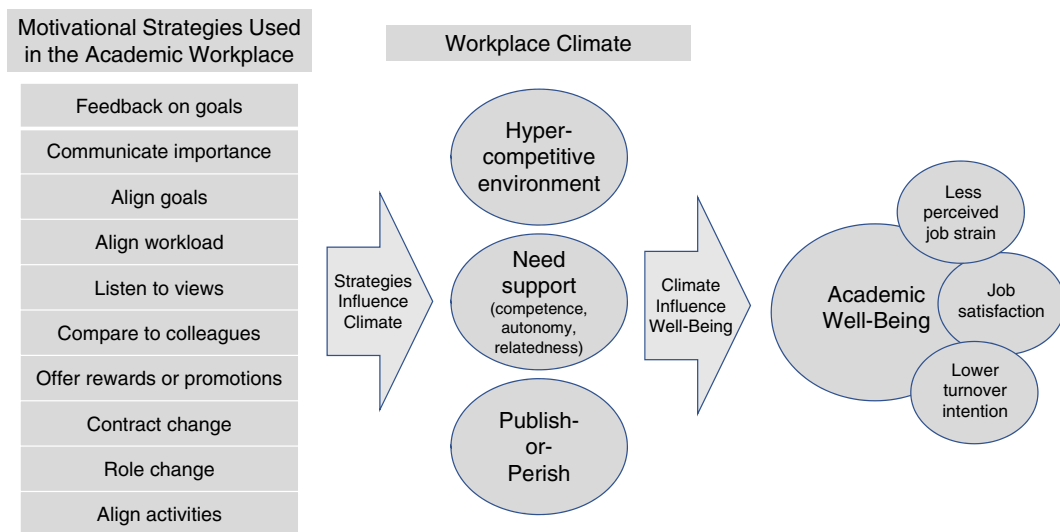


FIGURE 1 Full conceptual model tested across studies 1 and 2.

supported through their environments. In the context of the academic workplace, an SDT-based approach could outline specific motivational influences in the workplace, including psychological need support, hyper-competitive (i.e. competitive and instrumental) climates and perceptions of hyper-competition from an external incentive system.

### 1.1.1 | Psychological need supports

Building on SDT's operationalization of psychological needs, research has demonstrated that support for three basic psychological needs of autonomy, relatedness and competence drive workplace well-being (Deci et al., 2017). Specifically, individuals are supported for their need for *autonomy* when they can have a voice at work and make meaningful decisions (Slemp et al., 2015, 2018). Further, individuals are supported in their *relatedness* need when they feel close and connected to their colleagues and others at work, and they are supported in the *competence* need when they feel effective at undertaking workplace activities and goals (Ryan & Deci, 2017). A substantial body of work links psychological need support to workplace well-being (see e.g. Manganelli et al., 2018), though this work is nascent in the higher education and research context.

### 1.1.2 | Climate of hyper-competition

Although it has received much less attention, there is reason to believe that alongside psychological need support, motivating researchers through making internal metrics and competition salient may be detrimental (Chubb & Reed, 2017). Indeed, it has been argued that the academic workplace has replaced internal collegial cooperation with a culture of competition and audits (Giroux, 2020; Watermeyer, 2019), and that such a hostile, competitive environment is thought to breed self-interest (Kramer, 1999). Driving such competition, an ethos of measurement that guides motivating academic work undermines flourishing (Spence, 2019). From an SDT perspective, a transactional culture that primarily focuses on competition and metrics focuses motivation on instrumental goals external to the self, namely, to outperform others and demonstrate success (Gläser et al., 2017), which may undermine well-being.

### 1.1.3 | Perceived 'publish-or-perish' climate

Linked to this hyper-competitiveness, academia is increasingly characterized as an audit culture or a 'game' (Lucas, 2006), with its rules determined by incentive systems of all kinds (Collini, 2017; Docherty, 2011; Strathern, 2000; Wilsdon, 2015). In the context of research, some argue that these demands have created a 'publish-or-perish' climate in which researchers must demonstrate their *value* or face career instability and stagnation (De Rond & Miller, 2005). In SDT terms, such perceptions may orient motivation towards meeting judgmental external demands that are augmented by concern about personal cost if failing meet these demands, and for this reason they may undermine well-being.

Within the UK, expectations concerning research outputs and impacts are significantly influenced by REF (Oancea, 2019; Watermeyer & Chubb, 2019; Wilsdon, 2015). It has been argued that the REF frames research expectations and exacerbates a publish-or-perish culture within UK academia (e.g. Moosa, 2018). While recent reforms to the exercise have gone some way to shifting the emphasis away from the quantity of publications and towards quality, and to wider research impacts on society and the economy (Stern, 2016), a persistent focus in many HEIs include individualized performance in the context of the REF, and in wider processes of academic recruitment and promotion, showing how institutional HEI structures tend to push such expectations onto individuals.

## 1.2 | Motivational strategies used in the academic workplace

Thus far, we have described how individuals' perceptions of their workplaces can be fostered through optimal (e.g. need supportive) or suboptimal (e.g. hyper-competitive) workplace climates. These can be shaped through specific strategies adopted by supervisors (in the higher education workplace, line managers, heads of departments) when they try and motivate individuals to perform optimally (Nature, 2021). For example, departments and supervisors can seek to motivate researchers through collaborating on the development of shared goals, providing performance-dependent rewards for achievement or effort, through comparing colleagues, or through threatening termination. These, too, may then vary in terms of their positive and negative impacts on well-being.

SDT offers a useful framework for understanding which motivational strategies are likely to promote perceptions of positive workplace climates and well-being, in terms of those that foster self-driven and volitional motivation and satisfy psychological needs. Positive motivational strategies have included providing meaningful feedback and achievable performance goals, guiding researchers on how they can effectively meet the expectations set out by external incentives in the workplace. Goals and feedback, when informational, desired and constructive, can be beneficial because it offers a clear understanding of the steps needed to succeed and how one is progressing towards set goals, such as promotion (Mouratidis et al., 2008). It may also be beneficial to provide a rationale for, or communicate the significance of, the REF to researchers (Steingut et al., 2017). Through this process, individuals can understand the personal value and relevance of research goals, and are motivated through valuing their efforts rather than merely attempting to meet external demands. A third motivational strategy is to listen to researchers' voices as a way of involving them as partners in change and academic goal pursuit (Van Quaakenbeke & Felps, 2018). Finally, departments can support competence by aligning workloads to expectations (Basson & Rothmann, 2018; Fadlurrahman et al., 2021).

Conversely, management strategies that motivate through pressure and coercion may be expected to undermine researcher well-being. Primarily, such strategies, including job contracts being dependent on performance or rewarding and punishing researchers as a function of outputs produced, can undermine researcher authenticity, identity, creativity and security (Fontinha et al., 2018; Kınıkoğlu & Can, 2021; Van Dalen & Henkens, 2012; Watermeyer & Tomlinson, 2021). Further, in some departments, competition between colleagues is encouraged through direct comparisons (Waaijer et al., 2018). We argue that these strategies undermine researcher well-being because they create performativity-obsessed climates that undermine fundamental psychological needs.

### 1.3 | Researcher well-being

We anticipate that these workplace climates predict well-being, which we operationalize through three core indicators: job strain, job satisfaction and turnover intention. These indicators reflect complementary aspects of the construct, and each reflects a specific intrapsychic experience. *Job strain* is an indication of stressful job characteristics (low job resources, stressors). While detrimental, feeling strained at work can more purely reflect the extent of job demands (Sales, 1969), though its perceptions may be augmented by perceived support at work, including psychological need support (De Gieter et al., 2018), and collaborative work relationships (Sargent & Terry, 2000). Under detrimental workplace climates, job strain is also accompanied by costs to affect and commitment: lower job satisfaction and, reflecting burnout, increased turnover intention (Joo & Park, 2010; Wall et al., 1996). *Job satisfaction* is understood as the affective orientation of individuals towards their work, namely that it is enjoyed and felt to be rewarding (Kaliski, 2007; Vroom, 1964). Job satisfaction, and more so turnover, reflect stressful work conditions in non-conducive environments (De Croon et al., 2004). Finally, *turnover intention* directly reflects burnout that comes from job strain and low job satisfaction (Reynolds-Kueny & Shoss, 2021; Zhongzeng & Xiting, 2005), and has implications for institutions, who must invest significant resources to prepare and develop new recruits when informed staff leave (Jackson, 2012). Taken together, each of these indicators reflects a somewhat different dimension of well-being and together paint a well-rounded picture of the construct (Dewe & Cooper, 2012).

### 1.4 | Current research

To the best of our knowledge, the current research is the first to directly relate perceptions of support from academic departments to researcher well-being. Across two studies, we tested four hypotheses based on the literature reviewed above:

**Hypothesis 1.** Perceived psychological need support would predict researcher well-being across time (Study 1), and independently of perceived Hyper-competition and perceptions of publish-or-perish (Study 2). Further, across both studies, we expected that the effect would be independent of career and economic characteristics.

**Hypothesis 2.** Perceived Hyper-competition would undermine researcher well-being independently of perceived psychological need support, perceptions of publish-or-perish, independent of career and economic characteristics. (Study 2)

**Hypothesis 3.** Perceived publish-or-perish would undermine researcher well-being independently of perceived psychological need support, perceptions of Hyper-competition, independent of career and economic characteristics of researchers. (Study 2)

**Hypothesis 4.** The presence of supportive motivating strategies undertaken by departments or schools would predict more positive and higher well-being; the presence of non-supportive motivational strategies undertaken by departments or schools would negatively predict these outcomes. (Study 2)

Study 1 focused on relations between perceived basic psychological need support at work and researcher well-being, using data from two time-points of a multi-wave study, collected 2 years apart. We, therefore, tested Hypothesis 1 across time: perceptions of basic psychological need support from departments (initial measurement,

2018) would relate to well-being measured 2 years later (second measurement, 2020), controlling for need support measured simultaneously with well-being (in 2020). We expected this effect to be maintained when controlling for career and economic characteristics that could confound the relation.

Study 2 expanded the conceptual test including a representative sample of British universities to address the two other workplace climates described above: Perceptions that one's department is hyper-competitive; and perceptions of an external publish-or-perish climate driven by a retrospective assessment of research quality, the REF. Therefore, in Study 2, we also assessed a more comprehensive model of supportive and non-supportive work by simultaneously testing Hyper-competition in the workplace, and publish-or-perish climate from an external incentive system (the REF) as two motivational drivers alongside need support. Further, we explored whether the use of specific motivational strategies within departments or schools would relate to both perceived and researcher well-being.

## 2 | STUDY 1 AND 2 METHODS

### 2.1 | Study 1 participants and procedure

Participants were initially recruited in 2018 from four UK universities: Cardiff University, University of Sheffield, University of Sussex and Lincoln University, as part of a larger study examining responses to the REF, funded by Research England (Weinstein et al., 2019). It is not possible for four universities to represent the full diversity of UK HEIs, but these institutions were selected to provide some degree of contrast in research profile and REF engagement and practicality given the access the research team was able to achieve. Other pragmatic factors influenced the selection, and these are described fully in Weinstein et al. (2019). Both studies received institutional ethics approval and participants provided informed consent before taking part.

In 2018, 598 participants (228 women) took part, with a modal age of 35–44 years ( $n = 190$ , 31.8%). Of those, 341 agreed in 2018 to be contacted again and 146 provided responses with individual codes that matched across the two time points.

The final sample of 146 participants included those who agreed to be contacted 2 years later, who responded again in 2020, and who completed the survey in 2020. Of these participants, 67 were women; and the sample had a modal age of 35–44 years. Comparing these participants with the full sample of 598 individuals who participated in Time 1 (2018), they reported higher need support in 2018,  $t(549) = 2.22$ ,  $p = .027$ ,  $d = .21$ , 95% CI [.02–.40], but did not vary from the full sample on the basis of gender,  $t(549) = -0.90$ ,  $p = .369$ ,  $d = -.09$ , percentage of time spent on research,  $t(549) = -0.65$ ,  $p = .501$ ,  $d = .06$  and career status,  $t(549) = 1.33$ ,  $p = .185$ ,  $d = .13$ .

### 2.2 | Study 2 participants and procedure

Participants were 2951 researchers in higher education institutions across the UK, recruited through RAND Europe for a study understanding academic attitudes towards the Research Excellence Framework (REF) 2021, funded by Research England. Participant recruitment took place from September to November 2020. Of those recruited, 972 were women (32.9%), 1419 were male (48.1%), two identified as another gender, and the remainder preferred not to say. The modal ages were 35–44 years ( $n = 806$ , 27.3%) and 45–54 ( $n = 817$ , 27.7%).

Participants were recruited from 25 UK universities that agreed to participate in the study and circulated the survey to their academics. The sample was stratified by size and geography, ensuring representation of larger and smaller (under 1000 staff) HEIs; research-intensive and less research-intensive HEIs; and including institutions from England, Scotland, Wales and Northern Ireland. In addition, the survey was open to all UK academics and advertised through social media. Overall, researchers from 112 UK HEIs participated, capturing views from a



diverse range of institutions with contrast in research profile and REF engagement. The methodology is described fully in Manville et al. (2021).

## 2.3 | Study 1 survey items

### 2.3.1 | Need support

Respondents completed one item reflecting each of the three needs. These were taken from the basic psychological need support in relationships scale (La Guardia et al., 2000): *autonomy* support: 'I feel that, overall, my department/school encourages me to have a voice in what happens, and to feel free to be who I am,' *relatedness* support: 'I feel that, overall, my department/school encourages closeness and trust with others at work,' and *competence* support: 'I feel that, overall, my department/school helps me to feel capable and effective in my work.' Items were completed on a seven-point scale, which ranged from *not at all agree* to *strongly agree*. The three items for need support showed high interrelations in 2018,  $\alpha = .89$ , and in 2020,  $\alpha = .84$ . An exploratory factor analysis further showed the items measuring need support at Time 1 loaded onto one factor with loadings above .81, and that the items measuring need support at Time 2 loaded onto a second, separate factor with no loading below .69. Scales accounted for 75.4% of the variance in the items.

### 2.3.2 | Well-being

Well-being was operationalized in three ways. First, we evaluated *job strain* with the item 'My job is a source of considerable personal strain', which was paired with a scale ranging from 0 = *not at all true* to 6 = *extremely true* ( $M = 3.21$ ,  $SD = 1.49$ ). *Job satisfaction* was measured with the item 'How would you rate your overall satisfaction with your current job?' paired with a scale, 0 = *not at all satisfied* to 6 = *extremely satisfied* ( $M = 3.81$ ,  $SD = 1.34$ ). Finally, *turnover intention* was measured with the item 'I often think of quitting my job' was paired with a scale ranging from 0 = *not at all true* to 6 = *extremely true* ( $M = 1.95$ ,  $SD = 1.67$ ).

### 2.3.3 | Alternative career-status explanations

Models controlled for a number of factors that could have contributed to both perceived support at work and well-being, such as whether the individual's post was open (with no end-date; i.e. permanent) or fixed to a set end-date ( $n = 129$ ; 88.4% reported an open-ended contract), whether participants identified as early career during the 2018 data collection ( $n = 47$ ; 32.2% had self-identified as early career through a dichotomous yes/no item), the percentage of work time individuals spent conducting research ( $M = 47.09$ ,  $SD = 25.54$ ) and the number of outputs they had published in the past 4 years ( $M = 3.15$ ,  $SD = 1.52$ ). These covariates were pre-selected because they were seen to create additional stress on researchers, which could account for lower perceived support and less well-being. For example, early career researchers struggle because they have demanding workloads, stress linked to research outputs and a steeper learning curve to meet expectations (Aarnikoivu et al., 2019; Andrews et al., 2020), and similarly those with fixed contracts also experience additional pressure and stress (Crang, 2007; Ferrie, 2001; Loveday, 2018). On the other hand, those who have more of their work week dedicated to conducting research and who are more successful in producing high-quality valued outputs may feel generally more effective, and be highly valued by colleagues and supervisors, and may therefore be more likely to feel supported and to experience more well-being at work (Brieger et al., 2020; Seldin, 1987).

### 2.3.4 | Alternative economic explanations

Models also controlled for 2020 self-reported job security with the item 'I feel secure about the future of my job' ( $M = 3.54$ ,  $SD = 1.69$ ), which was paired with a Likert-type scale ranging from 0 (*not at all true*) to 6 (*extremely true*), and economic insecurity with the item 'How often do you worry about being able to meet normal monthly living expenses?' ( $M = 1.18$ ,  $SD = 1.60$ ), with response options ranging from 0 (*never worry*) to 6 (*worry all the time*).

## 2.4 | Study 2 survey items

Well-being (current study job strain,  $M = 3.13$ ,  $SD = 1.81$ ; job satisfaction,  $M = 3.58$ ,  $SD = 1.62$ ; turnover intention,  $M = 2.19$ ,  $SD = 1.98$ ), as well as job security ( $M = 3.16$ ,  $SD = 1.86$ ) were assessed using the same measures used in Study 1.<sup>1</sup> In this study, 2625 participants were on an open-ended contract (89.70%), and 667 identified as early career (22.6%). The average respondent spent 44.70% of their time on research ( $SD = 12.42\%$ ), and identified 4.00 high-quality outputs eligible for the next REF submission ( $SD = 2.48$ ).

### 2.4.1 | Need support from academic department

Need support was measured with four items. Competence and relatedness were measured with the same items as in Study 1, while autonomy need support was measured with two items ('I feel that my school or department Encourages me to have a voice in what happens'); 'I feel that my school or department makes me feel controlled and pressured' (reversed). The four items were averaged (after reverse scoring the control item) and showed high reliability similar to that of Study 1,  $\alpha = .86$ . An exploratory factor analysis indicated these items loaded onto one factor accounting for 71.0% of variance in them, with individual loadings above .73.

### 2.4.2 | Hyper-competition in department

Hyper-competition was measured through items assessing perceived instrumentality, focus on metrics and perceived competition within schools (Morrison & Wright, 2009; Sherf & Venkataramani, 2015). Four items asked the extent to which individuals' school or department 'Finds me important only to the extent that it helps them to accomplish their goals', 'Values me (communicates that I am important or worthwhile) (R)', 'Creates a competitive climate in which colleagues are concerned with "finishing on top", and "Places more value on meeting metrics, than it does on research quality"'. The items showed high internal reliability,  $\alpha = .82$ . In an exploratory factor analysis, items loaded together onto a single factor accounting for 65.0% of their variance with loadings above .76.

### 2.4.3 | 'Publish-or-perish' and the REF

Participants responded to two items regarding the Research Excellence Framework. These were: 'The REF creates a publish-or-perish culture with respect to research outputs (journal papers, books or other outputs)' and 'The REF creates a "publish-or-perish culture" with respect to impact (effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia)'. The items were highly correlated,  $r = .64$ ,  $p < .001$ , and thus combined into one index.

### 3 | STUDY 1 AND 2 RESULTS

#### 3.1 | Study 1 preliminary relations

Correlations between study variables are presented in [Table 1](#). Among other links, these correlations suggested the three well-being indicators used in this study were statistically independent but moderately correlated ( $|r|s = .39$  to  $.65$ ), with the biggest correlation linking higher job satisfaction to lower turnover intention  $r = -.65$ .

#### 3.2 | Study 1 primary analyses

Effects on three indicators of workplace well-being were tested separately using a hierarchical linear regression model with three steps. At Step 1, we first tested career characteristics, in Step 2 we tested the effects of economic characteristics above and beyond career ones, in Step 3, we tested need support 2 years prior (2018) and at present (2020) above and beyond career and economic characteristics. The full set of results are presented in [Table 2](#).

As seen in [Table 2](#), at Step 1, career characteristics of having a fixed-term contract, percent time spent on research, early career status and number of outputs failed to predict job strain, job satisfaction, or turnover intention. Together, they accounted for between just 1% and 6% of the variability in these outcomes ([Table 2](#)).

At Step 2, economic insecurity related to higher job strain, lower job satisfaction and greater turnover intention, whereas feeling more job security related to lower job strain, more job satisfaction and less turnover intention. Together, these two variables accounted for between 12% and 19% additional variance in workplace well-being outcomes above and beyond career characteristics.

At Step 3, need support did not relate to perceived job strain above and beyond career and economic predictors. Need support in 2020 related to higher job satisfaction, accounting for 19% of the variance in this outcome above and beyond career and economic characteristics. Predicting turnover intention, lower need support in 2020 related to higher turnover intention. Furthermore, holding this constant, lower need support in 2018 related to

TABLE 1 Study 1 correlations between variables of interest measured in 2018 or 2020.

	1	2	3	4	5	6	7	8	9	10
1. Fixed vs. open	-									
2. %Research	.50**	-								
3. Early career	-.34**	-.14	-							
4. Number of outputs	-.39**	-.08	.25**	-						
5. Economic insecurity	.01	-.03	-.13	-.04	-					
6. Job security	-.31**	-.11	.21*	.12	-.21*	-				
7. Need support (2018)	-.03	.06	-.03	.03	-.16	-.04	-			
8. Need support (2020)	-.10	-.03	.11	.00	-.19*	.16	.59**	-		
9. Job strain	.02	-.02	-.07	.01	.25**	-.29**	-.01	-.16	-	
10. Job satisfaction	-.05	.12	.18*	.05	-.36**	.39**	.35**	.54**	-.45**	-
11. Turnover intention	.12	-.03	-.22*	-.04	.28**	-.37**	-.40**	-.49**	.39**	-.65**

Note: Variables 1–4 were measured in 2018; variables 5–6 and 8–11 were measured in 2020.

\* $p < .05$ ; \*\* $p < .01$ .

TABLE 2 Results of hierarchical regression models predicting workplace well-being indicators (job strain, job satisfaction and turnover intention) from career, economic and need support (measured 2 years prior to and simultaneously with outcomes).

	Job strain				Job satisfaction				Turnover intention			
	$\beta$	t	p	pr	$\beta$	t	p	pr	$\beta$	t	p	pr
Step 1	$R^2 = .01, p = .957$				$R^2 = .06, p = .152$				$R^2 = .05, p = .177$			
Fixed-term	.03	0.22	.823	.02	-.09	-0.73	.466	-.07	.10	0.97	.420	.07
Percent time	-.08	-0.72	.471	-.07	.19	1.86	.066	.17	-.14	-1.30	.195	-.12
Early career	-.03	-0.30	.768	-.03	.16	1.61	.111	.15	-.19	-1.83	.070	-.17
Outputs	.03	0.29	.769	.03	-.01	-0.11	.915	-.01	.04	0.41	.685	.04
Step 2	$\Delta R^2 = .12, p = .001$				$\Delta R^2 = .19, p < .001$				$\Delta R^2 = .16, p < .001$			
Economic insecurity	.20	2.25	.026	.20	-.29	-3.43	.001	-.28	.25	2.82	.006	.24
Job security	-.26	-2.72	.007	-.24	.29	3.25	.002	.27	-.28	-3.09	.003	-.26
Step 3	$\Delta R^2 = .01, p = .417$				$\Delta R^2 = .19, p < .001$				$\Delta R^2 = .20, p < .001$			
Need support 2020	-.15	-1.32	.190	-.12	.39	4.18	<.001	.30	-.30	-3.20	.002	-.24
Need support 2018	.10	0.90	.372	.08	.10	1.04	.300	.07	-.22	-2.33	.021	-.17

higher turnover intention 2 years later. Together, these two variables accounted for 20% of the variance in turnover intention.

In short, the findings of Study 1 demonstrated a link between perceiving need support from one's school and department and felt job satisfaction and turnover intention. The latter effect was even observed 2 years later. Furthermore, this effect was in evidence when controlling for career and economic characteristics that could have provided a stronger explanation for the effect. This evidence offers a first insight into how researchers' perceived need support impacts work-related well-being.

### 3.3 | Study 2 preliminary relations

Table 3 summarizes correlations among study variables for Study 2. Relations among well-being indicators are noteworthy: in this sample job strain and satisfaction did not relate robustly to turnover intention, although they correlated independently and robustly to one another.

### 3.4 | Study 2 primary effects

Effects on three indicators of workplace well-being were tested separately using a hierarchical linear regression model with three steps. At Step 1, we first tested career characteristics, in Step 2 we tested the effects of job security, in Step 3, we tested need support, Hyper-competition and perceptions of 'publish-or-perish' expectations as a function of the REF. The full set of results are presented in Table 4.

At Step 1, having research time was related to less job strain, more job satisfaction and less turnover intention. Those who reported a fixed contract reported higher job strain, but they did not differ in terms of their job satisfaction and turnover intention. Early career researchers reported more job strain, but did not differ on satisfaction or turnover intention metrics. Finally, those who produced more high-quality outputs felt more job satisfaction, but did not differ on job strain or turnover intention. Together, these career characteristics accounted for between 1% and 4% of the variability in well-being outcomes (Table 4).

TABLE 3 Study 2 correlations between variables of interest.

	1	2	3	4	5	6	7	8	9	10
1. Fixed vs. open	-									
2. %Research	-.33**	-								
3. Early career	-.24**	.08**	-							
4. Outputs	.07**	.17**	-.22**	-						
5. Job security	.19**	.04	-.13**	.13**	-					
6. Need support	-.09**	.10**	.05*	.03	.37**	-				
7. Hyper-competition	.07**	-.07**	-.04*	-.03	-.36**	-.82**	-			
8. Publish-or-perish REF	.03	-.07**	.07**	-.08**	-.20**	-.28**	.35**	-		
9. Job strain	.08**	-.17**	.02	-.07**	-.27**	-.43**	.42**	.24**	-	
10. Job satisfaction	-.10**	.21**	.03	.07**	.42**	.63**	-.58**	-.23**	-.53**	-
11. Turnover intention	.08**	-.33**	-.24**	.07**	.19**	-.09**	.07**	.03	.08**	-.10**

\* $p < .05$ ; \*\* $p < .01$ .

TABLE 4 Results of hierarchical regression models predicting workplace well-being indicators (job strain, job satisfaction and turnover intention) from career, economic and workplace climates (need support, hyper-competitive, publish-or-perish).

	Job strain				Job satisfaction				Turnover intention			
	$\beta$	<i>t</i>	<i>p</i>	<i>pr</i>	$\beta$	<i>T</i>	<i>p</i>	<i>pr</i>	$\beta$	<i>t</i>	<i>p</i>	<i>pr</i>
Step 1	$R^2 = .03, p < .001$				$R^2 = .04, p < .001$				$R^2 = .01, p < .001$			
Fixed-term	.05	2.04	.041	.04	-.03	-1.54	.124	-.03	.03	1.23	.218	-.09
Percent time	-.14	-6.15	<.001	-.13	.19	8.43	<.001	.17	-.09	-4.23	<.001	-.02
Early career	.05	2.29	.022	.05	.01	0.33	.744	.01	-.02	-0.75	.453	.03
Outputs	-.04	-1.95	.051	-.04	.05	2.36	.019	.05	-.04	-1.65	.100	-.03
Step 2	$\Delta R^2 = .07, p < .001$				$\Delta R^2 = .18, p < .001$				$\Delta R^2 = .10, p < .001$			
Job security	-.27	-13.05	<.001	-.27	.44	22.67	<.001	.42	-.33	-15.90	<.001	-.32
Step 3	$\Delta R^2 = .13, p < .001$				$\Delta R^2 = .25, p < .001$				$\Delta R^2 = .16, p < .001$			
Need support	-.20	-5.86	<.001	-.11	.41	14.66	<.001	.23	-.25	-7.54	<.001	-.14
Hyper-competitive	.18	5.23	<.001	.10	-.15	-5.22	<.001	-.08	.20	5.93	<.001	.11
Publish-or-perish	.09	4.56	<.001	.08	-.02	-1.07	.287	-.02	.02	1.23	.220	.02
REF												

At Step 2, job security related to lower job strain, more job satisfaction and less turnover intention, replicating findings of Study 1. This variable alone accounted for between 7% and 18% of the variability in well-being outcomes, a percentage of variance comparable to those observed in Study 1.

At Step 3, those who reported a more Hyper-competition and lower need support within their schools and departments reported more job strain, lower job satisfaction and higher turnover intention. Publish-or-perish climate related to higher job strain, but it did not relate to job satisfaction or turnover intention when holding constant other predictors. Together, these variables accounted for between 13% and 25% of the variability in well-being outcomes. In summary, Hypotheses 1 and 2 regarding need support and Hyper-competition were fully supported in this study, but we only received partial support for Hypotheses 3, that a publish-or-perish climate would relate to lower well-being.

A final set of multiple analyses of variance tests first examined omnibus effects of the management strategies tested and found significant effects of all strategies across the six outcomes tested (left columns, Table 5). Means for these constructs within each of the two management options (present or absent) are presented in Table 6. Across the board, the strongest effects observed were for communicating the importance of research beyond the REF (i.e. external incentive system) and having one's views listened to about how to approach the REF, both of which were strong predictors of all indicators, which showed consistently large effect sizes. Aligning goals with REF expectations and receiving constructive feedback on how work goals could be met, were also highly correlated with positive outcomes, showing generally moderate effect sizes.

Moderate effect sizes were also observed for the non-supportive strategies of realigning one's activities to meet REF expectations, comparing researchers' performance to their colleagues, and suggesting role changes (e.g. additional teaching) if failing to perform in line with output expectations.

In summary, Hypothesis 4 was borne out—showing that the use of supportive management strategies predicted more positive workplace climates and well-being, whereas unsupportive strategies undermined these indicators.

## 4 | DISCUSSION

Academia is typically understood as a high-performance profession in which recruitment and promotion are based on the number and quality of research outputs, at a potential cost to creativity, morale and well-being (De Rond & Miller, 2005). It is argued that these high expectations must be paired by climates that value and support researchers (Weinstein et al., 2021), and that such support should be an area of priority by departments, schools, institutions and research culture at all levels, from funders to universities to research staff and students (Nosek et al., 2015; Ryan et al., 2021; UKRI, 2021). Data collected from UK researchers highlighted the consequences of support and non-support, and showed that the motivational climate shaped by researchers' departments and research cultures influences their well-being.

In two studies, we observed, for the first time, that researchers perceiving their department as supportive of their psychological need for autonomy—having a voice and freedom from pressure, relatedness—feeling close and connected to colleagues, and competence—feeling effective in what one does, related to a greater sense of well-being. For example, departments help employees with their need for *autonomy* by allowing them to express themselves honestly, respecting and responding to employee views, and encouraging employees to make meaningful decisions in their daily working life, *relatedness* by promoting collaborative and open climates and *competence* by requesting meaningful and achievable activities are undertaken that utilize researchers' skills well (see Dagenais-Desmarais et al., 2014; Gagne, 2003; Greguras & Diefendorff, 2009; Leroy et al., 2015; Ryan & Deci, 2017).

In Study 1, this effect was particularly striking when predicting turnover intention: higher psychological need support predicted lower turnover intention 2 years later, even when controlling for psychological need support measured simultaneously. In other words, feeling supported in one's need led to a greater sense of lasting commitment to one's job across a 2-year period.

TABLE 5 Results of multiple analyses of variance (MANOVA) predicting each motivational climate and well-being outcome from the absence (coded 0) or presence (coded 1) of each motivational strategy.

Management strategy	Omnibus effect		Needs		Hyper-competitive		Publish-or-perish REF		Job strain		Job satisfaction		Turnover intention	
	F	t	t	d	t	d	t	d	t	d	t	d	t	d
Feedback on goals	13.68**	8.24**	1.13	-8.00**	-1.10	-1.57	-0.22	-2.47*	-0.34	5.46**	0.75	-5.51**	-0.76	
Communicated importance	69.81**	19.72**	2.72	-17.95**	-2.47	-4.17**	-0.57	-6.10**	-0.84	12.96**	1.78	-9.13**	-1.26	
Aligned goals	12.76**	4.08**	0.56	-6.18**	-0.85	-6.97**	-0.96	-3.84**	-0.53	1.69	0.23	-3.03**	-0.42	
Aligned workload	2.69*	2.70**	0.18	-0.93	-0.13	-0.23	-0.03	-1.43	-0.20	2.91**	0.40	-1.34	-0.18	
Listened to views	85.95**	22.23**	3.06	-18.73**	-2.58	-7.73**	-1.06	-5.46**	-0.75	11.93**	1.64	-8.40**	-1.57	
Compared to colleagues	8.85**	-6.00**	-0.83	7.05**	0.97	2.98**	0.41	3.45**	0.48	-4.76**	-0.66	3.14**	0.43	
Offered rewards or promotions	2.99**	-2.68**	-0.37	3.54**	0.49	2.97**	0.42	2.34**	0.32	-2.02**	-0.28	2.30**	0.32	
Contract change	3.83**	-2.52*	-0.34	3.10**	0.43	2.13*	0.29	3.02**	0.42	-1.90	-0.26	4.04**	0.56	
Role change	8.53**	-5.73**	-0.79	5.57**	0.77	3.52**	0.48	3.01**	0.41	-4.54**	-0.63	5.57**	0.77	
Aligned activities	17.00**	-6.45**	-0.89	9.16**	1.26	6.15**	0.85	4.65**	0.64	-4.93**	-0.68	4.69**	0.65	

Note: Results of MANOVA with  $df(6, \sim 2100)$ . Omnibus effect across all predictors (noted on left column: Feedback, goal alignment, workload alignment, listening, colleague comparisons, rewards offered for meeting REF goals, discussions of contract change, or alignment of activities with REF goals). Outcomes are listed across the top. All are  $p < .001$  Except 2.69\*, which is  $p = .01$ .

\* $p < .05$ ; \*\* $p < .01$ .



TABLE 6 Adjusted means comparing the presence (yes) and absence (no) of management strategies (left column) on and well-being.

	Need support		Hyper-competitive		Publish-or-perish		Job Strain		Job satisfaction		Turnover intention	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
<i>Supportive strategies</i>												
Provide feedback on goals	-0.02	-0.42	0.17	0.66	1.02	1.22	3.03	3.32	3.67	3.34	2.10	2.38
Communicated importance of REF	-0.14	-0.44	0.30	0.72	1.04	1.40	3.10	3.43	3.57	3.33	2.18	2.53
Aligned goals	-0.15	-0.56	0.32	0.83	1.07	1.43	3.10	3.70	3.56	3.23	2.15	3.00
Aligned workload	-0.19	-1.27	0.31	1.46	1.08	1.83	3.19	3.87	3.60	2.66	2.15	3.64
Listened to my views	-0.06	-0.58	0.27	0.94	1.00	1.50	3.05	3.50	3.63	3.24	2.09	2.58
<i>Non-supportive strategies</i>												
Compared to colleagues	-0.67	-0.05	0.86	0.23	1.20	1.07	3.32	3.09	3.22	3.65	2.65	2.09
Offered rewards/promotions	-0.80	0.32	0.96	-0.17	1.25	0.98	3.40	2.93	3.11	3.91	2.68	1.87
Contract change	-0.11	-0.39	0.25	0.69	0.96	1.47	3.06	3.39	3.57	3.45	2.12	2.40
Role change	-0.22	-0.01	0.38	0.30	1.09	1.11	3.18	3.03	3.51	3.75	2.23	2.08
Realigned activities	-0.79	0.64	0.90	-0.36	1.27	0.68	3.36	2.88	3.18	4.04	2.58	1.78

In Study 2, researchers sampled from across the UK who reported more psychological need support also reported lower job strain, higher job satisfaction and less turnover intention, even with other workplace climates accounted for. In Study 2, we also examined two other types of workplace climates. The first of these, a hyper-competitive culture in departments that encouraged competition, appreciating employees as a function of performance and not valuing, and prioritized metrics (Sherf & Venkataramani, 2015) was highly related to increased job strain, lower job satisfaction and intention to leave one's job. The finding that researchers found Hyper-competition as undermining is consistent with other theorizing and research in higher education that criticizes competitive and marketized environments and highlights that such a culture undermines research authenticity, integrity and well-being (Brown & Carasso, 2013; Collini, 2012; Watermeyer, 2019; Winter & O'Donohue, 2012).

Further, Study 2 tested the impact of perceived publish-or-perish climate as resulting from the REF. Interestingly, although individuals who perceived higher publish-or-perish climate reported more job strain, this did not translate to lower job satisfaction or turnover intention. This finding suggests that such high expectations are likely to be perceived as 'part and parcel' of academic life (Murphy & Sage, 2015). Importantly, these findings can also be understood in contrast with those for psychological need support in Study 1. In this case, researchers who experienced need support from their departments simultaneously experienced job satisfaction, and even more so, need support drove turnover intention even across time. However, need support did not relate to job strain in this study. Considering these together, the data seem to suggest that job strain was distinct from more holistic and affect-laden indicators of well-being (e.g. job satisfaction and turnover intention) and that each was driven by different factors: supportive climates drove well-being, whereas high expectations increased strain.

In Study 2, we also explored whether the use of specific management strategies used in departments supported or undermined workplace climates and well-being. Though it is commonplace and sensible to apply motivational strategies within academic departments and other workplaces, few studies test their impacts on employee well-being. Though all strategies influenced researchers in positive or negative ways, several emerged as particularly influential. Specifically, researchers reported significant positive benefits when departments communicated the importance of research effectively, beyond its role in satisfying REF expectations. Arguably, this strategy—also known as providing a rationale—promoted a sense of choice and valuing in one's work because it is understood to be intrinsically valuable, rather than instrumental (Steingut et al., 2017). The second most positive strategy used was to listen to researchers' voices on how to approach REF expectations; in other words, researchers found it beneficial when they were included as collaborators who could voice their views, and to contribute to strategic development of research activities. This strategy was robustly related to feeling psychologically need satisfied, and experiencing well-being at work, a finding in line with previous research of what promotes employees' well-being in the workplace (Gagné & Bhawe, 2011; Kochan et al., 2019). Other strategies that promoted well-being involved facilitating and supporting career goals that were well-matched to external expectations, presumably because doing so helped individuals to feel a sense of competence in their activities in relation to their job demands (Deci & Ryan, 2000; Van den Broeck et al., 2010). Non-supportive strategies were also identified, including comparing colleagues against one another, and shifting one's work activities as a function of failure to meet external output expectations (Ryan & Deci, 2000). These activities may be argued to have undermined motivation because they focused goals away from its importance and interest (autonomous motivations) towards avoidance of negative outcomes (negative comparisons, detrimental work outcomes).

## 4.1 | Limitations

These findings should be viewed in light of some limitations. First and foremost, a number of the findings are correlational. Notably, both studies controlled for career and economic factors that could confound relations between workplace climates and well-being, an especially important activity to control for halo effects at work (Rindfleisch et al., 2008). Indeed, we found that with more time dedicated to research and more job and economic security,

researchers reported much less job strain, more job satisfaction and less turnover intention. These structural characteristics of the workplace are important to consider in and of themselves (Fan et al., 2019; Witte, 1999), and reduced, but did not fully account for, the effects of our predictors in these studies. Despite these controls, it is still not possible to definitively ascertain causal effects in these studies. It is important that future longitudinal work is conducted to test fully cross-lagged models at work, or via using field experiments to examine effects of interventions to support positive workplace climates in higher education research.

Second, we tested departmental strategies in a somewhat broad framework, and did not have a-priori hypotheses about which of the workplace climates tested would best account for their effects (e.g. specific need supports, such as autonomy and competence, or competition). This was done because we were interested in providing an initial understanding of the overall contributions that each strategy made to researcher well-being, itself a novel and important contribution. That said, future research is needed to develop deeper theory regarding the motivational mechanisms for strategies used in the workplace, using multi-wave longitudinal data and cross-lagged models. Such research would contribute greatly to an understanding of which management strategies are beneficial for promoting positive workplace climates, which, according to SDT can be viewed as those that promote internalization of workplace goals and behaviour and satisfy psychological needs (Ryan & Deci, 2000), and which promote workplace well-being alongside furthering valuable productivity which focuses less on quantity and more on quality for researcher well-being.

## 5 | CONCLUSIONS

Research policies that support institutions to better implement localized incentives can help to place well-being at the heart of positive workplace climates. In UK policy, increasing attention is now being directed towards researcher well-being and the research environment. The national research funding agency, UK Research and Innovation (UKRI) has given visible priority to the challenge of building a healthier research and innovation culture (Gibney, 2020; UKRI, 2021). They are not alone, as other funders and scientific bodies, including the Wellcome Trust, National Institute for Health and Care Research (NIHR) and the Royal Society, have supported a range of initiatives to address equality, diversity and inclusion; work-life balance; workplace bullying and safety and research integrity (AMS, 2021; Royal Society, 2021; Wellcome, 2021). Research managers and university leaders have been seen as key to this step-change (Nature, 2021), and some have suggested that periods of crisis (such as the COVID-19 pandemic) might lead to a 'kinder research culture' (Derrick, 2020).

Our research interprets such kindness implicitly in terms of supportive motivational strategies and workplace climates that satisfy researchers' psychological needs for autonomy (sense of volition, self-congruence and choice), relatedness (sense of connection to others in the workplace) and competence (experience of being effective at important goal pursuits). These principles apply in and out of the higher education context: investing in supportive workplace climates can reduce burnout and turnover, resulting in a more effective, creative and happier workforce. With tens of thousands of intelligent, intensively trained and highly skilled staff within its ranks, failing to support such workplaces throughout the UK's higher education sector would be a false economy of the most self-defeating and short-sighted kind.

With respect to the design and operation of the REF, our research lends measured support to arguments that the rule changes introduced to REF 2021 helped to ease some of the pressures experienced by individual researchers in the previous cycle—largely because of more collectivized expectations around outputs, instead of the four-outputs-per-researcher norm under REF 2014 (Manville et al., 2021). But as we also sound that the extent to which there was a tangible reduction in levels of stress while being assessed was dependent on the approach taken to interpretation and implementation of changes at a local institutional level.

As policy attention turns to the next REF—notionally scheduled for 2027 or 2028—through the multiple strands of analysis now underway through the Future of Research Assessment Programme (Sweeney, 2022),

there is a growing chorus of voices calling for more radical changes to the framework, to further reduce the pressures that it places on individuals, and to limit the scope of institutions to implement it in ways that are perceived as harmful to researcher well-being (Gluckman, 2022; Solloway, 2020; Wilsdon, 2022). After 40 years of steadily more sophisticated yet burdensome methods of research assessment in the UK, there is now serious talk of shifting the balance away from retrospective audit of past performance and towards prospective strategies for culture change. If such a shift occurs, the REF could become a powerful driver to incentivize and reward the improvements in research culture that so many in UK higher education and research urgently want to see.

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### CONFLICT OF INTEREST

No potential conflict of interest was reported by the author(s).

### DATA AVAILABILITY STATEMENT

Data, materials and code will be made freely available on the OSF upon acceptance of the manuscript.

### ETHICS STATEMENT

The studies received ethical approval from the departmental ethics committee. No materials are reproduced.

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### ENDNOTE

<sup>1</sup> The only exception to correspondence with Study 1 was economic insecurity, which was not assessed in Study 2.

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