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## Work-life balance of UK construction workers: relationship with mental health

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### ABSTRACT

Although the importance of work-life balance (WLB) is related to occupational psychological outcomes in many countries and industries, these relationships have not been explored in UK construction industry, a major sector of the UK economy. This workforce suffers from high rates of mental health problems and low help-seeking. Accordingly, the purposes of this study were to explore relationships between WLB, mental health, attitudes towards mental health problems, along with work schedules. One hundred and forty-four UK workers in the construction industry completed measures of those three constructs. WLB was negatively associated with mental health problems and mental health attitudes. Mental health attitudes did not mediate the relationship between WLB and mental health problems with a small effect size. WLB was the strongest predictor of mental health problems. Mental health problems scores differed by work pattern groups; day time workers had poorer mental health than mixed workers. Findings will help UK construction workers, employers, and organizational researchers deepen their understanding of WLB and identify better solutions to poor WLB and mental health.

### ARTICLE HISTORY

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### KEYWORDS

Work-life balance; mental health; mental health attitudes; Role Theory

## Introduction

### *Importance of work-life balance among workers*

Work-life balance (WLB), organization's support for its employee's personal life provided by various schemes including flexible work hours, child and dependent care, and leave for a family or personal reason (Estes and Michael 2005; Beauregard and Henry 2009), has been an important issue for both employers and employees in modern society (Nizam and Kam 2018). Maintaining good WLB has been endorsed by the government for all employees in the UK (Department for Business, Innovation and Skills 2011), and the benefits of good WLB have been reported by the European Commission, particularly parental leave, breastfeeding provision, and flexible working (Vaganay *et al.* 2016). Since Caplow's (1954) initial sociological research, many social and organizational researchers have investigated WLB. Female workers' increased involvement in workplaces since the 1960s (Naithani 2010, Zheng *et al.* 2015) along with family commitments were recognized as causing work-family conflict and unsustainable, poor WLB (Manfredi 2006). In contrast, flexible work hours and locations could result in better WLB (Hill *et al.* 2001), leading to a good balance of time,

satisfaction, and involvement in both work and life (Greenhaus *et al.* 2003). Poor WLB was associated with higher levels of psychological distress at an individual level (Aazami *et al.* 2015) and decreased work productivity at an organizational level (Mendis and Weerakkody 2014). Further, poor WLB can cause lower birth rates, lowering population sustainability, which results in increased stress and decreased quality of life among workforces (Lewis *et al.* 2007). Similarly, in the construction industry, WLB is important for organizational productivity and employees' wellbeing (Lingard *et al.* 2007).

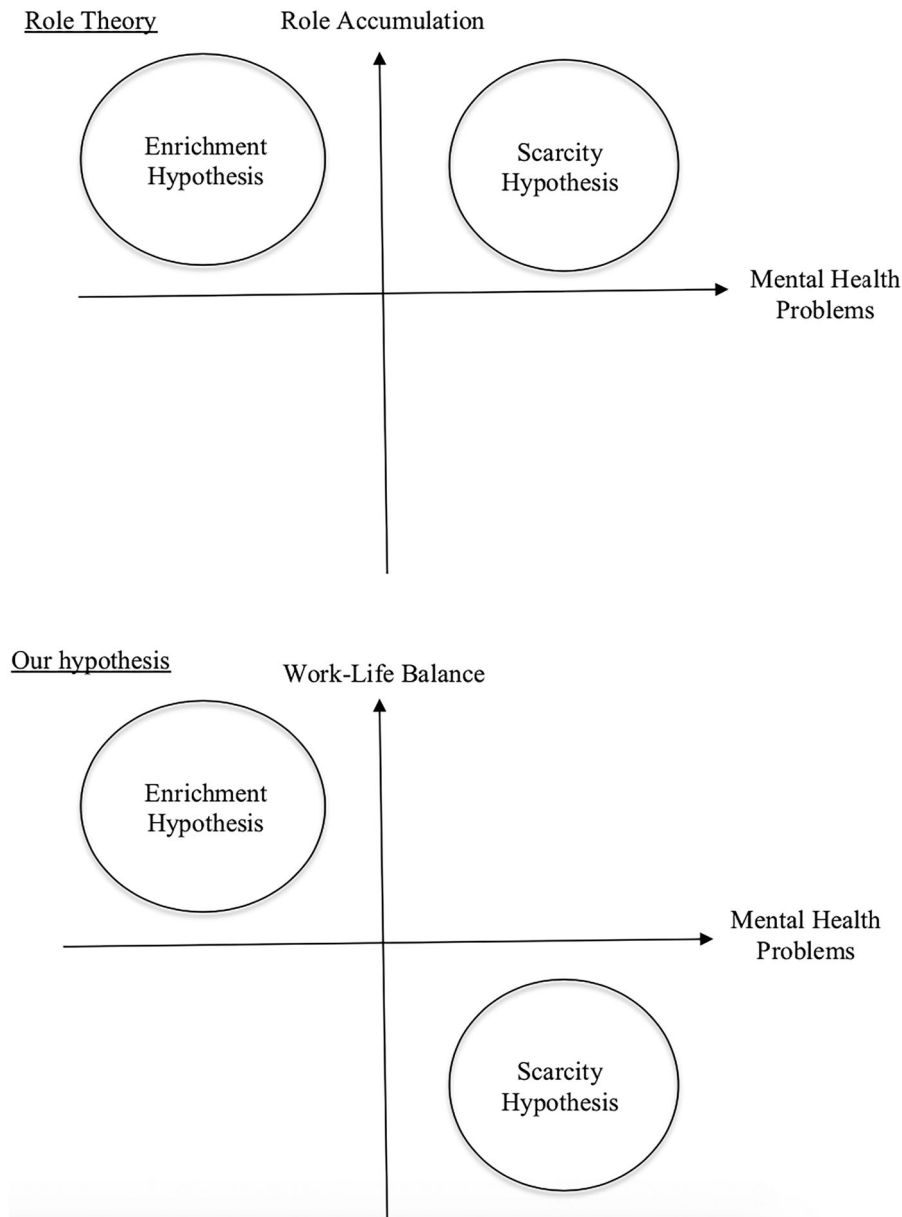
Between 1999 and 2007, about 30% of the European workers, equating to 56 million workers, noted that their mental wellbeing was affected by exposure to psychosocial risks, of which the most common was poor WLB (Eurostat 2007). Among workers with a work-related health problem, high levels of mental health problems (depression, anxiety, and stress) were considered the most serious problem (Eurostat 2010). Eighty percent of European managers are aware of high levels of mental health problems in their workplaces, however, more than 70% of the European organizations do not have procedures to cope with them, hence almost half of the European

managers find mental health risk factors harder to manage than other occupational health risk factors (European Agency for Safety and Health at Work [EU-OSHA] 2010). Mental health risk factors include excessive workload and work pace, inflexible work schedules, irregular, unpredictable or unsocial work hours, and conflicting demands of work and home – all of which are related to WLB (Cox 1993). Protracted exposure to those risk factors is associated with poor mental health and reduced work performance in workplaces (Hassard *et al.* 2014) and reduced quality of life and relationship with the family in personal lives (Hoel *et al.* 2001, Amick and Mustard 2005). Employers are legally responsible for reducing employees' health and safety risks (see the European Framework Directive: 89/391/EEC) and failure to address these risks can be costlier for employers, employees, and the societies (Bond *et al.* 2006). Though many European countries have national health care systems, poor WLB and its negative impacts can still lead to reduced income at an individual level: taking prolonged leaves and early retirement (Eurofound 2011). Indeed, some countries offer occupational compensation for employees who have experienced work-related mental health problems; however, the procedure to apply for and receive them can be daunting to many applicants (Kieffer 2013). At an organizational level, mental health risk factors are related to poor productivity, high absenteeism, and employee turnover. Also, in the UK, occupational mental health problems caused 16 million lost working days in 2016 (Office for National Statistics [ONS] 2017a), costing employers £40 billion and the government £25 billion annually, over 3% of GDP (Stevenson and Farmer 2017). Lastly, the benefits of good WLB include more engagement (a contributing factor to increased work productivity; Grover and Crooker 1995), job satisfaction, employee retention, better recruitment outcomes (Caspar and Buffardi 2004, Matos and Galinsky 2014), and higher returns for shareholders (Arthur and Cook 2004). These findings regarding the positive and negative impacts of WLB highlight the importance of further investigation.

Unsurprisingly, there have been numerous theories to elucidate this important concept. Conflict theory is centred around the incompatibility of one's role pressures in work and family lives: more work commitment makes it challenging to maintain the family role (Greenhaus and Beutell 1985). Though the original conflict theory was a one-way model, it is now more commonly regarded as two-way (i.e. work hampers family life, and vice versa; Frone *et al.* 1992). Since work-family conflict is often present in employees,

work's interference with family is emphasized (Kelly *et al.* 2008). The spill-over theory is based on interactions between work and family, which can increase similarities between these two domains (Edwards and Rothbard 2000). Affective spill-over refers to one's mood in one domain affecting their mood in the other domain (i.e. a worker feeling well at home will feel well at work too and vice versa; Illies *et al.* 2009), while instrumental spill-over refers to one's behaviours and skills in one domain carried to the other (i.e., a worker's organizational skills used at work are utilized at home too; Edwards and Rothbard 2000). Other WLB theories include: structural functionalism theory which suggests radical separation between work and family (Kingsbury and Scanzoni 1993); ecology system theory which proposes that the environmental effects one experiences affects work and life (Grzywacz and Marks 2000), resource drain theory; theorizing that a worker balances their limited resources such as time, money, and attention between work and life (Edwards and Rothbard 2000) and so on.

One established theory in WLB, relating to employee mental health, is Role Theory, focusing on the roles an employee has in their workplace and personal life (Marks 1977, Pradhan 2016). One of the two hypotheses of this theory is the scarcity hypothesis (Marks 1977), which proposes that the quantity of time and energy an individual has is fixed. Therefore, an increase in roles can lead to role conflicts (i.e. scarcity of time and energy per role), causing overload and negative consequences including poor mental health, performance, and work motivation (Grant-Vallone and Donaldson 2010). One's roles, which are a large component of meaningfulness in their lives (Simon 1997), were associated with mental health (i.e. a strong sense of professional roles was associated with mental health problems; Kotera *et al.* 2018b). Having numerous roles was associated with mental distress (Cojocararu *et al.* 2018), and sacrificing personal activities for work was related to negative emotions such as guilt and shame and lower life and work satisfaction (Dahm *et al.* 2019). On the other hand, the enrichment hypothesis in Role Theory suggests that an increase in roles is beneficial to our well-being: workers who fulfill multiple roles (i.e. role accumulation) were had lower levels of mental health problems and better well-being (Barnett and Hyde 2001). Role accumulation can support one's resources, social belongingness, and emotional gratification (Marks 1977, Thoits 1991). High levels of work and life satisfaction are related with one's happiness and perceived the quality of life (Rice *et al.* 1992). Also, the



**Figure 1.** Comparing Role Theory and our hypothesis.

enrichment hypothesis claims that role accumulation can be safer, as distress in one role can be buffered by satisfaction in the other roles. One's overall well-being was maintained from stressful work experience if their personal life was fulfilling, and vice versa (Barnett 1999). Lastly, as with the spill-over theory, experiences in one role can be transferred to the other roles to produce positive outcomes (e.g. being a mother trained her listening skills, which were useful as a manager; Ruderman *et al.* 2002). Role Theory places these hypotheses as opposing to each other: the scarcity hypothesis relates role accumulation with poorer mental health, whereas the enrichment hypothesis relates role accumulation with better mental health (Greenhaus and Powell, 2006). However, we

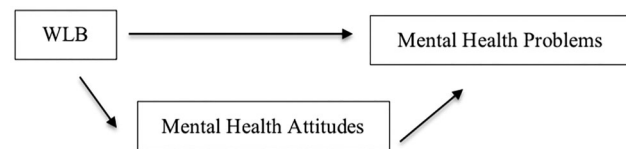
believed that WLB might be able to offer insights in this relationship between the two hypotheses: regardless of the degree of role accumulation, when an employee's WLB is good, their mental health is also good (i.e. less mental health problems), and vice versa. Accordingly, we hypothesized that their WLB would be negatively correlated with their mental health problems (Aim 1, see Figure 1).

### ***UK construction workers' poor mental health and low help-seeking***

Construction workers are involved with repair, additions, and modifications of diverse enterprises for buildings and public engineering works (Office for

National Statistics (ONS) 2015). The UK construction industry produces 6% of the economic output (£150 billion) and employs 8% of the national workforce (2.7 million workers; Statista 2018), but has many workers who suffer from poor mental health; the ratios of construction workers who have experienced psychological distress are more than twice the national average: 55% of UK construction workers have experienced mental health problems in their lives, and 42% of them suffer from them at their current workplace (42% in construction and 17% in general workers; Alderson 2017). Relatedly, contrary to the on-site accident deaths (which have reduced substantially from 200 to 40 in the past 60 years), the incidence of suicide has been constant at around 300 per year (Sanderson 2017), higher than any other industry (13% of all work-related suicides; Office for National Statistics (ONS) 2018); more construction workers end their lives for a lack of psychological safety than physical safety. In the country, work mental health has been highly focused upon, as the total costs of poor mental health at work were enormous, estimated to be £74 to 99 billion per year (Stevenson and Farmer 2017). Though we could not retrieve a cost estimate of mental health problems in the construction industry, considering its magnitude and challenging mental health status, it would not be negligible.

In spite of their poor mental health, help-seeking of workers in the UK construction is low. Only 40% of them told their boss about their mental health problems when they took leave due to mental distress (Alderson, 2017). Low-skilled male construction workers were three times more likely to commit suicide than the male national average in the UK (Office for National Statistics (ONS) 2017b). Almost all (90%) employees in this industry who have had suicidal thoughts or known someone who committed suicide did not seek help because of shame (Alderson, 2017). Previous research has also found that shame serves as an obstruction for help-seeking among students (Kotera *et al.* 2018b) and workers (Kotera *et al.* 2018a). Low help-seeking was associated with high emotional exhaustion among 222 Hong Kong construction workers (Yip *et al.* 2008), highlighting employees' sensitivity to maintaining a front, due to fear of losing credibility by expressing negative emotions at work (Rowlinson and Root 1996). Moreover, they identified a lack of organizational support for a good WLB in the construction industry, which moderated the relationship between work-to-family conflict and emotional exhaustion (Lingard and Francis 2006). Indeed, shame was present in WLB as well: "walk of shame" (i.e. shame associated with leaving work early



**Figure 2.** Mental health attitudes as a mediator in the relationship between work-life balance and mental health problems.

due to a personal/family issue) was reported among Australian construction workers (Turner *et al.* 2009, p.100). To address high shame in the industry, a smart-phone intervention, where participants undertook mental health education offered in texts and videos on their smart-phone, was provided to construction workers. However, it did not yield significant findings, possibly due to statistical power or because of the complexity of shame and stigma; they highlight the need for better understanding of shame in this workforce (Milner *et al.* 2018). Accordingly, the current study focused on mental health problems, and shame-based attitudes towards mental health problems ("mental health attitudes") among workers in the UK construction industry, in relation to WLB: how much impact mental health attitudes would have on the relationship between WLB and mental health problems (Aim 2, see Figure 2).

### Work schedule and mental health

Work schedule (i.e. the times and days an employee is supposed to be working) has been reported to be related to the mental health of workers (Worrall and Cooper 2015). For example, non-standard work hours (e.g. night or weekend work) negatively impact on employee mental health (Wildes 2005) and a longitudinal study in the Netherlands reported that using the company policy for exemption from evening and night shifts increased work engagement among senior workers, a construct related with good mental health ( $n = 6922$ ; van der Meer *et al.* 2016). Similarly, highly motivated workers who believe their work is a calling tend to work long hours, which is related to their diminished sleep, leading to poor mental health (Clinton *et al.* 2017). Long working hours were associated with sleepiness at work, increasing the risk of accidents among construction workers (Wilhelm *et al.* 2010). Irregular working hours and witnessing colleagues' fatigue were negatively associated with an overall sense of safety in the construction workplaces, which was a key factor contributing to employee engagement and productivity (Whiteoak and Mohamed 2016). Non-standard work hours can



damage WLB and well-being (Ulker 2006). Weekend work, a major source of dissatisfaction in Australian construction workers (Lingard and Francis 2002), was associated with burnout, stress, and mental health problems (Jamal 2004) as well as work-family conflict (Hosking and Western 2008), which was a mediator in the relationship between schedule demands (i.e. work hours and irregularity) and emotional exhaustion in male Australian construction workers (Lingard and Francis 2005).

Furthermore, non-standard work hours can affect their family life too: non-standard work hours can affect marital quality negatively among shift workers (White and Keith 1990), causing high divorce rates (Presser 2000). Parents working non-standard work hours experience more depressive symptoms and their children are more likely to encounter emotional difficulties (Strazdins *et al.* 2006). High family-work conflict was deemed to be related to negative attitudes towards mental health problems in hospitality workers (Kotera *et al.* 2018a). Alternative work hours, such as compressed work week, were introduced to this industry; however, the effects were ambiguous: compressed work week helped employees' WLB and organizational efficiency in Australian construction workers (Lingard *et al.* 2007), whilst such work hours can create problems for waged workers who would have to give up their weekend shifts (that pay more), causing managers' stress (Townsend *et al.* 2012). This may suggest a need for a deeper understanding of WLB, mental health problems, and mental health attitudes in construction workers, relating to work location and work schedule. These relationships have not been explored in UK construction workers, who work a variety of work hours (Oswald *et al.* 2017) (Aim 3).

## Aims

This study aimed to explore relationships between their WLB, mental health problems, and mental health attitudes (Aim 1, Figure 1), investigate the impact of mental health attitudes on the relationship between WLB and mental health problems (Aim 2, Figure 2), and examine whether WLB, mental health, and mental health attitudes would differ in different work schedule groups (Aim 3).

## Method

### Settings and samples

The organizations that participated in this study are engaged in highway construction and specialize in works with major government-owned highway

organizations in England and Wales. This collaborative community has been formed comprising over 20 different construction companies, delivering maintenance works on motorways and trunk roads in the East Midlands in the UK. Approximately, 1000 participants were approached through their managers and through flyers; they were construction workers who were 18 years old or older and had at least one-year work experience in the industry. One hundred sixty full-time workers agreed to participate and 144 (127 males and 17 females; age range 21–67,  $M_{age} = 40.38$ ,  $SD_{age} = 10.90$  years) completed the self-report measures about WLB, mental health problems, and mental health attitudes. This sample size satisfied the required size based on power calculation (114; Faul *et al.* 2009). Their work experience ( $M_{WE} = 15.42$  years,  $SD_{WE} = 10.77$  years) and weekly working hours ( $M_{WWH} = 48.99$  hours,  $SD_{WWH} = 9.60$  hours) were reported. The largest proportion of them ( $n = 71$ ; 49%) worked at site-based locations, followed by office ( $n = 57$ ; 40%) and other sites such as a mixture of sites and office ( $n = 16$ ; 11%). The majority of them worked during the daytime with irregular night shifts ( $n = 52$ ; 36%) and without night shifts ( $n = 38$ ; 26%). The rest of the working hours included a combination of day and night shifts ( $n = 26$ ; 18%), night only ( $n = 15$ ; 10%), and night shifts with irregular day time work ( $n = 13$ ; 9%). About one-third were managers ( $n = 53$ ; 37%), a quarter were foremen/supervisors ( $n = 33$ ; 23%), and one-fifth were operatives ( $n = 26$ ; 18%); the rest were technical professionals ( $n = 19$ ; 13%) and others ( $n = 13$ ; 9%) including directors and administrative staff. These choices regarding their work locations, schedules, and roles in the demographic questionnaire were determined based on consultation with construction managers. Sixteen percent of them had undertaken some mental health training and 15% had received professional care for their own mental health problems in the past.

### Instruments

Work-Life Balance Checklist 7 (WLBC7) consisted of seven items regarding an employee's WLB (e.g. "At the moment, because the job demands it, I usually work long hours"), responded by one of the three responses: A = "Agree", B = "Sometimes", and C = "Disagree" (Daniels and McCarraher, 2000). Predominantly, A responses indicate poor WLB, whereas mostly C responses indicate good WLB. For the purpose of this study, the responses were changed to a five-point Likert scale (1 = "Agree",

3="Sometimes", and 5="Disagree"), where higher scores would indicate better WLB. WLBC7 had adequate internal consistency ( $\alpha = 0.66$ ; Daniels and McCarragher 2000).

Depression Anxiety and Stress Scale (DASS21) is a shortened version of the DASS42 (Lovibond and Lovibond 1995), comprising 21 items on a four-point Likert scale (0="Did not apply to me at all" to 3="Applied to me very much or most of the time"), measuring the levels of mental health problems. Seven items are allocated to three subscales: depression (e.g. "I couldn't seem to experience any positive feeling at all"), anxiety (e.g. "I was aware of dryness of my mouth") and stress (e.g. "I found it hard to wind down"). The DASS21 subscales have good reliability ( $\alpha = 0.87$ – $0.94$ ; Antony *et al.* 1998).

Attitudes towards mental health problems (ATMHP) consists of 35 items on a four-point Likert scale (0="Do not agree at all" to 3="Completely agree"), evaluating attitudes towards mental health problems (i.e. mental health attitudes). ATMHP incorporates four sections: (i) how their community and family perceive mental health problems (community and family attitudes; e.g. "My community/family sees mental health problems as something to keep secret"), (ii) how their community and family would perceive them if they had a mental health problem (external family/community shame; e.g. "I think my community/family would look down on me"), (iii) how they perceive themselves if they had a mental health problem (internal shame; e.g. "I would see myself as inferior"), and (iv) how their family would be perceived if they had a mental health problem (family-reflected shame; e.g. "My family would be seen as inferior"), and how you would be perceived if your family member had a mental health problem (self-reflected shame; e.g. "I would worry that others will look down on me"). All subscales had good internal consistency ( $\alpha = 0.85$ – $0.97$ ; Gilbert *et al.* 2007).

### Procedure

An introduction meeting was held by the researchers for managers and team leaders at the collaborative community, explaining the purposes and procedure of the study. The study information and consent were then distributed to their organizations by the managers and leaders, followed by a link to the online scales once consent was submitted. For the participants who preferred the paper-based survey, the hard copies of these materials were given by the managers and leaders. They were given one month to respond to the survey at any time and anywhere they liked,

considering their shame about mental health problems. After participants responded to all questions, the debrief was presented to them. For the participants' protection, information about available mental health support inside and outside the industry was provided. Ethics approval was obtained from the University Research Ethics Committee.

### Data analysis

This study employed a cross-sectional design. First, data screening for outliers was conducted, then the assumption of normality and homogeneity of variances were examined. Second, a correlation analysis was completed in order to explore relationships between WLB, mental health problems, and mental health attitudes (Aim 1). Third, path analyses were conducted to assess whether mental health attitudes would mediate the relationship between WLB and mental health problems (Aim 2). Fourth, one-way MANOVA was conducted to determine if night shift workers had poorer WLB, mental health problems, and mental health attitudes than workers in the other work schedules (Aim 3). IBM SPSS version 24.0 and Process macro version 3 (Hayes 2017) were used for the analyses.

## Results

### Descriptive statistics

Six score in family external shame and five scores in anxiety were identified as outliers using the outlier labelling rule (Hoaglin and Iglewicz 1987) and so were winsorized (Tukey 1962). Internal consistencies for all of the scales and subscales were high ( $\alpha \geq 0.81$ ; Table 1).

### Relationships between WLB, mental health, and mental health attitudes (aim 1)

The ATMHP subscales were summed sectionally due to their high internal consistencies (Gilbert *et al.* 2007): "negative attitudes" (community and family attitudes), "external shame" (community and family external shame), and "reflected shame" (family-reflected shame and self-reflected shame). As the data were not normally distributed, indicated by the Kurtosis and Skewness values and significant Shapiro-Wilk's tests ( $p < .05$ ), they were square-root-transformed (Table 2).

WLB was negatively associated with mental health problems, mental health attitudes. This corresponded to the scarcity hypothesis (Figure 3).

**Table 1.** Descriptive statistics: work-life balance (WLBC7), mental health problems (DASS21), and mental health attitudes (ATMHP) measures in UK construction workers ( $n = 144$ ).

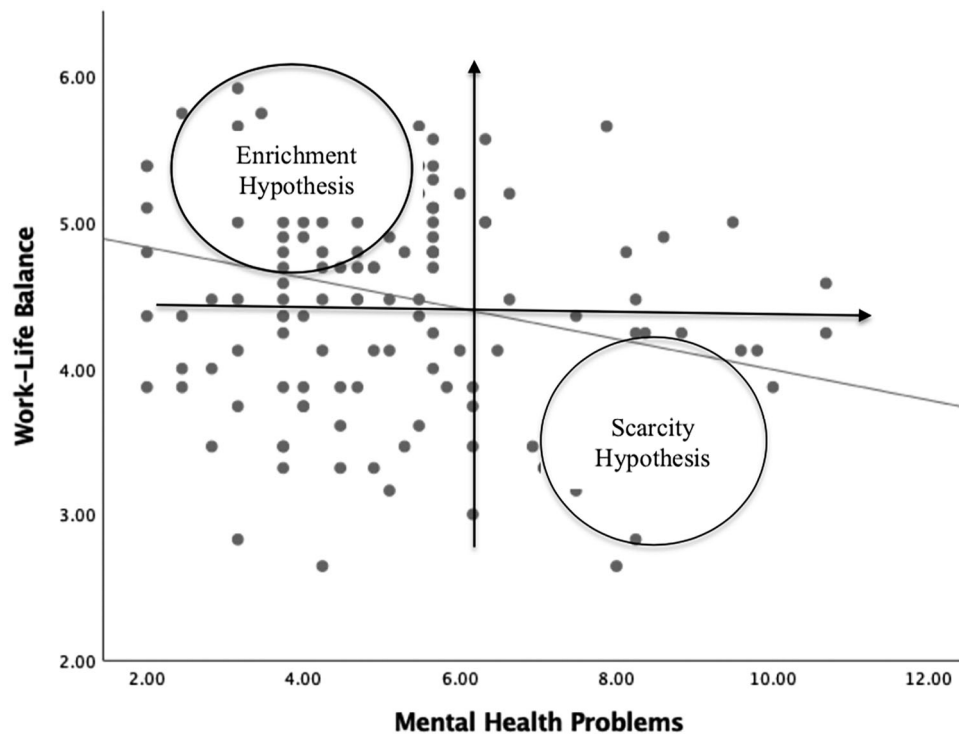
Scales	Measured constructs	Variables (range)	M	SD	Skewness	Kurtosis	$\alpha$
Work-life balance checklist 7	Work-life-balance	WLB (7–35)	20.94	6.78	−0.07	−0.93	0.81
Depression, anxiety, and stress scale 21	Mental health problems	Dprn (0–42)	9.26	9.16	1.52	2.38	0.93
		Anx (0–42)	6.71	6.81	1.50	1.67	0.88
		Strs (0–42)	13.11	8.45	1.20	1.41	0.89
Attitudes towards mental health problems	Mental health attitudes	CA (0–12)	3.85	2.95	0.85	0.48	0.88
		FA (0–12)	1.67	2.18	1.68	3.41	0.85
		CES (0–15)	5.28	4.11	0.42	−0.53	0.97
		FES (0–15)	1.30	2.28	1.47	0.63	0.97
		IS (0–15)	6.72	4.21	0.38	−.59	0.94
		FRS (0–21)	5.19	4.50	0.99	0.60	0.88
		SRS (0–15)	2.57	3.64	1.53	1.83	0.95

WLB: Work-Life Balance; Dprn: depression; Anx: anxiety; Strs: stress; CA: community attitudes; FA: family attitudes; CES: community external shame; FES: family external shame; IS: internal shame; FRS: family-reflected shame; SRS: self-reflected shame.

**Table 2.** Correlations among work-life balance, mental health problems, and mental health attitudes in UK construction workers ( $n = 144$ ).

		1	2	3	4	5	6	7	8	9
1	GN	–								
2	Age	0.07	–							
3	WWH	0.34**	−0.04	–						
4	WLB	−0.10	0.00	−0.32**	–					
5	MHP	−0.10	−0.08	0.00	−.27**	–				
6	NA	0.05	−0.09	0.31**	−0.26**	0.18*	–			
7	ES	0.03	−0.03	0.24**	−0.13	0.20*	0.77**	–		
8	IS	−.05	0.09	0.12	−0.10	0.27**	0.41**	0.47**	–	
9	RS	0.06	0.04	0.03	0.04	0.28**	0.44**	0.56**	0.54**	–

GN: Gender (0 = female, 1 = male); WWHL: average weekly working hours; WLB: work-life balance; NA: negative attitudes towards mental health problems; ES: external shame; IS: internal shame; RS: reflected shame; MHP: mental health problems.  $p < .05^*$ ;  $p < .01^{**}$ .

**Figure 3.** Mapping out aim 1 onto the scatter plot for the relationship between work-life balance and mental health problems.



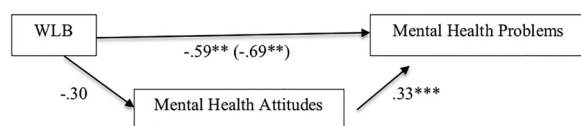
### **Mental health attitudes as a mediator between WLB and mental health problems (Aim 2)**

To examine the impact of mental health attitudes on the relationship between WLB and mental health problems, path analyses were conducted (WLB as a predictor variable, and mental health problems as an outcome variable).

There was not a significant indirect effect of WLB on mental health problems through mental health attitudes,  $b = -0.10$ , BCa CI  $[-0.27, 0.01]$ , which accounted for 14% of the total effect, indicating a small effect. The direct effect of WLB on mental health problems, controlling for mental health attitudes, was significant,  $b = -0.59$ ,  $t(141) = -2.95$ ,  $p = .004$ , implying that WLB directly predicted the variance in mental health problems and that mediation was partial. The total effect of WLB on mental health problems, including mental health attitudes, was significant,  $b = -0.69$ ,  $t(142) = -3.33$ ,  $p = .0011$ . Controlling for mental health attitudes, 7% of the variance in mental health problems was explained by WLB. Mental health attitudes did not mediate the relationship between WLB and mental health problems (Figure 4).

### **Difference in WLB, mental health problems, and attitudes among work schedules (Aim 3)**

A one-way MANOVA was run to determine the effect of different work schedules on WLB, mental health problems, and mental health attitudes (Table 3). There was homogeneity of variance-covariance matrices, as



\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ . Direct effects (Total effects)

**Figure 4.** Parallel mediation model: work-life balance as a predictor of mental health problems, mediated by mental health attitudes. The confidence interval for the indirect effect is a BCa bootstrapped CI based on 5000 samples.

assessed by Box's test of equality of covariance matrices ( $p = .19$ ). There was a statistically significant multivariate difference between the different work schedules on the dependent variables,  $F(12, 362.76) = 2.98$ ,  $p = .02$ ; Wilks'  $\Lambda = 0.84$ ; partial  $\eta^2 = 0.06$ . Follow-up univariate ANOVAs showed that mental health problems ( $F(4, 139) = 4.34$ ,  $p = .002$ ; partial  $\eta^2 = 0.11$ ) were statistically significantly different between workers working different work schedules, using a Bonferroni adjusted the  $\alpha$  level of 0.01. Tukey *post-hoc* tests revealed that for mental health problems, day time workers had higher mean scores (indicating poor mental health) than workers who routinely work day times with some night shifts and who work a mixture of day and night shifts ( $p < .01$ ).

### **Discussion**

This study focused on relationships between WLB, mental health problems, and mental health attitudes (Aim 1), the impact of mental health attitudes on the relationship between WLB and mental health problems (Aim 2), and difference in WLB, mental health problems, and mental health attitudes among different work schedule groups of UK construction workers (Aim 3). Our correlational analysis revealed that WLB was negatively related to mental health problems and mental health attitudes, supporting both of the scarcity hypothesis and the enrichment hypothesis of Role Theory. Our path analysis found that mental health attitudes had little impact on the relationship between WLB and mental health problems. Lastly, MANOVA identified differences in mental health problems among different work schedule groups. We will discuss each finding in turn below.

WLB was negatively associated with mental health problems and mental health attitudes: construction workers with good WLB tend to have less mental health problems and less negative attitudes towards mental health problems. As previously reported in other industries (Grover and Crooker 1995, Caspar and Buffardi 2004, Matos and Galinsky 2014), good WLB

**Table 3.** One-way MANOVA: difference in the mean work-life balance, mental health problems, and mental health attitudes scores between different work patterns.

	WLB	MHP*	MHA
Work patterns	M $\pm$ SD	M $\pm$ SD	M $\pm$ SD
Day time only ( $n = 38$ )	4.58 $\pm$ .74	5.70 $\pm$ 1.88 <sup>ab</sup>	4.63 $\pm$ 1.50
Routinely day times with some night shifts ( $n = 52$ )	4.52 $\pm$ .79	4.55 $\pm$ 1.71 <sup>a</sup>	4.83 $\pm$ 1.72
Mixture of day and night working ( $n = 26$ )	4.47 $\pm$ .86	4.23 $\pm$ 1.44 <sup>b</sup>	4.84 $\pm$ 1.91
Routinely night shifts with some day time working ( $n = 13$ )	4.62 $\pm$ .81	5.80 $\pm$ 1.88	5.01 $\pm$ 2.03
Night shifts only ( $n = 13$ )	4.29 $\pm$ .64	5.81 $\pm$ 3.01	5.42 $\pm$ 2.33

\*Significant differences among the groups ( $p < .01$ ). Similar superscripts indicate a significant difference between the two groups on that measure ( $p < .05$ ).

WLB: work-life balance; MHP: mental health problems; MHA: mental health attitudes.

was related to better mental health in the construction industry too. The relationship between WLB and mental health attitudes implies psychological safety of construction workers: those who feel psychologically safe in a workplace may feel comfortable leaving work for their family or personal concerns and believe that their colleagues do not perceive mental health problems negatively and vice versa (Wanless 2016). Psychological safety has been the focus of increasing organizational research due to its relation to other psychological outcomes and productivity (Graham 2016). WLB may be conducive to psychological safety, both of which are associated with mental health. One theoretical framework for WLB is social exchange theory: you want to give back when you receive something (Blau 1964). This could explain why in psychologically safe workplaces, trust is exchanged among employees (Beauregard and Henry 2009). Trust at a workplace is related to better engagement, higher productivity, and less mental distress (Zak 2011). Trust in a construction workplace can be augmented by fostering good colleague communication (especially with their supervisor) and a workforce-friendly atmosphere (Shen *et al.* 2015). Reviewing those aspects of a construction workplace may be the first step towards stronger psychological safety, leading to better WLB and better mental health. Future research needs to explore these relationships in order to elucidate further benefits of good WLB for construction workers.

The scarcity hypothesis and the enrichment hypothesis in Role Theory may be better understood by considering employees' sense of WLB. In our results, the difference between these two hypotheses was deemed to be relevant to WLB. While Role Theory left the difference rather ambiguous, our findings suggest that the difference may be related to WLB: regardless of the level of their role accumulation, if an employee perceives their WLB to be good, they also rate their mental health as good (which corresponds to the enrichment hypothesis) and vice versa (which corresponds to the scarcity hypothesis). Indeed, high role accumulation may be more related to lower WLB, which was related to poor mental health in our sample; however, this would not support the enrichment hypothesis. Further, more specificity may be needed in role accumulation. For example, Kikuzawa (2006) reported the enriching effects of role accumulation on mental health in both Japanese and US samples, however, the samples were all 60 years old or older. It makes sense that among seniors, having another role can give them a sense of fulfillment leading to better mental health, as seen in "ikigai (meaning of life)"

research (Sone *et al.* 2008). The same may apply to new workers who aspire to be promoted in the organization; they may feel better to have additional roles. Role Theory still leaves these ambiguities, but our findings may offer insights into these ambiguities: how much an employee believes they have a good WLB may determine whether the scarcity hypothesis or enrichment hypothesis applies.

Our path analyses yielded that while the direct and total effects of WLB on mental health problems were significant, mental health attitudes did not mediate the relationship between WLB and mental health problems (non-significant indirect effects). Mental health attitudes only had a small impact on the relationship and WLB's effects on mental health problems were stronger than mental health attitudes. This suggests the importance of WLB in relation to mental health and a strong predictive relationship between WLB and mental health (Cox 1993). Work-life fit, an employee perceives to have enough recourses to meet demands in their work and non-work roles, was crucial to construction workers' wellbeing, and flexible work practices were recommended to enable workers to access the services (e.g. even though an organization supports child-care, inflexible work practices may not allow workers to access the service; Turner and Lingard 2016). In addition, positive relations between the employees' positive emotions toward their work and their families' perception toward their work have been reported (e.g. Wayne *et al.* 2013). Considering construction workers' diverse working places and hours, it may be difficult to arrange, however, company events involving employees' families could improve their WLB, leading to reductions in work-family conflict. Future research should explore the effects of these events on WLB and mental health.

Our findings can contribute to a deeper understanding of Role Theory and the scarcity hypothesis in relation to WLB. There was a strong relationship between WLB and mental health problems, which would be interpreted, using this theory, that poor WLB may cause workers' role conflict, resulting in more mental distress (Marks 1977). Given that 86% of the total effect of WLB on mental health problems were its direct effect (Figure 2), in line with previous findings (Grant-Vallone and Donaldson 2010, Yang *et al.* 2018), WLB may be the primary predictor of workers' mental health. In our sample, mental health attitudes predicted mental health problems, but not as strongly as WLB. The opposite construct of the scarcity hypothesis is the enrichment hypothesis, where an improvement in one area enriches the other

(Carlson *et al.* 2006). Again, creating a (not only physically but) psychologically safe workplace may help achieve a good work-life fit, leading to better well-being in construction workers, in line with the enrichment hypothesis (Turner and Lingard 2016). Further, encouraging employee autonomy and improving relationships with supervisors were recommended as ways to increase work-life enrichment (Lingard *et al.* 2010). Future research should explore the work-life enrichment of the construction industry workforce.

Among different work schedules, mental health problems scores were different, while WLB and mental health attitudes scores were not. Significant differences in mental health problems among different work schedule groups are consistent with UK hospitality workers (e.g. hotel and restaurant workers). Indeed, day time workers had a significantly higher mean mental health problems score than workers who routinely work day time with some night shifts and mixed workers. This suggests that working at regular times may be related to poor mental health, while working at a flexible time may be related to better mental health, which is consistent with some previous findings (Oshio *et al.* 2017, Whitehouse 2018) and the country's initiatives (e.g. Children and Families Bill, legislated in 2014). However, our data do not indicate whether working schedules were the participants' choices, or were assigned by the employer, or were negotiated. Indeed, individuals with mental health problems may have been less able to negotiate their preferred working pattern (Hindmarch *et al.* 2013). Future research should explore these relationships in depth, including the causality between work arrangements (e.g. work schedule) and mental health.

There were some limitations to this study. Firstly, participants were recruited through opportunity sampling via personal contacts and snowball sampling, limiting the generalisability of the findings. Secondly, though no correlation was found between shame and perceived risk of disclosing personal information in UK samples (Gilbert *et al.* 2007), measuring shame using self-report measures might compromise their accuracy (e.g. social desirability bias; Latkin *et al.* 2017). Third, due to the small number of the participating female workers ( $n = 17$ ), this study did not report meaningful findings about male-female differences (we conducted an ANOVA but no difference was found in WLB  $F(1, 142) = 1.31, p = .25$ ). Future studies should recruit more female workers to explore gender difference in this male-dominant industry. Fourth, because there were not so many comparative data sets of some of the scales used in this study (i.e. WLB, ATMHP, as opposed

to DASS21), we could not make a meaningful comparison with other industry workers. Future research should compare the data reported here with other industries. Lastly, the direction and causality of these relationships have not been investigated. In the future, longitudinal studies would help elucidate the temporal patterning of the observed relationships and may help develop interventions that would elucidate our understanding of causality.

Despite the plentiful benefits of good WLB, including mental health, these relationships had not been explored in the UK construction industry, a major workforce in the country. This was the first ever study to explore WLB, mental health problems, and mental health attitudes in UK construction workers. Our findings suggest that: (i) WLB, mental health problems, mental health attitudes were related to each other; (ii) mental health attitudes were not a mediator of the relationship between WLB and mental health problems and that WLB was the strongest predictor of mental health problems; and (iii) day time workers had higher mental health problems scores than workers who had some variations in their work hours. Future longitudinal studies would help elucidate the temporal patterning of these relationships and aid the development of beneficial interventions.

## Disclosure statement

No potential conflict of interest was reported by the authors.

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