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# The effects of JDC model on burnout and work engagement: A multiple interaction analysis

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ABSTRACT

This study investigated the moderating effects of functional social support (emotional and instrumental support) on the relationship of job demand control with burnout and work engagement. In total, 297 frontline employees from a hotpot restaurant franchise in China were surveyed. The results indicated emotional support, such as caring and inspiration, mitigated the adverse effects of high demand/low control on burnout and work engagement. Instrumental support, such as giving suggestions and solving problems, only mitigated the adverse effects of burnout. Further, the high demand/low control/low emotional support work condition was the most unfavourable for work engagement and burnout; while high demand/low control/low instrumental support was the most unfavourable condition for burnout. The theoretical and managerial implications of this research have been provided to gain a deeper insight into functional social support in the job demand control model.

## 1. Introduction

The service industry is one of the major economic sectors in developed countries. In this industry, frontline service employees play a critical role by offering services to customers and building strong customer relationships through direct and frequent interactions (Dong, Liao, Chuang, Zhou, & Campbell, 2015; Hülsheger & Schewe, 2011). Customer relationships and service quality have a substantial influence on organisational performance (Jung & Yoon, 2014; Wu, Yuan, & Yen, 2021). Thus, identifying effective ways of enhancing employees' service with engagement is a key concern in the service industry, and in particular, an important consideration in the human resources management field (Buruck, Dorfel, Kugler, & Brom, 2016; Jung & Yoon, 2014; Wu et al., 2021). Further, due to the increasing levels of consumer demand in the service industry, the range of services that service employees provide has greatly expanded in recent years (Jung & Yoon, 2014; Karatepe & Karadas, 2015). Consequently, employees' stress levels in the workplace have continued to increase, which can negatively affect their physical and psychological health (Dong et al., 2015; Jung & Yoon, 2014). In addition, to adapt to the exponential growth in various customer demands, organisational reform has resulted in employees feeling uncertain about their jobs, generating more work-related stress (Baum, Sattler, & Reimann, 2021).

The Job Demand Control (JDC) model has been considered one of the most influential theories for examining work stress among service employees (Karasek, 1979; Nikolova, Schaufeli, & Notelaers, 2019). It hypothesises that job demands, such as enacting task requirements and time pressure, can increase job strain. Conversely, job control, such as decision authority and work autonomy, can decrease job strain. These interacting facets of JDC often occur simultaneously. Specifically, high demand and low control may lead to a higher level of job strain, usually referred to as the 'strain' hypothesis (Gordon, Demerouti, Bipp, & Le Blanc, 2015). By comparison, in a high demand and high control condition, job control mitigates the adverse effects of job demand, and hence leads to a relatively positive result—this phenomenon is referred to as the 'buffer' hypothesis. Johnson and Hall (1988) argued the JDC model should include the social support factor, a coping resource as important as job control. Webster, Adams, Maranto, Sawyer, and Thoroughgood (2018) also suggested social support directly and indirectly interacts with job strain, and thus may affect employees' physical and psychological health. Previous researchers have incorporated social support into the JDC model to develop the job demand control support (JDCS) model (Bakker & Demerouti, 2007; Häusser, Mojzisch, Nisel, & Scholz-Hardt, 2010; Luchman & González-Morales, 2013;

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Shakespeare-Finch & Obst, 2011). Based on the JDCS model, this study examined the interactions between job demand, job control and social support on work-related stress induced outcomes (burnout and work engagement).

In the JDCS model, the strain hypothesis was expanded to address the conditions of high demand, low control and low support, the most disadvantageous condition for workers. Subsequently, the strain hypothesis was renamed the 'iso-strain' hypothesis (Dawson, O'Brien, & Beehr, 2016). The buffer hypothesis was expanded to incorporate social support to represent the condition of high demand, low control and high support, which tends to be more effective for mitigating the adverse effects of high demand and low control; the buffer hypothesis was thus renamed the 'synergistic buffer' hypothesis (Johnson & Hall, 1988).

A review of several studies of the JDCS model has indicated the iso-strain hypothesis is more widely accepted than the synergistic buffer hypothesis (Bakker & Demerouti, 2007; Dawson et al., 2016; Häusser et al., 2010). Some scholars even contend that the function of social support is more effective than the source of this support (Colbert, Bono, & Purvanova, 2016; Shakespeare-Finch & Obst, 2011), and Rogala et al. (2016) argued the function of social support is generally a more accurate predictor of work-related outcomes than other types of social support. That is, previous research on the JDCS model used the social support function as the basis for determining its classification (e.g., supervisor support, co-worker support or family support), and categorised it as emotional support or instrumental support (Bakker & Demerouti, 2007; Häusser et al., 2010; Luchman & González-Morales, 2013; Shakespeare-Finch & Obst, 2011).

The emotional and instrumental elements of social support can be intangible or tangible, and objective or subjective, representing the various assistance types offered by significant shareholders (Lindsey & Yates, 2004; Williams et al., 2004). For example, supervisors or colleagues can give employees tangible assistance featuring emotional support (e.g., caring) or intangible assistance featuring instrumental support (e.g., solving customer problems) (Semmer, Elfering, Jacobshagen, Beehr, & Boos, 2008).

Above all, this study examined how the social support function (emotional and instrumental support) can be applied to infer the influences of JDC on burnout and work engagement (see Fig. 1). This study has contributed the following theoretical implications. First, the social support function (emotional and instrumental support) was used in this study as a moderating variable in the JDCS model to compare results with previous research findings and obtain additional insights into this subject. Second, some previous studies of the JDCS model adopted burnout as a dependent variable based on its negative effect (Gordon et al., 2015; Hessels, Rietveld, & van der Zwan, 2017; Schaubroeck & Merrit, 1997; Schaufeli, Bakker, & van Rhene, 2009), but relatively few studies employed the positive effect (e.g., work engagement) as a dependent variable. The different effects chosen in this study can be considered one of the major contributions in this subject area. Finally, this study has expanded the generalizability of the JDCS model by using a sample of frontline employees working in a hotpot[1] restaurant franchise in a Chinese context.

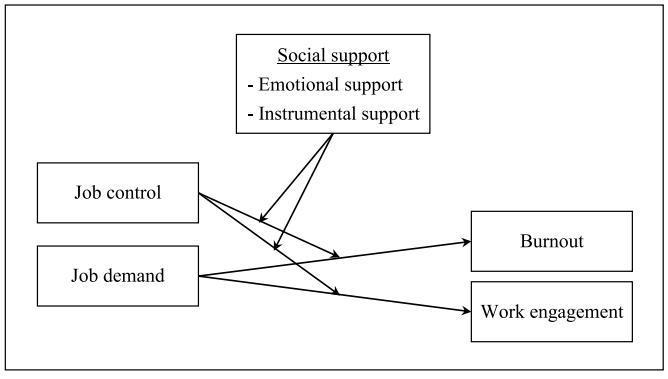


**Fig. 1.** The research framework of the three-way interactions of job demand, job control, and social support on burnout and work engagement.

## 2. Literature review

### 2.1. Burnout and work engagement

'Burnout' describes psychological fatigue. It is generally considered a negative psychological state and a consequence of work stress. Burnout usually occurs when there is a period of imbalance between an individual's job demands and their capabilities (Baranik & Eby, 2016; Jung & Yoon, 2014; Stirpe, Profili, & Sammarra, 2021; Wu, Yuan, Yen, & Xu, 2019). Burnout typically affects individuals working in the service industry, and may comprise emotional exhaustion, depersonalisation and/or feeling a lack of personal accomplishments. However, recent studies revealed burnout not only affects service providers but also individuals in ordinary jobs (Maslach, Jackson, & Leiter, 1996). In general, burnout consists of emotional exhaustion, cynicism and professional inefficacy. 'Emotional exhaustion' describes the level of job fatigue a person feels; specifically, they experience resource exhaustion and energy loss and then become incapable of satisfying their job demands owing to their physical and psychological fatigue. 'Cynicism' can be regarded as a specific type of physical or mental distancing from jobs or work roles. For example, employees who are cynical and/or detached will respond to the associated job demands by turning into more frustrated and depersonalised. Further, 'Professional inefficacy' is a feeling of reduced personal accomplishment. In other words, employees may evaluate their job performance negatively and consequently, do not cope with job demands well. According to Rogala et al. (2016), job demands positively correlate with burnout, whereas autonomy, job control and resources negatively correlate with burnout. These findings are consistent with studies on the effects of job demand and job control in the JDCS model (e.g., Häusser et al., 2010).

'Work engagement' is defined as an experiential state characterised by a dynamic cognitive and emotional dimension entailing personal enthusiasm (Schaufeli et al., 2009; Wu, Parker, Wu, & Lee, 2018). It is also associated with the current positive psychology research trend (Karatepe & Karadas, 2015). The positive psychology perspective focuses on individuals' abilities and optimal functions, situating them in occupations most likely to engender job enthusiasm; the alternative approach is simply to avoid negative psychological states. Maslach and Leiter (1997) contended work engagement opposes burnout. That is, individuals who achieve low scores in emotional exhaustion and cynicism but high scores in professional efficacy tend to exhibit stronger work engagement. Schaufeli et al. (2009) noted work engagement is a positive work-related psychological state characterised by factors including vigour, dedication and absorption. 'Vigour' refers to high energy and mental flexibility at work, a willingness to expend additional effort on one's tasks, and/or the ability to persist through difficulties. 'Dedication' refers to a worker ascribing value and meaning to their work and feeling a sense of enthusiasm and pride in carrying out their job; while 'absorption' refers to an individual being totally engaged with their job. Karatepe and Karadas (2015) found job demand is negatively correlated with work engagement, whereas other researchers found autonomy and a supportive environment are positively correlated with

[1] 'Hotpot' is a famous style/type of East Asian cooking, a dish consisting of raw ingredients such as thinly sliced meat and vegetables cooked by diners at the table by dipping them into boiling broth. 'Hotpot' also implies 'reunion'. In China, there are many hotpot restaurants in which the strict and consistent management policies and high service standards are applied to handling/reconciling the variability of customer interactions. Frontline employees always have a heavy workload, providing various associated services each day.

work engagement (Amor, Vázquez, & Faíña, 2020; Van Wingerden, Derks, & Bakker, 2017; Wu et al., 2018).

Work stress is a key issue in the organisational psychology field. The negative consequences of burnout are evident: they have harmful effects on individuals' physical and psychological health, and can manifest as reduced performance quality, low productivity and a possible reason for resignation in an organisational context (Alessandri, Borgogni, Schaufeli, Caprara, & Consiglio, 2015; Karatepe & Karadas, 2015; Lu, Lu, Gursoy, & Neale, 2016). Burnout usually occurs at an individual level, but its negative effects may spill over into the entire organisation in which an individual works.

The emergence of positive psychology research has helped illustrate the topic of work engagement in detail. Previous studies (e.g., Alessandri et al., 2015; Van Wingerden et al., 2017) concluded work engagement positively affects job performance, turnover rate, job satisfaction and organisational commitment. In this study, we adopted the concept of work engagement proposed by Schaufeli et al. (2009) and undertook the assessments using two mutually independent instruments that included work engagement and burnout. These two variables have been incorporated into the JDCS model to conduct an integrated analysis (Vassos, Nankervis, Skerry, & Lante, 2019).

### 2.2. Moderating effect of social support functions

Johnson and Hall (1988) argued that the JDC model overlooks the crucial factor of social support. Social support may directly and indirectly affect the relationship between job strain and employees' physical and psychological health (Colbert et al., 2016; Feeney & Collins, 2015; Webster et al., 2018). As discussed earlier, the strain hypothesis of the JDC model was expanded to designate the conditions of high demand, low control and low support as the most disadvantageous for workers and renamed the iso-strain hypothesis. Working in high-tension conditions may present the most significant risk to a worker's psychological well-being and create a strong possibility they will develop physiological and psychological disorders (An, Qiang, Wen, Jiang, & Xia, 2019; Lu et al., 2016). Similarly, the buffer hypothesis, renamed as the 'synergistic buffer' hypothesis, proposes the adverse effects occurred due to the high job strain (e.g., high demand and low control) are ameliorated by the social support (Johnson & Hall, 1988). Additional studies (Harju, Hakanen, & Schaufeli, 2016; Karasek, 1979) indicate that social support may assist the employees successfully persevere in the high-strain jobs via an interacting effect associated with relevant job control. Specifically, substitute (e.g., high support with low control and low support with high control) (Webster et al., 2018) and/or complementary effects (e.g., high support and high control) (Alessandri et al., 2015; Bakker & Demerouti, 2007) can both be employed to protect employees from adverse work conditions.

Based on the JDC model, why do these two interactions (e.g., substitute and complementary effects) have the similar effects onto the work-related stress induced outcomes? Previous studies have largely focused on the psychological structure and resource functionality of social support (Feeney & Collins, 2015). For example, social support may affect an individual's situational assessment (e.g., their perception of fewer threats in a specific situation), which may mean they perceive relatively weak or few stress sources (Fenlason & Beehr, 1994; French, Dumani, Allen, & Shockley, 2018). This enables individuals to withstand stress and implement critical changes to their environment, thereby enhancing the positive feeling of work engagement. In terms of social support—the third variable newly incorporated into the JDCS model—most studies have adopted the source of that support in the social system as a research dimension. This dimension comprises two support sources: supervisors and co-workers. Some scholars include family or friends as a source of support, but social support from supervisors or co-workers remains a point of interest for further studies using the expanded JDCS model (Häusser et al., 2010; Luchman & González-Morales, 2013). However, if the current study had adopted only the sources of social support used in previous JDCS research (e.g., supervisor and co-worker support), it may not have yielded deeper insights into social support. In addition, the functions of social support are more effective than the sources of social support and demonstrate a stronger predictive power for analysing the dependent variables (Declercq, Vanheule, Markey, & Willemsen, 2007; Shakespeare-Finch & Obst, 2011). Based on the categorisation of social support function, emotional support and instrumental support have both been identified as the most salient and encompassing social support dimensions (Colbert et al., 2016; French et al., 2018; Luchman & González-Morales, 2013; Shakespeare-Finch & Obst, 2011). For example, social support featuring emotion, such as caring, empathy and inspiration, and support offering information/cognition, such as job suggestions and solving customers' problems, can be given by supervisors or colleagues (Semmer et al., 2008).

'Emotional support' involves expressing care for others through actions or compassionate listening (Caltabiano, Byrne, Martin, & Sarafino, 2002). Conversely, 'instrumental support' entails providing feasible suggestions and/or relevant knowledge about how to complete tasks (Colbert et al., 2016). To address the inconsistent results obtained in previous research concerning the JDCS model and better understand the function of social support, this study assessed emotional and instrumental support and investigated their interaction effects on sources of stress.

Bakker and Demerouti (2007) indicated that some components of job control and various types of functional support may create potential moderating effects on the consistency of matching individuals' stress sources and applied resources, thereby revealing the potential interaction effects of job control and social support. In addition, Cutrona and Russell (1990) contended that specific types of functional support might create more effective buffering effects on specific types of stress (Peeters & Le Blanc, 2001). A study of the triple-match principle for the JDC model (De Jonge & Dormann, 2006) held that buffering effects are most easily established in the dimensions of demand, control and strain, which are similar in nature. For example, emotional control (e.g., being close to one's supervisor) can buffer the relationship between emotional demand (e.g., working with an underage worker who is derelict in their duties) and emotional strain (e.g., emotional exhaustion). Hence, if JDCS research adopts emotional support and instrumental support as the dimensions of social support, then demand, control and strain may easily echo one another, thereby supporting the buffering effect. Since the dependent variables in this study were burnout and work engagement, and emotional exhaustion is a core dimension of burnout (Michael, Walter, Bedeian, & O'Boyle, 2012), this study expected emotional support would be able to buffer the relationship between high-strain jobs (high demand/low control) and burnout. Further, work engagement is a positive psychological state related to satisfaction at work, whereas burnout is its negative counterpart (Schaufeli et al., 2009). The work engagement dimensions of vigour, dedication and absorption are also related to the emotional aspect (Nikolova et al., 2019). As a result, emotional support tends to buffer the relationship between high-strain jobs and job enthusiasm. Further, instrumental support does not comply with the matching principle, but the synergistic buffer hypothesis can still be supported in the JDCS model (Johnson & Hall, 1988). Unfortunately, there appear to be fewer studies on the buffering effect of instrumental support than on emotional support (Lindsey & Yates, 2004; Williams et al., 2004).

According to the iso-strain hypothesis of the JDCS model, the conditions of high demand, low control and low support are the most disadvantageous for workers. The synergistic buffer hypothesis claims social support can mitigate the adverse effects of high-strain jobs (e.g., high demand/low control jobs; Johnson & Hall, 1988). If one positive and one negative dependent variable were found, both the iso-strain and synergistic buffer hypotheses could be supported, except their directions would be opposing. As discussed earlier, work engagement is a positive work-related state of psychological satisfaction (Schaufeli et al., 2009).

For this reason, this study deployed the function of social support (emotional and instrumental support) to obtain different insights into social support (Cohen & Wills, 1985; Rogala et al., 2016). Based on the matching principle (De Jonge & Dormann, 2006; Häusser et al., 2010), emotional support can buffer the outcome variables in the emotional dimension and includes burnout (negative emotional arousal, such as emotional exhaustion, cynicism and professional inefficacy) and work engagement (positive emotional arousal, such as vigour, dedication and absorption). In contrast, instrumental support can provide tangible and intangible aid, such as resolving a customer problem or improving the quality of a specific service task. It is also beneficial for employees who need help to balance the effects of higher job demand and lower job control to reduce burnout and arouse work engagement.

Therefore, both the iso-strain and synergistic buffer hypotheses would be supported in the JDCS model when predicting burnout and work engagement. Based on this discussion, the following hypotheses were proposed:

**H1**. The three-way interaction between job demand, job control and social support significantly affects burnout and work engagement.

**H1.1**. With respect to emotional support, a high demand/low control/low support situation leads to a higher level of burnout compared to other situations (H1.1a); however, emotional support mitigates the positive effect of high demand/low control on burnout (H1.1b).

**H1.2**. With respect to emotional support, a high demand/low control/low support situation leads to a lower level of work engagement compared with other situations (H1.2a); however, emotional support mitigates the negative effect of high demand/low control on work engagement (H1.2b).

**H1.3**. With respect to instrumental support, a high demand/low control/low support situation leads to a higher level of burnout compared with other situations (H1.3a); however, instrumental support mitigates the positive effect of high demand/low control on burnout (H1.3b).

**H1.4**. With respect to instrumental support, a high demand/low control/low support situation leads to a lower level of work engagement compared with other situations (H1.4a); however, instrumental support mitigates the negative effect of high demand/low control on work engagement (H1.4b).

## 3. Methods

### 3.1. Participants and procedure

This study investigated the employees of a well-known hotpot restaurant franchise in China. Frontline employees at the company's 11 branches in Fujian Province were selected as the respondents. The questionnaire was distributed through purposive sampling. To avoid research bias, approximately 30 employees at each branch were sampled. Of the 330 questionnaires distributed, 318 were returned and 297 were valid, yielding a valid return rate of 96.3%. The valid samples were mostly from women (78.6%); 61.2% of the respondents had a senior high school diploma or higher level of education; the average respondent age was 21.73 years ($\sigma = 4.16$) and the average length of respondent employment was 2.84 years ($\sigma = 2.33$).

### 3.2. Materials

All scales and instruments adopted in this study have been developed in previous research. To design a Chinese-version questionnaire, the study followed the back-translation procedure and invited experts to ensure all translated texts were appropriate for investigating the psychological state of service industry workers (Brislin, 1970).

#### 3.2.1. Job demand

The job demand scale developed by Caplan, Cobb, French, Harvison, and Pinneaw (1980) was used to conduct the assessment. A four-point Likert scale (1 = never; 4 = always) was adopted to score the seven-item scale. Sample items are 'I regularly feel overloaded by my work' and 'Can you do your work in comfort?' The Cronbach's α value for this scale was 0.83.

#### 3.2.2. Job control

The job control scale developed by Van Yperen and Hagedoorn (2003) was employed. A four-point Likert scale (1 = never; 4 = always) was adopted to score the 11-item scale. Sample items are 'Can you choose the approaches to use in carrying out your work?' and 'Do you have full authority in determining how much time you spend on particular tasks?' The Cronbach's α value was 0.88.

#### 3.2.3. Social support

The Social Support Questionnaire for Transactions proposed by French et al. (2018) was used. This questionnaire is divided into two functional support dimensions: emotional support (six questions) and instrumental support (three questions). A four-point Likert scale (1 = never; 4 = always) was employed for scoring. Sample items are 'Does it ever happen to you that people reassure you? (emotional support)' and 'If necessary, do people help you if you call them to do so unexpectedly? (instrumental support)' The Cronbach's α values for these two dimensions were 0.92 and 0.85, respectively.

#### 3.2.4. Dependent variables

The MBI-General survey developed by Maslach et al. (1996) was employed in the assessment. This 17-item survey was scored using a seven-point Likert scale (1 = never; 7 = always). Sample items are 'I feel emotionally drained from my work (emotional exhaustion)', 'I have become less enthusiastic about my work (cynicism)', and 'I have accomplished many worthwhile things in this job (reverse coding; professional inefficacy)'. The Cronbach's α value was 0.85.

The scale of work engagement developed by Schaufeli et al. (2009) was adopted for the assessment. This 17-item survey was scored using a seven-point Likert scale (1 = never; 7 = always). Sample items are 'At my work, I feel bursting with energy (vigour)', 'My job inspires me (dedication)', and 'I get carried away when I am working (absorption)'. The Cronbach's α value was 0.93.

#### 3.2.5. Control variables

Previous studies of the JDCS model (Sonnentag, 2003) have often controlled for employee gender (male and female), age (years), educational level (years) and length of employment (years) to prevent possible confounding. In addition, due to having a single source for the data collection, respondents in these studies were asked to fill in items for the independent and dependent variables concurrently, which would be more likely to lead to common method variance (CMV). Thus, this study adopted the suggestions of Podsakoff, MacKenzie, Lee, and Podsakoff (2003) to examine the influence of CMV. The resulting indices of goodness of fit (GFI) were a comparative fit index of 0.72, a GFI of 0.44, and a standardised root mean residual of 0.18. Therefore, the preliminary investigation indicated CMV would not severely affect the obtained research results.

### 3.3. Data analysis

Three-way interaction models of job demand, job control and social support (emotional and instrumental support) on burnout and work engagement were developed to examine study hypotheses H1.1 to H1.4 using hierarchical regression modelling (see Tables 2 and 3). First, the control variables of gender, education level, age and length of employment were entered into the models with the dependent variables of burnout and work engagement. Then, the main effects of job demand,

**Table 1**
Mean, standard deviation, and correlation coefficient of all variables.

| Variable | M | S.D. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Gender | 0.83 | 0.42 | – | | | | | | | | | |
| 2. Educational level | 13.41 | 1.25 | −0.13* | – | | | | | | | | |
| 3. Age | 21.73 | 4.16 | −0.28** | −0.15* | – | | | | | | | |
| 4. Length of employment | 2.84 | 2.33 | −0.06 | −0.27** | 0.09* | – | | | | | | |
| 5. Job demand | 2.57 | 0.41 | −0.04 | 0.15* | 0.03 | 0.09* | (0.83) | | | | | |
| 6. Job control | 2.83 | 0.39 | −0.03 | −0.05 | −0.02 | −0.01 | −0.31** | (0.88) | | | | |
| 7. Emotional support | 2.75 | 0.48 | 0.03 | 0.07 | −0.07 | −0.11* | −0.21** | 0.28** | (0.92) | | | |
| 8. Instrumental support | 2.97 | 0.36 | 0.11* | 0.06 | −0.14* | −0.12* | −0.06 | 0.26** | 0.52** | (0.85) | | |
| 9. Burnout | 3.57 | 0.79 | 0.09* | −0.06 | −0.22** | −0.13* | 0.18* | −0.33** | −0.44** | −0.21* | (0.85) | |
| 10. Work engagement | 4.33 | 1.21 | −0.11* | 0.06 | 0.28** | 0.19* | −0.11* | 0.31** | 0.38** | 0.32** | −0.51** | (0.93) |

Note: N = 297; *P < 0.05; **P < 0.01.
The numbers in parentheses are Cronbach's α presented in the diagonal.
Gender is indicated using a dummy variable where men are represented by 1 and women by 0.
Educational level denotes the actual time span of education.

**Table 2**
Three-way interaction between job demand, job control, and emotional support.

| | Dependent Variables | |
|---|---|---|
| Steps | Burnout | Work engagement |
| ***Step 1*** | | |
| Gender | 0.01 | −0.03 |
| Educational level | −0.15* | 0.16* |
| Age | −0.28** | 0.31** |
| Tenure | 0.22* | −0.08 |
| $R^2$ | 0.15 | 0.17 |
| Δ $R^2$ | 0.15 | 0.17 |
| ***Step 2*** | | |
| Job demand | 0.19* | 0.19* |
| Job control | −0.26** | 0.28** |
| Emotional support | 0.24** | 0.31** |
| $R^2$ | 0.28 | 0.32 |
| Δ $R^2$ | 0.13 | 0.15 |
| ***Step 3*** | | |
| Job demand × Job control | −0.11 | 0.09 |
| Job demand × Emotional support | 0.18* | −0.14 |
| Job control × Emotional support | −0.07 | 0.06 |
| $R^2$ | 0.31 | 0.33 |
| Δ $R^2$ | 0.03 | 0.01 |
| ***Step 4*** | | |
| Job demand × Job control × Emotional support | 0.17* | −0.19* |
| $R^2$ | 0.34 | 0.38 |
| Δ $R^2$ | 0.03 | 0.04 |

Note: N = 297; *P < 0.05; **P < 0.01; Gender is indicated using a dummy variable where men are represented by 1 and women by 0. Educational level denotes the actual time span of education.

**Table 3**
Three-way interaction between job demand, job control, and instrumental support.

| | Dependent Variables | |
|---|---|---|
| Steps | Burnout | Work engagement |
| ***Step 1*** | | |
| Gender | 0.01 | −0.03 |
| Educational level | −0.15* | 0.16* |
| Age | −0.28** | 0.31** |
| Length of employment | 0.22* | −0.08 |
| $R^2$ | 0.15 | 0.17 |
| Δ $R^2$ | 0.15 | 0.17 |
| ***Step 2*** | | |
| Job demand | 0.21* | 0.18* |
| Job control | −0.28** | 0.27** |
| Instrumental support | −0.18* | 0.28** |
| $R^2$ | 0.26 | 0.31 |
| Δ $R^2$ | 0.11 | 0.14 |
| ***Step 3*** | | |
| Job demand × Job control | −0.09 | 0.06 |
| Job demand × Instrumental support | 0.17* | −0.15* |
| Job control × Instrumental support | 0.08 | −0.05 |
| $R^2$ | 0.29 | 0.32 |
| Δ $R^2$ | 0.03 | 0.01 |
| ***Step 4*** | | |
| Job demand × Job control × Instrumental support | 0.16* | −0.11 |
| $R^2$ | 0.33 | 0.33 |
| Δ $R^2$ | 0.04 | 0.01 |

Note: N = 297; *P < 0.05; **P < 0.01; Gender is indicated using a dummy variable where men are represented by 1 and women by 0. Educational level denotes the actual time span of education.

job control and social support were entered into the models. After controlling for the product terms of job demand × job control, job demand × social support, and job control × social support, the product term of job control × job control × social support was finally entered into the models. If the regression coefficient of the product term of these three variables was significant, the moderating effects were illustrated to examine the study hypotheses.

## 4. Results

### 4.1. Descriptive statistics

The mean, standard deviation and correlation coefficient values of all variables indicate that when the dependent variable was burnout (Table 1), this had significantly negative correlations with job control ($r = -0.33$), emotional support ($r = -0.44$) and instrumental support ($r = -0.21$), but a significantly positive correlation with job demand ($r = 0.18$). When the dependent variable was work engagement, this had significantly positive correlations with job control ($r = 0.31$), emotional support ($r = 0.38$), and instrumental support ($r = 0.32$), but a significantly negative correlation with job demand ($r = -0.11$). In addition, burnout was significantly negatively correlated with work engagement ($r = -0.51$). This study used the variance inflation factor (VIF) suggested by Hair, Anderson, Tatham, and Black (1998) to examine whether collinearity occurred among the independent variables. The results showed that the VIF for each independent variable was less than 10, indicating no collinearity among variables.

### 4.2. Social support function as a moderating effect

This section examines the three-way interaction between job demand, job control and social support. Step 4 of Table 2 indicates the three-way interaction between burnout and job demand, job control and emotional support achieved significance ($\beta = 0.17$, $\Delta R^2 = 0.03$, $p < 0.05$). Compared with the other work–situation combinations, the condition of high demand/low control/low emotional support (Fig. 2) yielded the highest level of burnout, supporting the iso-strain hypothesis proposed in the JDCS model. The high demand/low control/low emotional support condition had a negative slope, while the high

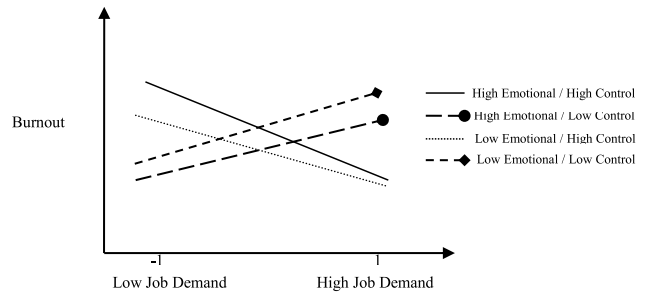


**Fig. 2.** Interaction effects of job demand, job control, and emotional support on burnout.

demand/low control/high emotional support situation had a positive slope. Accordingly, emotional support mitigated the positive effect of high demand/low control on burnout. The synergistic buffer hypothesis in the JDCS model was supported, thereby confirming H1.1a and H1.1b. Consequently, with respect to emotional support, a high demand/low control/low support situation leads to a higher level of burnout than other work–situation combinations; however, emotional support can reduce the positive effect of high demand/low control on burnout.

Step 4 of Table 2 shows the three-way interaction effect of job demand, job control and emotional support on work engagement achieved significance ($\beta = -0.019$, $\Delta R^2 = 0.04$, $p < 0.05$). Compared with the other work condition combinations, the condition of high demand/low control/low emotional support yielded the lowest level of work engagement (Fig. 3). That is, the iso-strain hypothesis in the JDCS model was supported. Second, the slopes in the work conditions with high demand/low control/high emotional support and with high demand/low control/low emotional support were positive. As a result, emotional support mitigated the negative effect of high demand/low control on work engagement. The synergistic buffer hypothesis proposed in the JDCS model was thus supported, thereby confirming H1.2a and H1.2b. This demonstrated that, with respect to emotional support, a high demand/low control/low support condition leads to a lower level of work engagement compared with other work condition combinations, but emotional support mitigates the negative effects of high demand/low control on job engagement.

Step 4 of Table 3 indicates the three-way interaction effect of job demand, job control and instrumental support on burnout achieved significance ($\beta = 0.16$, $\Delta R^2 = 0.004$, $p < 0.05$). First, compared with other work condition combinations, the high demand/low control/low instrumental support condition yielded the highest level of burnout (Fig. 4). Thus, the iso-strain hypothesis in the JDCS model was supported. Second, compared with the high demand/low control/low instrumental support condition, the high demand/low control/high instrumental support condition produced a lower level of burnout. Therefore, instrumental support mitigated the positive effect of high job demand/low job control on burnout. The synergistic buffer hypothesis in the JDCS model was supported, thereby also supporting H1.3a and

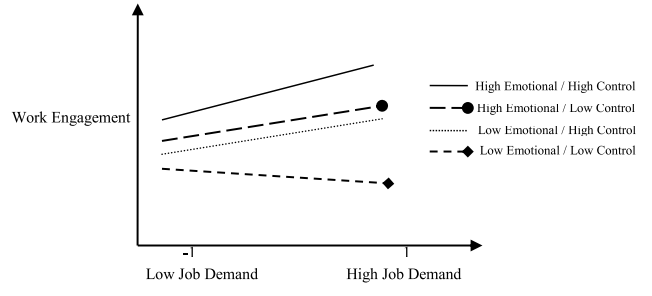


**Fig. 3.** Interaction effects of job demand, job control, and emotional support on work engagement.

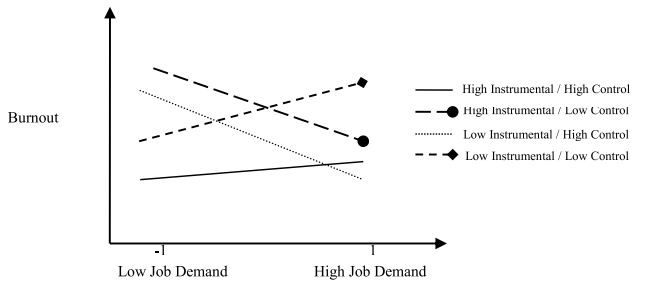


**Fig. 4.** Interaction effects of job demand, job control, and instrumental support on burnout.

H1.3b. This demonstrated that, with respect to instrumental support, the high demand/low control/low support condition leads to a higher level of burnout compared with other work condition combinations, but instrumental support mitigates the positive effects of high demand/low control on burnout.

Step 4 of Table 3 indicates the three-way interaction effect of job demand, job control and instrumental support on work engagement did not achieve significance ($\beta = -0.11$, $\Delta R^2 = 0.01$, $p > 0.05$). Therefore, H1.4a and H1.4b were rejected. Nonetheless, the patterns of the effects of emotional support in the JDC model were expected. With respect to emotional support, the high control/high emotional support condition exhibited stronger buffering effects than the high control/low emotional support and low control/high emotional support conditions. However, with respect to instrumental support, the high control/low instrumental support and low control/high instrumental support conditions exhibited stronger buffering effects than the high control/high instrumental support condition.

## 5. Conclusions and discussion

### 5.1. Conclusions

Based on the JDCS model, this study adopted the social support function as a moderator and investigated its effect on the relationships between two independent variables (job demand and job control) and outcome variables (burnout and work engagement). The results demonstrated that, with respect to emotional support, the situation of high demand/low control/low support leads to the most burnout and the least work engagement; however, emotional support can mitigate the adverse effects of high demand/low control on burnout and work engagement (H1.1a, H1.1b, H1.2a, and H1.2b were supported). With respect to instrumental support, the high demand/low control/low support condition leads to the greatest level of burnout; as with emotional support, instrumental support can mitigate the adverse effects of high demand/low control on burnout (H1.3a and H1.3b were supported). The above hypotheses (H1.1–H1.3) were consistent with previous studies (De Jonge & Dormann, 2006; Häusser et al., 2010).

However, this study uncovered that instrumental support did not contribute any benefit to the interaction effect of job demand and job control on work engagement (H1.4a and H1.4b are not supported). Further analysis showed that the combined effect of high instrumental support and high job demand would reduce employees' work engagement (the product term of job demand and instrumental support on work engagement in Table 3: $\beta = -0.15$, $p < 0.05$). This yields the question: Why can employees not take the advantage of instrumental support in some conditions?

Social support has been considered a coping resource (Bakker & Demerouti, 2007). The current study indicates that of the two social support functions, instrumental support may not always promote employee work engagement in high demand workplaces. This finding contributes some insight to the JDCS model. Based on the JDCS model,

Webster et al. (2018) determined that high control/low support and high support/low control were more effective at mitigating the adverse effects of job demand than high values for both (substitutive effect); conversely, Bakker and Demerouti (2007) found high values for social support and job control were more effective at mitigating these adverse effects than one high and the other low (complementary effect).

Since the JDC model is more applicable to employees with high self-efficacy, applying this model to employees with low self-efficacy may result in adverse effects (Schaubroeck & Merrit, 1997). Further, differences in individual characteristics may interfere with the applicability of the JDCS model. That is, the theory of high job control and high social support may be more applicable to employees with high self-efficacy, whereas the theory of one high control and one low support (e.g., the substitutive effect) may be more applicable to employees with low self-efficacy. Therefore, future research can apply individual differences such as self-efficacy or personality to the JDCS model to determine how the social support advantage occurs.

Further, in line with the aforementioned perspectives, job control denotes both time and method control. 'Time control' means frontline employees can decide when they undertake a designated work task, while 'method control' means they have a range of methods at their disposal with which to complete their work (Van Yperen & Hagedoorn, 2003).

In this study, the concept of emotional support denoted the assistance provided by others' caring actions and sympathetic listening, and instrumental support referred to the provision of substantial help, such as offering suggestions or knowledge relevant to completing a task (Colbert et al., 2016). Comparing these three variables revealed 'job control' means possessing autonomy over the time and method of work. Moreover, job control differs from emotional support but overlaps with instrumental support. Therefore, the complementary effect will appear with respect to emotional support, and the substitutive effect appears with respect to instrumental support (H1.4a and H1.4b were not supported). This study uncovered that the moderating effects of emotional and instrumental support were consistent with the finding obtained from the previous studies; that is, they operate via the complementary (Alessandri et al., 2015; Bakker & Demerouti, 2007) and substitutive effects (Webster et al., 2018). Therefore, our findings verify and support these inferences.

### 5.2. Theoretical and managerial implications

Theoretically, this study identifies and justifies the synergistic buffer hypothesis of emotional and instrumental support corresponding to the triple-match principle of the JDC model (De Jonge & Dormann, 2006). Moreover, it provides the additional insights into the social support functions (e.g., emotional and instrumental support) in the JDCS model (Alessandri et al., 2015; Schaubroeck & Merrit, 1997; Semmer et al., 2008). Following the positive psychology research trend (Karatepe & Karadas, 2015), work engagement employed as an active coping approach of work-related stress was integrated into the JDCS model, representing an avoidant coping approach to affect the burnout (Maslach & Leiter, 1997). Moreover, the results showed that the emotional support played as a satisfactory match for the dependent variables (e.g., burnout and work engagement), and for this reason, emotional support has created a greater moderating effect than the instrumental support. Third, as another key contribution, this study has proposed and developed an integrated JDCS model and tested its generalizability by utilizing a case study of frontline employees working in a hotpot restaurant franchise in the Chinese context.

Additionally, this study may offer certain managerial implications. First, the results indicate that simply strengthening employees' job control may not be enough to mitigate burnout and boost work engagement; increasing emotional and instrumental support may also be crucial. Emotional support is more influential than instrumental support, since it can mitigate both burnout and boost work engagement, whereas instrumental support only mitigates burnout. Excessive job requirements can lead to employee exhaustion or burnout. If employees are able access adequate resources, such as assistance from colleagues or supervisors (e.g., emotional support), this may alleviate work pressure.

This study also suggests that different social support functions should be paired with various levels of control and support in dealing with the various real-world situations. In other words, with respect to emotional support and job control, managers could handle this situation by empowering employees to increase their autonomy and strengthen their self-efficacy at work. In the service industry, laissez-faire management style tends to increase employee burnout and hence, reduce the work dedication (Dong et al., 2015; Karatepe & Karadas, 2015; Latorre, Ramos, Gracia, & Tomás, 2020). In this aforementioned case, managers should provide employees with the appropriate care when they need some support.

With respect to the instrumental support and job control, apart from economic or material support, instrumental support can also include the useful advice and helpful guidance. By doing so, frontline service industry staff can effectively reduce their work stress (e.g., reduce their job burnout) if they are able to access guidance or assistance effectively and efficiently from their supervisors and/or colleagues. However, if the relevant guidance or assistance is either not provided or in a poor quality, it will increase employee burnout and consequently leading to unfortunate staff turnovers. For this reason, managers should always promote/develop an atmosphere of mutual help and provide more encouragement to support colleagues in handling their tasks.

### 5.3. Limitations and suggestions

This study has some limitations; first, due to its cross-sectional design, the single source of data collection was more likely to face potential CMV. Nevertheless, this study was guided by Podsakoff et al.'s (2003) criteria, which in this case indicated that the probability of CMV is acceptable. In addition, while the interaction effects of JDCS on work outcomes were significant, the CMV in this study was effectively controlled (Siemsen, Roth, & Oliveira, 2010). Future studies could adopt a more rigidly designed questionnaire and employ different data sources to decrease respondents' unnecessarily defensive responses, thereby reducing the tendency for individual bias.

Second, the instrument used to assess work engagement was susceptible to the influence of social expectations and individuals' role expectations, which may lead to overestimation and thus generate research bias. Future studies could incorporate the social expectation scale into their assessment and analysis of work engagement, thereby controlling for such response errors and reducing research bias.

Third, other research indicated long-term and short-term adaptations to social support may differ (Feeney & Collins, 2015; French et al., 2018). Subsequent studies could adopt a longitudinal research design to probe more deeply into the changes in social support between different timings, thereby verifying the causal relationships among different variables with empirical evidence.

Finally, although this study's hypotheses regarding the effects of the JDCS model on burnout and work engagement were supported in the Chinese context, which is consistent with previous studies (De Jonge & Dormann, 2006; Häusser et al., 2010), the findings are still limited by the study context. Even though the corporation studied here is geographically located in Asia, Europe, and other regions, and has applied consistent policies and standards across all its workplaces to maintain positive customer interactions, the cultural values and the variability of customer interactions may yield a different influence. Therefore, future research should re-examine the interaction hypotheses of the JDCS model in different industries and other countries with different cultural dimensions (e.g., power distance and uncertainty avoidance) to account for contextual and psychological work-related factors.

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