

## Original Article

## Taking a Closer Look at Bus Driver Emotional Exhaustion and Well-Being: Evidence from Taiwanese Urban Bus Drivers

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## ABSTRACT

**Background:** Urban bus drivers work under conditions that are among the most demanding, stressful, and unhealthy with higher rates of mortality and morbidity as well as absenteeism and turnover.

**Methods:** Drawing on the job demand–resource model, this study investigates the impacts of job characteristics on emotional exhaustion and the effects of emotional exhaustion on job outcomes (including job satisfaction, life satisfaction, organizational commitment, and turnover intention) in the context of bus drivers.

**Results:** Using self-reported survey data collected from a sample of 320 Taiwanese urban bus drivers, results reveal that role overload and work–family conflict (as job demand factors) positively relate to emotional exhaustion, and organizational support (as a job resource factor) is negatively associated with emotional exhaustion. Emotional exhaustion has negative effects on both job satisfaction and organizational commitment. Job satisfaction positively leads to life satisfaction, whereas organizational commitment negatively relates to turnover intention.

**Conclusion:** This study concludes that role overload and work–family conflict as two stressors related to job demands and organizational support as the job resource factor to affect emotional exhaustion which further influence well-being in bus driver context. The moderating effects of both extraversion and neuroticism on the relationship between job demands and emotional exhaustion are evident.

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## 1. Introduction

Compared with other occupations, urban bus drivers work under conditions that are among the most demanding, stressful, and unhealthy conditions with higher rates of mortality and morbidity, as well as absenteeism and turnover [1–4]. Bus drivers encounter considerable occupational stressors including traffic congestion, conflicts from passengers, rotating shift schedules, poor cabin ergonomics, and tight time schedules [2,5]. The working environment and job characteristics of professional bus drivers make them vulnerable to specific health problems, leading many to retire earlier owing to disability [2,6]. Unlike professional truck drivers, bus drivers possess the job characteristics of emotional labor because they not only have to drive safely but also have to simultaneously deliver satisfactory customer service. Bus drivers must balance various requests from passengers and management, as well as follow traffic rules and regulations when they are on duty. Hence, these work-related expectations and requirements increase

bus drivers' workload and stress, subsequently leading to their job burnout and a negative impact on their well-being. This article is thus motivated to obtain a deeper understanding of bus drivers' stress and the relationships between its antecedents and consequences to design health and wellness programs for governments, bus companies, and drivers alike.

Burnout is a special type of psychological occupational stress resulting from a response to chronic exposure to work-related stressors [4]. In accordance with the job demand–resource (JD–R) model [7], job demands and job resources, two specific risk factors of every occupation, can explain employees' well-being [8]. The consequences of exchanges between an organization and its employees can be both positive (e.g., engagement, organizational commitment, job satisfaction) from job resources and negative (e.g., burnout, turnover intentions) from job demands [9]. More specifically, “interpersonal demands at works that exceed the worker's resources” [10, p. 562] can create burnout. Burnout is theoretically characterized by three components, including

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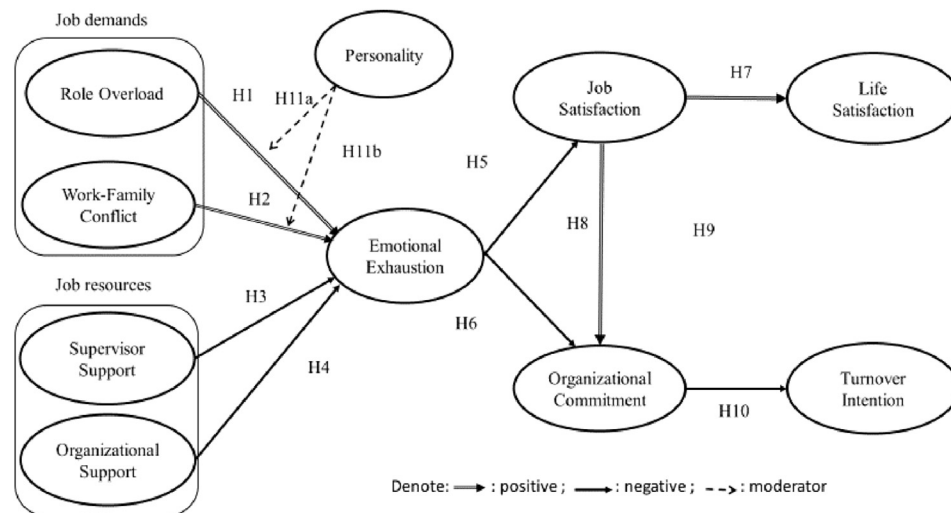


Fig. 1. Research model.

emotional exhaustion (i.e., the feeling of overwhelming emotions at work), depersonalization (i.e., detachment from others or indifference at work), and reduced professional efficacy (i.e., the tendency to evaluate one's efforts and achievement in a negative manner [11]). Among these three components, emotional exhaustion is the most representative one in related studies [8,12,13]. Hence, where appropriate in the following section, we measure drivers' emotional exhaustion and use emotional exhaustion to represent burnout.

Job demands pertain to those physical, social, or organizational aspects of work that require employees to continuously put forth physical and psychological efforts, thus causing a burden to them. Owing to long work hours and split-shift work schedules, bus drivers as remote/lone workers are dedicated to the transportation of passengers in a remote-working environment and have limited interaction with coworkers and supervisors [14]. The job characteristics also make it difficult for drivers to fulfill the needs of their family role, thus creating potential conflict between work and family. Previous evidence widely supports the positive influence of job demands such as role overload [8,13] and work–family conflict [12] on emotional exhaustion. Job resources pertain to those physical, social, or organizational aspects of the job that support employees to achieve work goals, motivate staff toward personal growth and development, and accordingly eliminate the negative physiological and psychological influences caused by job demands [7]. For instance, a high level of support from coworkers, supervisors, and the organization may alleviate the impact of job demands by helping employees at coping with difficult problems. In previous bus driver studies, however, the role of job resources in mitigating driver burnout (or emotional exhaustion) has been neglected. In this study, we focus on two kinds of job resources, i.e., supervisor support and organizational support, and explore their effects on burnout (emotional exhaustion) to offer a more comprehensive understanding of bus drivers' job strain and associated outcomes.

Previous studies provide evidence that burnout is associated with negative perceived well-being, including negative health outcomes and organizational outcomes. Drivers' negative health outcomes attributed to burnout include poor physical and mental health such as anxiety, depression, gastrointestinal diseases, muscle tension, cardiovascular diseases, obesity, hypertension, chronic fatigue, and poor job performance [2,4]. Burnout-associated

organizational outcomes include decreased job satisfaction, lack of organizational commitment, absenteeism, high turnover intention, and eventually decreased life satisfaction [15–17].

In addition, the same stressor a driver encounters may have different impacts on stress due to individual differences such as personality. Previous studies provide evidence of the moderating role of personality. If the role of personality is evident, it can provide insightful information for their human resource management of bus companies in terms of hiring and training drivers with more effective guidelines associated with personality. Hence, the present study hypothesizes driver personality as a moderator and to investigate the moderating effects of Big Five personality traits on the link between job demands and job burnout.

Drawing on the JD–R model, our study takes a closer look at bus drivers' stress and its antecedents and consequences. The center concept of the JD–R model postulates that job characteristics affect emotional exhaustion and in turn job outcomes, as well as well-being. More specifically, job demand factors (i.e., role overload and work–family conflict) and job resource factors (supervisor support and organizational support) are chosen as positive and negative antecedents of emotional exhaustion, respectively. We look into both job-related (i.e., turnover intention) and life-related (life satisfaction) outcomes of emotional exhaustion through job satisfaction and organizational commitment. The present study also examines the moderating effect of driver personality on the relationship between job demands and emotional exhaustion. We propose the research framework (Fig. 1) with the following hypotheses and empirically examine the model using a Taiwanese sample of bus drivers.

- H1.** Role overload is positively related to emotional exhaustion.
- H2.** Work–family conflict is positively related to emotional exhaustion.
- H3.** Supervisor support is negatively related to emotional exhaustion.
- H4.** Organizational support is negatively related to emotional exhaustion.
- H5.** Emotional exhaustion is negatively related to job satisfaction.
- H6.** Emotional exhaustion is negatively related to organizational commitment.

**Table 1**  
Sample profile

Characteristic		Frequency	Percentage
Gender	Male	311	96.0%
	Female	13	4.0%
Age	20–29	17	5.2%
	30–39	62	19.1%
	40–49	92	28.4%
	50–59	110	34.0%
	60–65	43	13.3%
Education	Under high school	43	13.3%
	High school diploma	206	63.6%
	Bachelor's degree & higher	75	23.1%
Marital status	Married	223	68.8%
	Single	101	31.2%
Income	Less than NT\$20,000	7	2.2%
	NT\$20,001–NT\$40,000	219	67.6%
	NT\$40,001–NT\$60,000	93	28.7%
	More than NT\$ 60,001	5	1.5%
Bus driving experience	Less than 2 y	65	20.0%
	2–5 y	107	33.0%
	5–10 y	41	12.7%
	10–20 y	54	16.7%
	More than 20 y	57	17.6%

Note: US\$1  $\approx$  NT\$30; y = years.

**H7.** Job satisfaction is positively related to organizational commitment.

**H8.** Job satisfaction is positively related to life satisfaction.

**H9.** Job satisfaction is negatively related to turnover intention.

**H10.** Organizational commitment is negatively related to turnover intention.

**H11a.** Personality moderates the effects of role overload on emotional exhaustion.

**H11b.** Personality moderates the effects of work–family conflict on emotional exhaustion.

## 2. Materials and methods

### 2.1. Participants and procedure

We design a self-administered questionnaire to collect data from bus drivers of city bus companies in Kaohsiung, Taiwan. Through cooperating with bus companies, we received permission to assess drivers and conduct the survey at driver lounges, where workers take a break after finishing their shifts. The cover letter of the questionnaire states the research purpose and ensures data anonymity of the participants. In total, 350 questionnaires were distributed during the period from March to April of 2017. After deleting those with incomplete responses, 324 usable samples were obtained, yielding a response rate of 92.6%. Table 1 presents the demographic characteristics and working characteristics of the respondents.

### 2.2. Measures

To ensure the reliability and validity of the survey instrument, we adopted measures of all constructs of the conceptual model from existing scales, with modifications to suit the study context. The original English scale items were translated into Chinese, following the back-translation procedure [18]. The measure items were rated on a five-point Likert scale, ranging from “strongly disagree (=1)” to “strongly agree (=5)”. Table 2 presents a complete list of scale items with descriptive statistics and scale reliability.

#### 2.2.1. Job demands

Job demands consist of two dimensions, role overload and work–family conflict, in this study. Role overload refers to individuals who face a situation when the expectation of their character exceeds their individual ability. Role conflict pertains to contradiction and conflict because of the inconsistency of different roles from one's expectations and requirements. Considering the unique characteristic of long working hours, it is relevant that conflicts arise for bus drivers between performing their jobs and fulfilling their family roles. Role overload is measured by three items adapted from a study by Schaubroeck et al [19], whereas work–family conflict is measured by three items adapted from a study by Carlson et al [20]. The reliability values for both scales are 0.892 and 0.934, respectively.

#### 2.2.2. Job resources

Job resources include two dimensions, supervisor support and perceived organizational support, in this study. Both organizational support and supervisor support are a type of social support that regards perceived or actual instrumental and/or expressive provisions from the community, social networks, and confiding partners [21]. Supervisor support is measured by three items adapted from a study by Mäkikangas et al [22], whereas perceived organizational support is measured by three items adapted from a study by Eisenberger et al [23]. The reliability values for both scales are 0.912 and 0.926, respectively.

#### 2.2.3. Emotional exhaustion

Emotional exhaustion, which is the central quality of burnout and the most obvious manifestation of this complex syndrome [24], is used to construct burnout in this study. Five items of emotion exhaustion are adapted from [25] with a reliability value of 0.918.

Job outcomes in this study include four constructs, job satisfaction, organizational commitment, life satisfaction, and turnover intention. Job satisfaction measures to what extent a bus driver is satisfied with his/her job and is measured by three items adapted from a study by Morris et al [26] with a reliability value of 0.890. Life satisfaction measures how a bus driver evaluates his/her life as a whole and is measured by three items adapted from a study by Diener et al [27] with the reliability value of 0.903. Organizational commitment measures how much a bus driver is committed to the company and is measured by four items adapted from a study by Mowday et al [28] with a reliability value of 0.899. Turnover intention measures a bus driver's intention to quit the job and is measured by three items adapted from a study by Ashill et al [29] with a reliability value of 0.843.

#### 2.2.4. Personality

Personality, specified as the moderator between work stressor and burnout in our study, is measured by the Ten-Item Personality Inventory adapted from a study by Gosling et al [30] for capturing the Big Five personality traits. This five-item personality inventory consists of agreeableness, extraversion, conscientiousness, neuroticism, and openness. Each trait is measured by two items.

### 2.3. Statistical analysis

The structural equation modeling with the maximum likelihood method was used to analyze the hypothesized model by following the two-stage approach [31]. Confirmatory factor analysis was conducted first to assess both convergent validity and discriminant validity of the measurement model. Subsequently the structural model was estimated to test the associated hypothesized relationships of conceptual model. Multiple indices including normed chi-square ( $\chi^2/\text{d.f.}$ ), goodness-of-fit (GOF) index, normed fit index

**Table 2**  
Measures items

Construct	Item	Mean
Role overload (RO) ( $\alpha = 0.892$ , mean = 3.257)	RO1: The amount of work I am expected to do is too great.	3.37
	RO2: I never seem to have enough time to get everything done at work.	3.17
	RO3: It often seems like I have too much work for one person to do.	3.23
Work-family conflict (WFC) ( $\alpha = 0.934$ , mean = 3.812)	WRC1: My work keeps me from my family activities more than I would like.	3.77
	WFC2: The time I must devote to my job keeps me from participating equally in household responsibilities and activities.	3.82
	WEC3: I have to miss family activities due to the amount of time I must spend on work responsibilities.	3.84
Supervisor support (SS) ( $\alpha = 0.912$ , mean = 3.523)	SS1: I can get help and support from my supervisor.	3.45
	SS2: I can count on my supervisor when facing difficulties.	3.49
	SS3: If necessary, I can ask my direct manager for help.	3.63
Organizational support (OS) ( $\alpha = 0.926$ , mean = 3.013)	OS1: The company takes pride in my accomplishments.	3.28
	OS2: The company really cares about my well-being.	2.89
	OS3: The company values my contributions to its well-being.	3.03
	OS4: The company strongly considers my goals and values.	2.96
	OS5: The company shows concern for me.	2.79
	OS6: The company is willing to help me if I need a special favor.	3.13
Emotional exhaustion (EE) ( $\alpha = 0.918$ , mean = 3.288)	EE1: I feel emotionally drained from my work.	3.48
	EE2: I feel "used up" at the end of my work day.	3.62
	EE3: I feel tired when I get up in the morning and have to face another day at the job.	3.20
	EE4: Working with people all day is really a strain for me.	2.86
	EE5: I feel exhausted from overworking myself.	3.27
Job satisfaction (JS) ( $\alpha = 0.890$ , mean = 3.428)	JS1: I am satisfied with the important aspects of my job.	3.58
	JS2: I think the current job is ideal.	3.31
	JS3: Overall, I am satisfied with my job.	3.39
Life satisfaction (LS) ( $\alpha = 0.903$ , mean = 3.343)	LS1: I am satisfied with my life.	3.45
	LS2: The conditions of my life are excellent.	3.33
	LS3: In most ways my life is close to my ideal.	3.25
Organizational commitment (OC) ( $\alpha = 0.899$ , mean = 3.401)	OC1: I really care about the fate of this company.	3.68
	OC2: I am proud to tell others that I am part of this company.	3.43
	OC3: I find that my values and the company's values are very similar	3.15
	OC4: For me this is the best of all possible organizations for which to work.	3.36
Turnover intention (TI) ( $\alpha = 0.843$ , mean = 2.731)	TI1: I often think about resigning.	2.60
	TI2: It would not take too much to make me resign from the current company.	3.11
	TI3: I will probably be looking for another job soon.	2.48

(NFI), comparative fit index (CFI), root mean square of approximation (RMSEA), and standardized root mean square residual are used to assess the model fits. A model fit is suggested by values of RMSEA and standardized root mean square residual lower than 0.08,  $\chi^2/\text{df}$  values less than 3, and other index higher than 0.9, whereas 0.8 means acceptable fit [32]. A series of hierarchical regression analyses were used to examine the moderating effects of personality on the relationship between job demands and emotional exhaustion.

### 3. Results

#### 3.1. Measurement model

Convergent validity of the confirmatory factor analysis results is examined by item reliability, construct reliability, and average variance extracted (AVE), as suggested by [32]. The GOF indices include  $\chi^2/\text{df} = 1.447$ , RMSEA = 0.037, GFI = 0.90, CFI = 0.88, and NFI = 0.94, indicating an acceptable fit to the data. Table 3 presents that the factor loadings of all construct items are greater than 0.7. The AVE values of the nine constructs are well higher than the suggested value of 0.5. The composite reliabilities of the focal constructs range between 0.835 and 0.941, which exceed the critical satisfactory value of 0.8. Hence, convergent validity of the measurement model is confirmed [33]. In addition, all square roots of AVE are greater than the correlation coefficient between two constructs (Table 4), supporting the measures' discriminant validity [33].

#### 3.2. Structural model and testing of hypotheses

We then estimate the structural model to examine the hypothetical relationships between latent constructs. The GOF indices of

**Table 3**  
Convergent validity

Construct	Item	Standard loading	Standard error	CR	AVE
Role overload	RO1	0.883	0.271	0.903	0.757
	RO2	0.776	0.333		
	RO3	0.943	0.199		
Work-family conflict	WFC1	0.917	0.159	0.941	0.841
	WFC2	0.928	0.139		
	WFC3	0.906	0.179		
Supervisor support	SS1	0.868	0.247	0.905	0.762
	SS2	0.897	0.195		
	SS3	0.852	0.274		
Organizational support	OS1	0.795	0.368	0.937	0.711
	OS2	0.851	0.276		
	OS3	0.833	0.306		
	OS4	0.837	0.299		
	OS5	0.862	0.257		
	OS6	0.881	0.224		
Emotional exhaustion	EE1	0.861	0.259	0.913	0.680
	EE2	0.873	0.238		
	EE3	0.855	0.269		
	EE4	0.612	0.625		
	EE5	0.888	0.211		
Job satisfaction	JS1	0.681	0.536	0.867	0.687
	JS2	0.871	0.241		
	JS3	0.916	0.161		
Life satisfaction	LS1	0.844	0.288	0.888	0.726
	LS2	0.829	0.313		
	LS3	0.882	0.222		
Organizational commitment	OC1	0.635	0.597	0.915	0.733
	OC2	0.888	0.211		
	OC3	0.960	0.078		
	OC4	0.904	0.183		
Turnover intention	TI1	0.905	0.181	0.835	0.632
	TI2	0.632	0.601		
	TI3	0.823	0.323		

AVE, average variance extracted.

**Table 4**  
Discriminant validity of the measurement model

Construct	RO	WFC	SS	OS	EE	JS	LS	OC	TI
RO	0.856								
WFC	0.593**	0.909							
SS	-0.316**	-0.264**	0.881						
OS	-0.369**	-0.470**	0.662**	0.828					
EE	0.584**	0.576**	-0.340**	-0.513**	0.835				
JS	-0.232**	-0.280**	0.522**	0.553**	-0.334**	0.855			
LS	-0.286**	-0.360**	0.504**	0.499**	-0.387**	0.609**	0.873		
OC	-0.247**	-0.312**	0.475**	0.664**	-0.430**	0.682**	0.565**	0.831	
TI	0.290**	0.310**	-0.319**	-0.414**	0.413**	-0.437**	-0.368**	-0.517**	0.808

Notes: \*\* denotes  $p < 0.05$ ; \*\*\* denotes  $p < 0.001$ . Square root of average variance extracted (AVE) is shown on the diagonal of the matrix.

structural model include  $\chi^2/df = 1.91$ , RMSEA = 0.05, GFI = 0.87, CFI = 0.98, and NFI = 0.91, indicating an acceptable fit to the data [32]. Fig. 2 presents the estimated structural model.

Eight of the ten hypotheses are overall supported. As hypothesized, both job-demands factors, role overload ( $\beta = 0.332$ ) and work-family conflict ( $\beta = 0.252$ ), have a positive impact on emotional exhaustion, thus supporting H1 and H2. Regarding the effects of two job-resources factors on emotional exhaustion, supervisor support and organizational support, only organizational support ( $\beta = -0.311$ ) has a negative effect on emotional exhaustion, thus supporting H4. Emotional exhaustion has a negative impact on both job satisfaction ( $\beta = -0.292$ ) and organizational commitment ( $\beta = -0.158$ ), supporting H5 and H6. Job satisfaction has a positive impact on organizational commitment ( $\beta = 0.838$ ), supporting H7. Job satisfaction also has a positive effect on life satisfaction ( $\beta = 0.961$ ), whereas it does not have a negative impact on turnover intention as hypothesized, suggesting support for H8 but not H9. Organizational commitment has a negative impact on turnover intention ( $\beta = -0.788$ ), thus supporting H10.

### 3.3. Moderating effects of personality

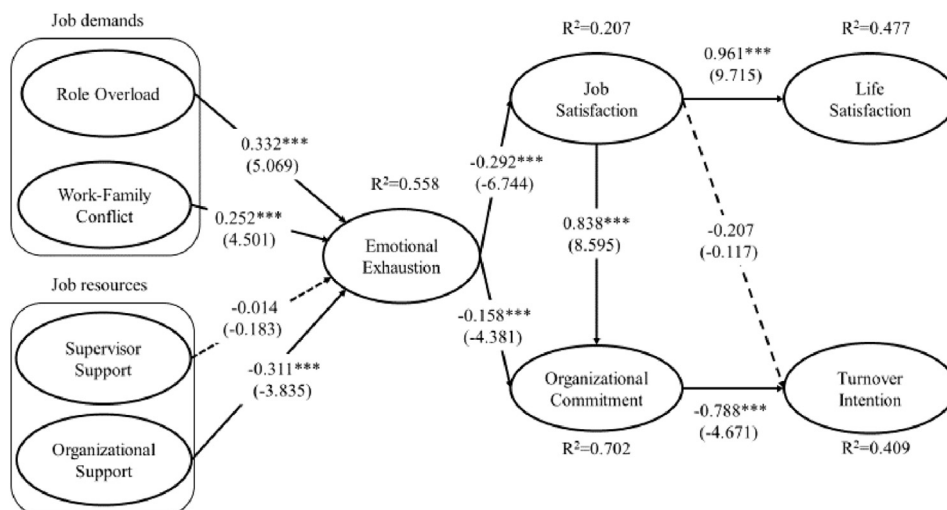
To examine the moderating effects of personality on the relationship between job demands and emotional exhaustion, we conduct a series of hierarchical regression analyses by using the five personality traits as moderators. Only control variables are included in the model at the first step, followed by including independent variables (role overload and work-family conflict) and personality traits in the second step. Finally, the interaction of job

demands and personality traits is added to estimate the moderating effects. Among the five personality traits, only extraversion and neuroticism have moderating effects on the job demands–emotional exhaustion relationship.

Table 5 shows the results of the hierarchical regression analysis. Regarding extraversion, although its main effect on emotional exhaustion is not statistically significant, its interaction effects with (a) role overload ( $\beta = -0.089$ ,  $t = -2.003$ ) and (b) work-family conflict ( $\beta = -0.092$ ,  $t = -2.019$ ) are significantly negative. With respect to neuroticism, its main effects on emotional exhaustion are statistically significant, implying that higher driver's neuroticism is likely to lead to emotional exhaustion. Furthermore, the interaction effects between neuroticism and (a) role overload ( $\beta = -0.099$ ,  $t = -2.223$ ) and (b) work-family conflict ( $\beta = -0.097$ ,  $t = -2.190$ ) are significantly negative. To illustrate the nature of the supported interactions, we plot the relationships for the high and low levels of personality traits (one standard deviation above/below mean), where y-axis and x-axis represents emotional exhaustion and job demands, respectively. The moderating effects of extraversion in terms of role overload and work-family conflict are depicted as Figs. 3 and 4, respectively, whereas the moderating effects of neuroticism are shown as Figs. 5 and 6, respectively. We discuss the implications of moderation effects in the next section.

## 4. Discussion

The goal of this study is to propose an integrated relationship model of bus driver emotional exhaustion and empirically investigate the antecedents and outcomes of emotional exhaustion by



**Fig. 2.** Estimated structural model. Notes: 1. The standardized path estimates and associated  $t$  values are presented without and within parentheses, respectively. 2. \*\*\* $p < 0.001$ .



**Table 5**  
Moderating effects for the job demands–emotional exhaustion relationships

	Model 1				Model 2			
Step 1: Control variables								
Gender	−0.022	0.023	−0.037	0.002	−0.020	0.021	−0.030	0.005
Age	−0.155**	−0.081	−0.140**	−0.058	−0.153**	−0.085	−0.140**	−0.058
Marital status	−0.041	−0.011	−0.039	−0.011	−0.041	−0.018	−0.023	0.000
Step 2: Independent variables								
Role overload	0.577***		0.558***		0.582***		0.548***	
Work–family conflict		0.562***		0.571***		0.557***		0.558***
Extraversion	−0.047	−0.022			−0.051	−0.015		
Neuroticism			0.206***	0.268***			0.218***	0.283***
Step 3: Interactive effect								
Role overload × Extraversion					−0.089*			
Work–family conflict × extraversion						−0.092*		
Role overload × neuroticism							−0.099*	
Work–family conflict × neuroticism								−0.097*
R <sup>2</sup>	0.364	0.338	0.403	0.408	0.372	0.347	0.412	0.417
Adjusted R <sup>2</sup>	0.354	0.328	0.393	0.399	0.360	0.334	0.401	0.406
F-value	36.333***	32.522***	42.903***	43.913***	31.233***	28.043***	37.019***	37.830***
R <sup>2</sup> change	0.327	0.301	0.366	0.372	0.008	0.008	0.009	0.009
F-value for R <sup>2</sup> change	81.619***	72.442***	97.437***	99.869***	4.012*	4.075*	4.942*	4.794*

Notes: \*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ .

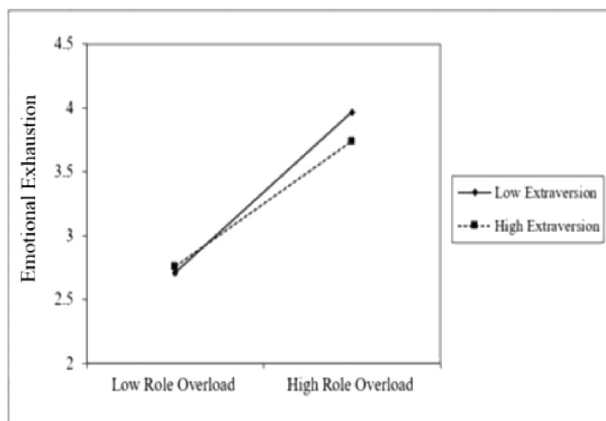
Model 1 adjusted gender, age, marital status, job demand, and personality; model 2 adjusted gender, age, marital status, job demand, personality, and interaction between job demand and personality.

using a sample of Taiwanese bus drivers. Not only considering the facilitating factors of emotional exhaustion i.e., job demands, we address the role of the mitigating factors, i.e., job resources, which are frequently considered in other professions but neglected in related past bus driver studies. The results show that emotional exhaustion does play an important role in the work domain. We identify role overload and work–family conflict as two stressors related to job demands and organizational support as the job resource factor to affect emotional exhaustion in bus driver context. The key indicators of job outcomes in the bus driver context are job satisfaction, organizational commitment, life satisfaction, and turnover intention.

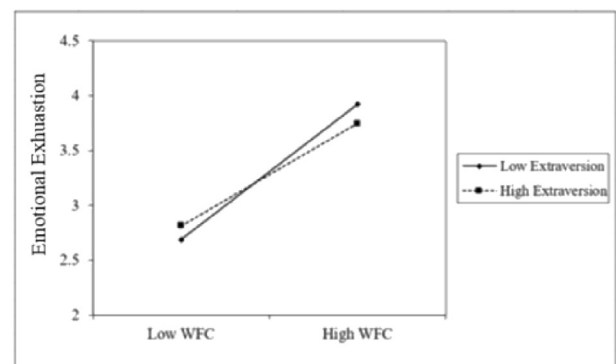
Four considerations and implications emerge from the estimated results. First, consistent with the JD–R model and most organizational studies [9], our data overall confirm that job demands and job resources positively and negatively determine the development of emotional exhaustion, respectively. Regarding the job demands factors, both role overload and work–family conflict are positively related to emotional exhaustion. Role overload indicates its positive effect on drivers' emotional exhaustion, implying the higher role overload drivers perceive the more likely they experience emotional exhaustion. The bus companies are recommended to evaluate additional roles apart from safe driving

drivers have to play such as ticket checking, greeting to passengers, or monitoring on-board situation, and seek alternate replacement by applying technology-assisted devices such as advanced driving assistance system. In addition, we emphasize a specific job demand, work–family conflict, which arises from the imbalance of dealing with both job and family matters to reflect the unique working characteristics of bus driving occupation (e.g., long working hours and split-time schedule) but to a great extent are neglected in previous studies. While both role overload and work–family conflict result in bus drivers' emotional exhaustion, the latter is more difficult to be observed and inspected than the former. More attention should be paid by bus company managers to the significant positive impact of work–family conflict on bus driver emotional exhaustion.

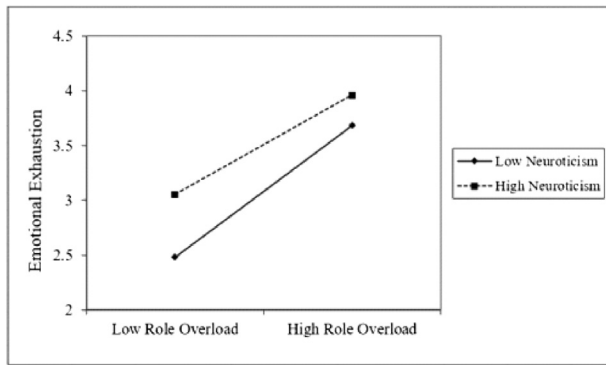
In terms of the job resources factors which are neglected in previous bus driver studies, we confirm its importance to mitigate bus drivers' emotional exhaustion. Our results reveal that only organizational support instead of supervisor support has a hindering effect on emotional exhaustion. It also implies that drivers' perception of whether the bus company is concerned about them and cares about their needs and welfare plays an important role in lessening the occurrence of emotional exhaustion. Inconsistent with past research [34], the effect of supervisor support on burnout is not significant. In accordance with the sampled drivers interviewed in this study, the explanation of the insignificant effect



**Fig. 3.** Extraversion as a moderator in the role overload–emotional exhaustion relationship.



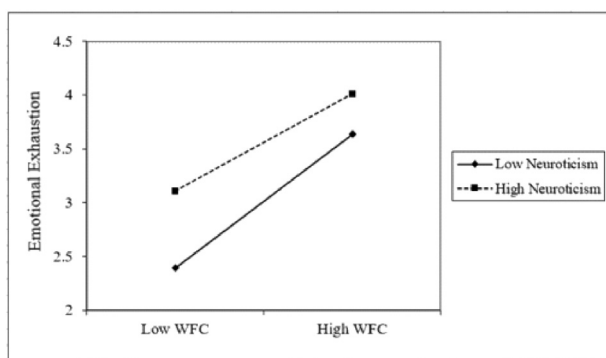
**Fig. 4.** Extraversion as a moderator in the relationship between work–family conflict and emotional exhaustion.



**Fig. 5.** Neuroticism as a moderator in the role overload–emotional exhaustion relationship.

might reflect that supervisors could provide drivers some immediate help, but they are unable to change the unfriendly or unhealthy organizational rules, which are most likely to form stressful working conditions. The results also imply that appropriate systems and processes should be developed to facilitate team building, including constructive feedback among drivers. This effort not only will help reduce emotional exhaustion but also enhance drivers' willingness to contribute to the bus company and their intentions to stay with it. To provide better organizational support, bus companies could guide bus drivers with effective coping ways to deal with the stressful work conditions through on-the-job education and training activities. It would be also helpful to have experienced drivers share their views in terms of how to effectively handle the impact of a split-shift work schedule on their balance between work and home life. While coworker support, a type of social support, is not taken into consideration in our study owing to the characteristic of lone driving, its potential benefit to reduce emotional exhaustions can be expected if bus companies can provide functions and facilities for drivers to communicate and exchange.

Second, our results support that emotional exhaustion leads to significant negative impacts on job satisfaction and organizational commitment. Consistent with previous organization studies [24,35], employees holding higher levels of emotional exhaustion due to increases in job demands and lack of job resources are likely to exhibit lower productivity and effectiveness at work and to experience psychological and physical discomfort. Employee job satisfaction is of most importance for managers in the organization because it represents the appraisal process for the work environment and is closely related to outcome behaviors such as productivity, absenteeism, and turnover intention [36]. Organizational commitment pertains to the degree of an employee's



**Fig. 6.** Neuroticism as a moderator in the relationship between work–family conflict and emotional exhaustion.

identification with and involvement in his/her organization. Employees with higher organizational commitment tend to agree with their organization's value proposition and goals, are eager to participate in activities, hold a positive attitude on showing considerable effort, and show a strong desire to stay in the company. Employees satisfied with their work environment are also likely to have higher organizational commitment. The negative impacts of emotional exhaustion on job satisfaction and organizational commitment in our results highlight the importance for the bus companies to carefully monitor and endeavor to mitigate bus drivers' emotional exhaustion from the perspective of the JD–R model.

Third, our results also provide evidence of the links between job satisfaction and life satisfaction, as well as between organizational commitment and turnover intention. Life satisfaction, a key indicator of subjective well-being, pertains to an individual's cognitive and global evaluation of the quality of his or her life as a whole. A job plays an important role in shaping an individual's overall life satisfaction. For instance, work provides the source of the home economy, which dominates quality of life [37]. If the job can meet an employee's needs, then the employee would have a higher level of job satisfaction and in turn life satisfaction. In particular, because work life occupies most of drivers' day time, it implies that improving the work environment to better fit their needs is an important matter for enhancing their subjective well-being. Our results also indicate that job satisfaction can reduce the likelihood of turnover intention through the mediation of organizational commitment. Job turnover has received considerable attention in academia and practice because employee replacement costs a lot to the organization through expenses on recruitment, selection, and training [38]. Employees with a commitment to the company agree with the company's goals and stay in the current company. In our study context, the shortage of bus drivers is a common phenomenon in the market, and thus it is not difficult for bus drivers to shift from one bus company to another. To maintain operation stability and reduce replacement costs due to turnover, bus companies should pay more attention to drivers' job satisfaction and strategies in order to build up drivers' commitment to their companies.

Last but not least, our results provide insights into the moderating effects of personality on the relationship between job demands and emotional exhaustion. Extraversion and neuroticism, two key personality traits frequently concerned in frontline employee studies and treated as antecedents of strain [39,40], are examined their moderating effects on the links between job demands and emotional exhaustion. The main effect of extraversion on emotional exhaustion is negative as expected while insignificant. Regarding moderating effects, although they face the circumstance of high stressors from role overload and role conflict, drivers with an extraversion trait tend to better deal with the stressors and mitigate the resultant emotional exhaustion. In line with previous studies [39,40], the main effect of neuroticism on emotional exhaustion is significantly positive, indicating drivers with higher neuroticism trait are more likely to experience emotional exhaustion. In addition, the moderating effects of neuroticism are found significantly negative. The results indicate when drivers encounter high role overload (or work–family conflict) situation, the difference in emotional exhaustion between high and low neuroticism groups is not significant, whereas high neuroticism group has higher emotional exhaustion. However, in the situation of low role overload (or work–family conflict), the emotional exhaustion of high neuroticism group is much higher than low neuroticism, and the difference between high and low group is significant. Hence, it is cautious for bus companies to avoid hiring drivers with high neuroticism trait, as well as to monitor drivers' workload within acceptable level.

The study also has certain limitations that offer research directions in future research. First, drawing on the JD–R model our results show the effects of job demands and job resources on emotional exhaustion and its outcomes. However, the role of job demands has been differentiated into job hindrance demands (e.g., role conflict, role ambiguity) and job challenge demands (e.g., high job responsibility) that lead to burnout and engagement, respectively, in related studies [13]. The differentiated JR–R model proposed by [13] hence provides an insightful direction to investigate both hindrance and challenge demands and their influences on bus drivers' job outcomes in future studies. Second, the results are obtained from a Taiwanese bus driver sample. Thus, the relationships inferred in the structural model should be treated with caution, in particular when applying them to other countries and cultures. In fact, the work environment of bus drivers varies among different regions or cultural contexts. To reach a comprehensive understanding of bus drivers' emotional exhaustion, more future research evidence is recommended. Third, the data used in the study are self-reported from bus drivers at the individual level and do not take the influences of group- or organization-level metrics such as service culture or climate into account. Future research evidence with the group- or organizational-level variables is recommended. Finally, future research should identify additional factors to reflect bus drivers' job characteristics, for instance, passenger incivility as job demands, and potential moderators, such as drivers' emotional intelligence and examine the effects of various coping behaviors used by bus drivers, such as psychological detachment, exercises, to help bus companies develop better human resource policies.

### Conflict of interest

The authors do not have any conflicts of interest.

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