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Small Actions Can Make a Big Difference: Voluntary Employee Green Behaviour at Work and Affective Commitment to the Organization

Shuang Ren ¹, Guiyao Tang² and Shujie Zhang²

¹Deakin Business School, Deakin University, Melbourne, Australia, ²School of Management, Shandong University, Jinan, China

Corresponding author email: tangguiyao2010@gmail.com

In the workplace, discretionary pro-environmental actions made by employees are referred to as voluntary employee green behaviour (VEGB). This is increasingly recognised as a contribution to both the environmental and the financial sustainability of the organisation. However, the implications of VEGB beyond its original environmental domain largely remain underspecified, thus constraining the theoretical development of the field and advocacy for organisations in practice. This study thus investigates how VEGB associates with the employee outcome of affective commitment, which especially impacts the psychological relationships that employees develop with their organisations. Drawing on two studies, we found that VEGB was positively associated with affective commitment, as enabled by three mediating mechanisms that enhanced the sense of warm glow and moral credit for employees while protecting them against emotional exhaustion. Moreover, we found that perceived organisational support for the environment served as a boundary condition for VEGB and its mediation by moral credit and emotional exhaustion. Implications for theory and practice are discussed in the paper.

A heightened awareness of the need for ecological responsibility has pressured organisations to address various environmental issues. In turn, the field of human resource management (HRM) has expanded its role to establish a green workforce in pursuing environmentally sustainable business practices (Jabbour and Renwick, 2020; Jackson *et al.*, 2011; Moktadir *et al.*, 2020; Wehrmeyer, 2017). Many enterprises are now facilitating employees in making discretionary actions that contribute to organisational environmental sustain-

ability, otherwise known as voluntary employee green behaviour (VEGB) (Kim *et al.*, 2017), which has continually attracted scholarly recognition (Norton *et al.*, 2015; Paillé and Boiral, 2013). In fact, a study on the top 500 green companies listed in *Newsweek* found that organisational greening efforts predominantly relied on VEGB (Dangelico, 2014), with specific practices including the prioritisation of environmental interests, lobbying, encouraging others, and initiating environmental programs (Norton *et al.*, 2015). In the literature, most researchers assume that VEGB automatically results in desirable outcomes, and therefore focus on antecedents of VEGB (e.g. Afzar, Badir and Kiani, 2016; Bissing-Olson *et al.*, 2013; Dumont, Shen and Deng, 2017; Norton *et al.*, 2017; Ones and Dilchert, 2012; Tian and

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Robertson, 2019; Yuriev *et al.*, 2018; Zibarras and Coan, 2015). In this context, the outcomes are largely overlooked, especially ‘how [VEGB] influences important outcomes for employees, coworkers and teams, leaders and the broader organisation’ (Norton *et al.*, 2015, p. 114). This represents a critical gap in the literature concerning the impacts of VEGB and its underlying mechanisms.

VEGB exceeds standard organisational requirements for environmental behaviour (Norton *et al.*, 2015). It constitutes deliberate actions in which employees invest time, energy and other resources to adjust conservation behaviours to fit organisational settings (Börner, Kalz and Specht, 2015). As a resource investment behaviour, VEGB therefore has the potential to impact generalised employee outcomes beyond the environmental domain. A highly researched desirable employee outcome is affective commitment to the organisation (Van Dyne and Peirce, 2004), defined as ‘emotional attachment to, identification with and involvement’ therein (Allen and Meyer, 1990, p. 1). Committed employees enjoy organisational membership, which predicts desirable outcomes such as job satisfaction and retention (Mathieu and Zajac, 1990; Riketta and van Dick, 2005). A recent review on green HRM reported that greening the workforce ‘may help to produce generally desirable outcomes beyond those with ecological benefits’, and that this should be explored to better visualise environmental sustainability (Ren, Tang and Jackson, 2018, p. 789). However, there is a lack of evidence on the consequences of VEGB, especially its impacts on non-green-specific outcomes (Norton *et al.*, 2015). While empirical studies on the environmental benefits of VEGB (Boiral, Talbot and Paillé, 2015; Norton *et al.*, 2015; Paillé *et al.*, 2014) have discussed the ‘hard’ results of HRM in controlling employee behaviours, there is theoretical and practical value to investigating the ‘soft’ results, especially the associations with affective commitment (Ren, Tang and Jackson, 2018).

In linking VEGB to positive attitudes towards the organisation (i.e. affective commitment), there is no unified theory on the underlying mechanisms. While previous studies have investigated sustainability-related initiatives (e.g. Giuliani and Scopelliti, 2009; Gond *et al.*, 2017), none have integrated the likely mechanisms. As mentioned, VEGB is a workplace-specific pro-environmental behaviour in which employees invest resources to

protect the natural environment. As a foundational attempt to explain human behaviour, the conservation of resources (COR) theory posits that resource gains and losses are important pathways to understanding resource investment behaviours (Hobfoll, 1989). According to COR, resources are broadly defined as items that are valued for goal attainment (Hobfoll *et al.*, 2018). This provides an overarching theoretical framework for considering multiple resources as underlying mechanisms in the association between VEGB and affective commitment. Such integration is important because the identification of relevant mechanisms will clarify the nature and significance of VEGB, thus expanding its implications and advancing theoretical explanations of its effect.

The purpose of this research is therefore to investigate the association between VEGB and employee affective commitment through a progressive research model (Figure 1). There were two studies. First, we proposed three COR-related mediating mechanisms, namely affective resources (i.e. warm glow), moral resources (i.e. moral credit) and energy resources (i.e. reduced emotional exhaustion), which represent the associations of VEGB with three resource types in the context of affective commitment to the organisation. These were tested in Study 1. We then added precision to the COR-informed predictions by proposing perceived organisational support for the environment (POS-E) as a boundary condition for the mediating pathways, thus addressing calls for increased precision in COR-based research. The integrated model was tested in Study 2.

Our findings make three important contributions to the literature. First, they address repeated calls to investigate VEGB outcomes (Norton *et al.*, 2015; Ren, Tang and Jackson, 2018). In demonstrating the linkage between VEGB and affective commitment, we add ‘soft’ evidence on HRM by showing that VEGB exceeds the environmental domain. This also highlights the multiple roles that employees simultaneously assume in the workplace (VEGB enactors and organisational exchange partners) (Ren, Tang and Jackson, 2018). Second, we clarify the underlying mechanisms and associated boundary conditions through which VEGB translates into affective commitment. Here, we enrich the theoretical foundation of the field by examining three

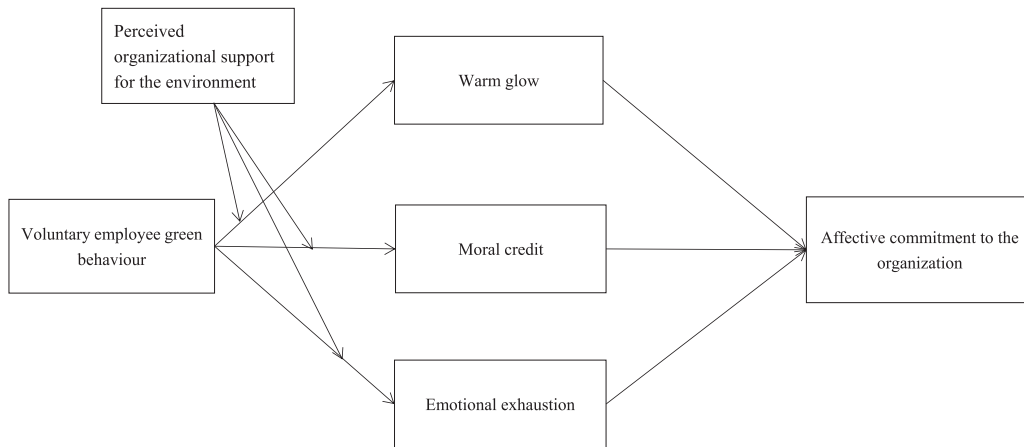


Figure 1. Research model

COR-informed mechanisms. Third, we offer several practical implications. It is not easy to invest in greening employees; for example, such practices amounted to €16.5 million in Unilever's 186 global projects in 2015 (Polman and Bhattacharya, 2016). This suggests that many organisations are not actively embedding sustainability (Bhattacharya, 2018). Our findings inform organisations that it is worthwhile to invest in workforce greening owing to its enhancement of employee affective commitment.

Theoretical Background and Hypotheses

A COR Approach to VEGB

COR theory posits that individuals invest in resources to gain new resources, protect themselves from resource loss, and/or recover from loss (Hobfoll, 1989). As a key COR concept, resources are broadly defined as objects, states, conditions, energy and other factors that are valued based on personal experiences and situations (Hobfoll, 1989). A major advantage of COR theory is its incorporation of a wider range of broad resources when compared with theories that focus solely on single resources (Hobfoll *et al.*, 2018). Here, gaining resources and/or protecting against resource loss are important pathways for understanding resource investment behaviour.

COR informed our choice of mediators while developing a model that captures the resource-gain/loss effects of VEGB and the resulting impacts on affective commitment. First, employees invest in gaining valuable resources because they protect against resource loss, offer comfort and create gains (Hobfoll, 2001). In the environmental domain, green behaviour (e.g. recycling and conserving energy) generates a 'feel-good' affect (Hartmann *et al.*, 2017; van Doorn and Kurz, 2021) and sense of moral self-image (Tiefenbeck *et al.*, 2013). As such, we investigated the affective resource-gaining pathway through warm glow (a feel-good affect derived about oneself after doing the right thing) (Andreoni, 1990) and the moral resource-gaining pathway through moral credit (a moral currency gained from past behaviour) (Miller and Effron, 2010) in the association between VEGB and affective commitment. Second, COR conceptualises resources as finite, thus positing resource loss as another important pathway; this often manifests as emotional exhaustion (Hobfoll *et al.*, 2018), defined as the sense of being depleted of emotional resources (Maslach, Schaufeli and Leiter, 2001). As such, we also considered the effects of VEGB on emotional exhaustion and subsequent affective commitment. Below, we discuss these three mechanisms and how they may explain the relationship between VEGB and employee affective commitment to the organisation.

Affective Resource-gaining Pathway through Warm Glow

Warm glow refers to ‘feelings of pleasure and satisfaction derived from the cognitive appraisal of contributing to the well-being of society’ (Hartmann *et al.*, 2017, p. 45). We posit that VEGB is positively associated with warm glow because it centres on prosocial and moral actions. Specifically, environmental protection is an integral sustainability component that broadly benefits society (Ren and Jackson, 2020). VEGB instils the sense of right actions for good causes beyond core task roles, thus embedding a cognitive appraisal of personal contributions towards the common good (i.e. protecting Earth), thereby creating warm glow. Moreover, warm glow is based on a utilitarian judgement in which cohesion with ethical norms generates a private good in the form of positive affective states (Ferguson and Flynn, 2016; Massarutto *et al.*, 2019). Because environmental protection is a moral issue (Jia *et al.*, 2017), employees who initiate VEGB beyond their core job tasks may experience positive affective responses (e.g. happiness, pleasure, satisfaction or contentment) (Roseman, 1991). For example, warm glow has been positively related to the consumer intention to reduce meat consumption (China) (Taufik, 2018), municipal waste recycling (Italy) (Massarutto *et al.*, 2019) and low-cost green behaviours (Van der Linden, 2018). We therefore hypothesised the following:

H1a: VEGB is positively associated with warm glow.

We further argue that warm glow from VEGB fosters employee affective commitment. Warm glow captures positive affect, or the feeling of well-being. Here, the antecedents of organisational commitment appear to exist in factors that make work enjoyable (Cropanzano, James and Konovsky, 1993; Meyer and Allen, 1997). Positive affect facilitates social acceptance at work and enhances one’s identification with the organisation (Ellemers, De Gilder and Haslam, 2004), thereby increasing affective commitment (Panaccio and Vandenberghe, 2012). As such, VEGB constitutes a contribution towards the common good that results in warm glow, which increases affective commitment to the organisation, as outlined in the following hypothesis:

H1b: Warm glow mediates the relationship between VEGB and affective commitment to the organisation.

Moral Resource-gaining Pathway Through Moral Credit

Moral credit is a self-crediting mechanism in which recent good behaviour is seen as credit that can be used to engage in subsequent behaviour without the fear of discrediting or detracting from the positive self-image (Miller and Effron, 2010). For example, research shows that self-credit can be activated through moral actions (Conway and Peetz, 2012), endorsements of racial equity (Effron, Cameron and Monin, 2009) and disclosed conflicts of interest (Cain, Loewenstein and Moore, 2011). There are at least three reasons that employees would credit themselves for VEGB.

First, VEGB is a moral act (Carroll, 1991; Jia *et al.*, 2017; Lülfs and Hahn, 2013). Environmental issues have moral connotations, as they invoke the ethical implications of one’s behaviour and decision-making vis-à-vis responsible values, beliefs and goals for the natural environment (Paillé *et al.*, 2016). Second, VEGB is not a job requirement or formal expectation, but is voluntary and intrinsically motivated (Ren, Tang and Kim, 2020). Positive environmental contributions may thus lead employees to believe that they have earned ‘credit’. Therein, employees gain positive impressions of their contributions and think well of themselves (Riess and Taylor, 1984; Robins and Beer, 2001). Third, VEGB reflects ability; despite the importance of environmental sustainability, not all organisations invest in educating employees or developing their environmental awareness and skills (Ren and Jackson, 2020). To undertake VEGB, employees must be familiar with the recycling system and/or communicate environmentally friendly practices to persuade others. Environmentally friendly ‘green jobs’ also require higher and more complex cognitive capabilities than transitional jobs (Ren, Tang and Jackson, 2018). As with VEGB, individuals are more likely to self-credit when their behaviours imply innate abilities (Mullen and Riordan, 1988).

Thus, VEGB makes moral information cognitively accessible, thereby helping employees attend to the moral contents of environmental issues (Wurthmann, 2013) while recognising their contributions to ethical and social responsibilities in

the workplace (Gholamzadehmir, Sparks and Farsides, 2019; Ren, Tang and Kim, 2020; Roskies, 2003). Consequently, employees who engage in VEGB are likely to credit themselves for morally laudable initiatives and will attribute positive contributions to their behaviours, as outlined in the following hypothesis:

H2a: VEGB is positively associated with moral credit.

There is insufficient evidence on how moral credit influences affective commitment. In general, the self-crediting process justifies later engagement in questionable behaviour under the premise of spending earned credit (Lin, Ma and Johnson, 2016; Monin and Miller, 2001). However, the acquisition of moral credit ‘does not necessarily trigger an active search for deviant behaviour’ (Klotz and Bolino, 2013, p. 298). Moral credit should protect against reduced affective commitment for two reasons.

First, affective commitment is ambiguous in its moral content. Morality refers to ‘prescriptive judgements of justice, rights and welfare pertaining to how people ought to relate to each other’ (Turiel, 1983, p. 3). It conceptualises human beings as individuals of equal worth who are treated as ends in themselves, and also regulates selfishness (Haidt and Kesebir, 2010). Affective commitment is an attitude towards the organisation rather than a supposition of organisational membership; it is derived from factors that make the job enjoyable and/or from positive organisational exchanges (van Knippenberg and Sleebos, 2006). To the extent that the lack of affective commitment can be construed as non-problematic, moral credit does not apply, as feelings of licence merely liberate individuals in displaying morally problematic behaviours (Miller and Efron, 2010).

Second, affective commitment concerns emotional attachment to the organisation (van Knippenberg and Sleebos, 2006), which is not in the same environmental domain as VEGB. Meta-analyses on moral licencing have primarily reported small-to-medium effects, which suggests situational variations (Blanken, van de Ven and Zeelenberg, 2015; Simbrunner and Schlegelmich, 2017). An important variation is the behavioural domain. Here, empirical evidence shows smaller licencing effects when moral and immoral behaviours occur in different domains. For exam-

ple, Urban, Bahník and Kohlová (2019) failed to replicate the moral licencing effect of green consumption on cheating in a non-environmental domain. The moral licencing effect is also smaller during subsequent behaviours that benefit the collective (as in the case with affective commitment) rather than the self (Simbrunner and Schlegelmich, 2017). Further, moral credit is not easy to earn; for that reason, most employees do not readily spend it until they encounter tasks that they particularly dislike (Klotz and Bolino, 2013, p. 299). As such, we posit that moral credit derived from VEGB is positively associated with affective commitment to the organisation, as stated in the following hypothesis:

H2b: Moral credit mediates the relationship between VEGB and affective commitment to the organisation.

Protection from the Resource-loss Pathway via Reduced Emotional Exhaustion

According to COR theory, people are motivated to avoid resource loss because this loss diminishes effective functioning (Hobfoll, 1989). VEGB is undertaken out of habit, interest or personal importance, and not catalysed by reactive factors such as managerial or shareholder pressures (DuBois, Astakhova and DuBois, 2013). As such, it does not require extra resources (e.g. self-regulation) to cope with pressures (e.g. avoiding organisational punishment) or obligations (e.g. required tasks), but is ‘motivated by an intrinsic desire to help protect the environment’ through work (Ciocirlan, 2017, p. 52). This is ‘naturally present in individuals who are the “true believers” in environmental sustainability’ (DuBois, Astakhova and DuBois, 2013, p. 196). Considering the moral component of VEGB, moral judgement and beliefs are intrinsically motivating (Roskies, 2003). Lee and De Young (1994) empirically demonstrated that intrinsic satisfaction is a key VEGB feature. Given its activation through intrinsic motivation, employees enact VEGB with passion and enthusiasm, not to mimic workplace behaviours (Norton *et al.*, 2015).

Thus, the inherently enjoyable nature of VEGB reduces the potential for subsequent depletion. Indeed, studies on resource depletion (e.g. Babakus, Yavas and Karatepe, 2008; Grant and Sonnentag, 2010; Kim, 2018; Lee and Ashforth, 1996) have shown that intrinsic motivation protects

against emotional exhaustion. Autonomous and volitional behaviours are not depleting because they have internally perceived loci of causality and involve less inhibition or control (Deci and Ryan, 2000). Intrinsically motivated employees engage in pro-environmental work behaviours to gain self-fulfilment in terms of the fundamental need for autonomy (cf. Amabile *et al.*, 1994). The resulting pleasure energises employees and reduces emotional exhaustion (Tang and Vandenberghe, 2020). This is consistent with COR theory, in that positive reinforcement (e.g. personal energy and intrinsic motivation) reduces emotional exhaustion (Halbesleben *et al.*, 2014). Thus, the intrinsic satisfaction derived from VEGB makes it a valuable personal resource for diminishing emotional exhaustion, as posited in the following hypothesis:

H3a: VEGB is negatively associated with emotional exhaustion.

According to COR theory, emotional exhaustion indicates resource depletion. Thus, emotionally exhausted employees have fewer resources to cope with workplace demands. Indeed, emotional exhaustion reduces job performance (Cropanzano, Rupp and Byrne, 2003; Halbesleben and Buckley, 2004) and employee well-being (Melamed *et al.*, 2006; Pugh, Groth and Hennig-Thurau, 2011). Because emotionally exhausted employees are more likely to evaluate work situations negatively, we argue that they are unlikely to expend psychological resources on organisational commitment. Prior studies have provided empirical evidence for the negative association between emotional exhaustion and affective commitment (e.g. Cropanzano, Rupp and Byrne, 2003). We therefore hypothesise that emotional exhaustion mediates the relationship between VEGB and affective commitment, as follows:

H3b: Emotional exhaustion mediates the relationship between VEGB and affective commitment to the organisation.

Study Overview

We implemented two studies with different populations, which helps to increase generalisability (Johns, 2006). In Study 1, we collected data from a sample of Chinese employees via three separate

survey waves. To achieve constructive replication, Study 2 expanded the investigation by adding perceived organisational support for the environment (POS-E) as a moderator; therein, we tested the full theoretical model among a sample of Australian employees.

Study 1

Sample and Procedure

We recruited frontline workers from an electrical equipment manufacturing company in northern China, a context in which sustainability is increasingly important (Cumming, Hou and Lee, 2016). This enriches the literature because there is limited research on VEGB in frontline workers in sectors with high environmental impact, as most studies have focused on the service sector or office workers (cf. Francoeur *et al.*, 2021; e.g. Kim *et al.*, 2017; Kim, Kim and Han, 2019; Paillé *et al.*, 2016).

We used existing contacts with senior human resource executives to get permission and obtain staff directories, from which we randomly selected 500 employees to contact. To ensure voluntary participation, we informed participants: (1) that participation was completely voluntary and they could withdraw from the study at any time without impacting their relationships with the research team or organisation; (2) that anonymity and confidentiality were strictly protected, with organisational staff having no access to completed questionnaires, and that we could only identify employees through code numbers (no names or identifiers were requested in the questionnaire); (3) that responses were used for research purposes only. Those who agreed to participate returned completed questionnaires directly to the research assistants.

We collected data in three waves with 2-week intervals, which is recommended (Podsakoff, MacKenzie and Podsakoff, 2012) and common (e.g. Greenbaum *et al.*, 2020) for testing mediation models. At Time 1, research assistants distributed questionnaires on basic demographic information and VEGB (435 responses). At Time 2, they distributed questionnaires asking the same 435 respondents to rate warm glow, moral credit and emotional exhaustion (422 responses). At Time 3, they distributed questionnaires asking the same 422 respondents about their affective commitment to the organisation (299 valid responses).

Following Goodman and Blum (1996), we conducted a multiple logistic regression to determine whether the participants who completed all surveys versus those who completed Time 1 alone were significantly predicted by demographics (gender, age, education and tenure) or focal baseline measures ($p > 0.05$). The data appeared to be missing at random with respect to the focal variables, meaning that the results were unlikely to be biased by participant attrition.

All participants were full-time employees, with mean age of 30.48 ($SD = 6.12$). 81.9% had college degrees or above. On average, they had worked for the company for 8.65 years ($SD = 6.08$). All respondents were male, as is typical in the industry. The disproportionately high number of men in manufacturing is consistent with the high intensity/risk and other characteristics of production line work, and is common in most countries (Lee *et al.*, 2006; Santos *et al.*, 2014). For example, the US Bureau of Labor Statistics reports that the US machinery manufacturing industry is dominated by men, who account for more than 94% of the workforce, and that this industry represents the largest gender ratio difference among all industries. Given that our theoretical model was not focused on gender differences, the male-dominated sample did not preclude meaningful conclusions.

Measure

All measures were anchored on a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree), unless indicated otherwise. We followed Brislin's (1990) back-translation procedure when designing the questionnaire.

VEGB was measured using the six-item scale developed by Kim *et al.* (2017). Sample items included 'avoiding unnecessary printing to save paper' and 'recycling reusable things in the workplace'. Cronbach's alpha was 0.82.

Warm glow was measured using a four-item scale that Hartmann *et al.* (2017) designed to measure positive affective rewards derived from cognitive appraisals of pro-environmental behaviours towards the common good. Sample items included 'Helping to prevent climate change, I feel pleased to be doing something good for our planet' and 'Doing something about climate change gives me a pleasant feeling of personal satisfaction'. Cronbach's alpha was 0.96.

Moral credit was measured using the five-item scale developed by Lin, Ma and Johnson (2016). Sample items included 'I earned credit for performing a morally laudable behaviour' and 'My previous good deeds earned me credit as a moral person'. Cronbach's alpha was 0.94.

Emotional exhaustion was measured using the five-item scale developed by Twenge, Muraven and Tice (2004). Sample items included 'I feel drained' and 'My mental energy is running low'. Cronbach's alpha was 0.87.

Affective commitment to the organisation was measured using the six-item scale from Rhoades, Eisenberger and Armeli (2001). Sample items included 'I feel personally attached to my work organization' and 'I feel a strong sense of belonging to my organization'. Cronbach's alpha was 0.96.

The control variables included employee age (years), education (0: middle school or below; 1: vocational high school; 2: high school; 3: vocational college; 4: undergraduate; 5: postgraduate; 6: PhD) and tenure (years), which are typically used in environmental sustainability research (Carmeli *et al.*, 2017; Kim *et al.*, 2017; Klein, D'Mello and Wiernick, 2012; Swami *et al.*, 2011). Of note, the hypothesis testing results were consistent with/without control variables.

Results

Table 1 lists descriptive statistics and correlations for the study variables. As shown in Table 2, the confirmatory factor analyses (CFAs) indicated that the hypothesised five-factor model was an acceptable fit for the data ($\chi^2(289) = 775.81$, $p < 0.05$, CFI = 0.93, TLI = 0.92, RMSEA = 0.08, SRMR = 0.04) and performed better than the other models.

We then tested the hypotheses using TYPE = COMPLEX (Table 3). Although our data collection was nested, we did this because the research model was essentially single-level. Of note, we undertook a supplementary analysis using TYPE = TWOLEVEL in Mplus V7, with consistent results.

The hypothesised model demonstrated a good fit for the data ($\chi^2(1) = 1.71$, $p = 0.19$, CFI = 0.99, TLI = 0.94, RMSEA = 0.05, SRMR = 0.01). VEGB was significantly related to warm glow ($b = 0.33$, $SE = 0.09$, $p < 0.001$), moral credit ($b = 0.43$, $SE = 0.08$, $p < 0.001$) and emotional exhaustion ($b = -0.38$, $SE = 0.09$, $p < 0.001$), respectively supporting H1a, H2a and H3a. Warm glow ($b = 0.32$,

Table 1. Descriptive statistics and correlations among study variables

Study 1	Mean	SD	1	2	3	4	5	6	7
1. VEGB	4.19	0.66							
2. Warm glow	3.63	0.95	0.25***						
3. Moral credit	3.86	0.86	0.33***	0.51***					
4. Emotional exhaustion	2.45	0.96	-0.28***	-0.56***	-0.37***				
5. Affective commitment	3.85	0.82	0.23***	0.50***	0.37***	-0.39			
6. Age	30.95	6.50	0.01	0.07	0.13*	-0.12*	0.12*		
7. Education	2.99	0.76	-0.07	-0.18**	-0.07	0.03	-0.06	-0.36***	
8. Tenure	5.08	4.32	-0.08	-0.02	0.07	0.10	0.00	0.48***	-0.35***

Study 2	Mean	SD	1	2	3	4	5	6	7	8	9
1. VEGB	4.19	0.89									
2. Warm glow	4.23	1.04	0.36***								
3. Moral credit	4.06	1.07	0.44***	0.30***							
4. Emotional exhaustion	2.80	0.89	-0.36***	-0.16	-0.42***						
5. POS-E	4.29	0.91	0.47***	0.13	0.41***	-0.12					
6. Affective commitment	4.32	0.93	0.39***	0.41***	0.57***	-0.47***	0.31***				
7. Age	32.59	5.13	-0.07	-0.12	-0.13	-0.01	0.04	-0.11			
8. Gender	0.40	0.49	-0.03	0.14	0.09	-0.04	-0.08	0.17*	-0.06		
9. Education	1.22	0.73	-0.04	0.05	-0.07	0.19*	-0.07	-0.23**	-0.02	0.13	
10. Tenure	2.68	1.89	-0.06	-0.06	-0.03	0.00	0.08	0.01	0.54***	-0.05	-0.08

Note: Study 1: n = 299. Study 2: n = 139. VEGB, voluntary employee green behaviour at work; POS-E, perceived organizational support for the environment.
 *p < 0.05; **p < 0.01; ***p < 0.001.

SE = 0.07, p < 0.001), moral credit (b = 0.13, SE = 0.06, p < 0.05) and emotional exhaustion (b = -0.10, SE = 0.05, p < 0.05) were significantly associated with affective commitment. The indirect effects test with 5000 bootstraps indicated significant indirect effects through warm glow (indirect effect = 0.107, 95% CI = 0.033–0.182), moral credit (indirect effect = 0.054, 95% CI = 0.000–0.108) and emotional exhaustion (indirect effect = 0.039, 95% CI = 0.003–0.076), respectively, supporting H1b, H2b and H3b.

We also conducted a post-hoc analysis with affective commitment as the independent variable and VEGB as the dependent variable. This alternative model yielded larger AIC (719.69) and BIC (730.79) values than the hypothesised model (AIC = 585.28, BIC = 596.38), meaning that we could empirically rule out a reverse causal direction and that the findings were relatively robust.

Discussion

Our hypotheses were supported in that VEGB was associated with affective commitment via mediation from warm glow, moral credit and reduced emotional exhaustion. As generalisability may

be limited owing to the male-dominated sample (cf. Briscoe *et al.*, 2019), we conducted a second study with two objectives. The first was to replicate the findings via multi-sourced data from a more gender-diverse industry in a less collectivistic society (Australia), while the second was to add a moderating variable to provide a more nuanced understanding of the boundary conditions of the associations between VEGB and affective commitment.

Study 2

According to COR theory, individuals with more resources are better positioned for resource gains, whereas those with fewer resources are more prone to losses (Hobfoll, 1998). This suggests that the resource pool influences the effectiveness of investment behaviours. In the environmental domain, POS-E is an organisational resource that refers to employee perceptions of the extent to which the organisation demonstrates environmental concern (Pinzone *et al.*, 2019). Drawing from COR, we argue that POS-E amplifies the resource-gaining pathways of VEGB; that is, higher perceived

Table 2. Confirmatory factor analysis

Study 1	χ^2	df	χ^2/df	CFI	TLI	RMSEA	SRMR
Five-factor	775.81	289	2.68	0.93	0.92	0.08	0.04
Four-factor	1986.66	293	6.78	0.76	0.74	0.14	0.11
Three-factor	2353.61	296	7.96	0.71	0.69	0.15	0.11
Two-factor	3893.05	298	13.06	0.50	0.45	0.20	0.17
One-factor	4407.25	299	14.74	0.43	0.38	0.21	0.19
Study 2	χ^2	df	χ^2/df	CFI	TLI	RMSEA	SRMR
Six-factor	363.24	174	2.09	0.92	0.90	0.09	0.06
Five-factor	681.84	179	3.81	0.78	0.75	0.14	0.10
Four-factor	865.17	183	4.73	0.71	0.66	0.16	0.16
Three-factor	1036.26	186	5.57	0.64	0.59	0.18	0.14
Two-factor	1726.89	188	9.19	0.34	0.26	0.24	0.17
One-factor	1823.60	189	9.65	0.30	0.22	0.25	0.17

Note: Study 1: $n = 299$. Study 2: $n = 139$. VEGB, voluntary employee green behaviour at work; POS-E, perceived organizational support for the environment. Study 1: four-factor model: warm glow and moral credit combined into one factor; three-factor model: warm glow, moral credit and emotional exhaustion combined into one factor; two-factor model: warm glow, moral credit, emotional exhaustion and affective commitment combined into one factor. Study 2: given the large number of items relative to our sample size, we created three parcels for longer scales with more than four items (i.e. VEGB, moral credit and emotional exhaustion). Five-factor model: VEGB and POS-E combined into one factor; four-factor model: warm glow and moral credit further combined into one factor; three-factor model: emotional exhaustion, moral credit, warm glow and affective commitment combined into one factor; two-factor model: all predictor variables combined into one factor.

POS-E is associated with greater warm glow and moral credit.

Specifically, POS-E provides employees with resources by which they can acquire more resources (Hobfoll, 2001). As a specific form of POS, POS-E includes beliefs that the organisation provides emotional (e.g. respect and care) and material (e.g. incentives) resources, and allows autonomy in valuing ecological contributions (Lamm, Tosti-Kharas and King, 2015). Compared with employees with lower perceptions, those who perceive higher POS-E are equipped with additional valuable resources that better position them for further acquisition, as posited in the following hypotheses:

H4: POS-E moderates the relationship between VEGB and warm glow such that VEGB is associated with greater warm glow under higher (vs. lower) POS-E.

H5: POS-E moderates the relationship between VEGB and moral credit such that VEGB is associated with greater moral credit under higher (vs. lower) POS-E.

We similarly argue that VEGB is associated with less emotional exhaustion under higher (vs. lower) POS-E. As mentioned, POS-E describes a con-

textual organisational characteristic in which employees perceive a supportive climate and concern about environmental sustainability (Lamm, Tosti-Kharas and King, 2015). Perceptions of organisational care and trust signal to employees that it is worthwhile to invest resources in protecting the environment, thereby increasing the value of VEGB (Halbesleben *et al.*, 2014). As this perception amplifies the enjoyability of VEGB, it reduces the potential for depletion, as posited in the following hypothesis:

H6: POS-E moderates the relationship between VEGB and emotional exhaustion such that VEGB is associated with less emotional exhaustion under higher (vs. lower) POS-E.

Sample and Procedure

We collected dyadic data from hospitality employees and their supervisors in a coastal city in Australia. During the protracted COVID-19 lockdown, food and beverage takeaway businesses and regional restaurants were among the few organisations (e.g. hospitals, clinics, supermarkets) considered essential and allowed to remain open. Owing to environmental impacts, green practices are gaining momentum in hospitality management (Pham,

Table 3. Unstandardized regression results of hypothesis testing (Study 1)

Variables	Warm glow			Moral credit			Emotional exhaustion			Affective commitment						
	b	SE	p	95% CI	b	SE	p	95% CI	b	SE	p	95% CI				
Control variables																
Age	0.01	0.01	0.53	[-0.01, .02]	0.01	0.01	0.10	[-0.00, 0.03]	-0.03	0.01	0.00	[-0.05, -0.01]	0.01	0.01	0.07	[-0.00, 0.02]
Education	-0.23	0.08	0.00	[-0.38, 0, -0.08]	0.00	0.07	0.96	[-0.13, 0.13]	0.01	0.08	0.94	[-0.16, 0.17]	0.06	0.06	0.32	[-0.06, 0.17]
Tenure	-0.02	0.02	0.35	[-0.06, 0.02]	0.01	0.01	0.50	[-0.02, 0.04]	0.04	0.01	0.00	[0.01, 0.07]	-0.00	0.01	0.80	[-0.02, 0.01]
Independent variable																
VEGB	0.33	0.09	0.00	[0.16, 0.51]	0.43	0.08	0.00	[0.28, 0.58]	-0.38	0.09	0.00	[-0.55, -0.22]				
Mediators																
Warm glow													0.32	0.07	0.00	[0.19, 0.45]
Moral credit													0.13	0.06	0.04	[0.00, 0.25]
Emotional exhaustion													-0.10	0.05	0.03	[-0.20, -0.01]
R ²			0.09				0.12				0.12				0.29	
Indirect effects of VEGB																
Via warm glow	0.107			[0.033, 0.182]												
Via moral credit	0.054			[0.00, 0.108]												
Via emotional exhaustion	0.039			[0.003, 0.076]												

Note: n = 299. VEGB, voluntary employee green behaviour at work. 95% CI: based on 5000 bootstrap samples.

Tučková and Chiappetta Jabbour, 2019). There were 2-week intervals between the following survey periods. At Time 1, the research team visited approximately 150 hospitality establishments and explained the study purpose to the managers/owners and employees to ensure confidentiality. We asked employees ($n = 150$) to provide VEGB ratings and demographic information. At Time 2, we revisited the sites and obtained 143 questionnaires from employees on warm glow, moral credit and emotional exhaustion. At Time 3, we revisited the sites again and asked the managers to rate focal affective commitment among employees, and in this way received 139 matched completed questionnaires. We chose site visits, used shorter surveys and collected completed surveys directly from participants to minimise time commitments during COVID-19, thus enhancing the response rate. The average respondent age was 32.59 ($SD = 5.13$). 59.7% were men, 64% had vocational education or below, and tenure ranged from 1 to 10 years.

Measure

We used the same scales as in Study 1 to collect data on VEGB ($\alpha = 0.92$), warm glow ($\alpha = 0.92$), moral credit ($\alpha = 0.90$), emotional exhaustion ($\alpha = 0.88$) and demographics. We measured POS-E using a four-item scale from Pinzone *et al.* (2019), which has been implemented in relevant research (Hameed *et al.*, 2021) (sample item: 'The organization values my contribution to environmental management') ($\alpha = 0.90$). Managers rated focal employees' affective commitment using the four-item manager-rated affective commitment scale developed by Shore, Barksdale and Shore (1995) (sample item: 'Appears to be highly committed to the organization') ($\alpha = 0.93$).

Results

Table 1 lists descriptive statistics, while Table 2 summarises the CFA results, indicating that the hypothesised six-factor model fit the data best ($\chi^2(174) = 363.24$, $p < 0.05$, CFI = 0.92, TLI = 0.90, RMSEA = 0.09, SRMR = 0.06).

Table 4 summarises the hypothesis testing results, with all relationships simultaneously tested using Model 7 in the SPSS process. VEGB was significantly related to warm glow ($b = 0.47$, $SE = 0.13$, $p < 0.001$), moral credit ($b = 0.69$, $SE = 0.11$, $p < 0.001$) and emotional exhaustion ($b = -0.63$,

$SE = 0.10$, $p < 0.001$), supporting H1a, H2a and H3a, respectively. Warm glow ($b = 0.21$, $SE = 0.06$, $p < 0.001$), moral credit ($b = 0.29$, $SE = 0.07$, $p < 0.001$) and emotional exhaustion ($b = -0.23$, $SE = 0.08$, $p < 0.001$) were significantly associated with affective commitment. There were significant indirect effects through warm glow (indirect effect = 0.090, 95% CI = 0.007–0.214), moral credit (indirect effect = 0.154, 95% CI = 0.025–0.313) and emotional exhaustion (indirect effect = 0.085, 95% CI = 0.013–0.174), supporting H1b, H2b and H3b, respectively.

Regarding the moderation hypotheses, the VEGB and POS-E interaction term was not significantly related to warm glow ($b = 0.03$, $SE = 0.07$, $p > 0.05$), failing to support H4. However, the interaction term was significantly related to moral credit ($b = 0.32$, $SE = 0.06$, $p < 0.001$) (Figure 2). Simple slope analysis showed that the relationship between VEGB and moral credit was greater under higher POS-E ($b = 0.98$, $p < 0.001$) versus lower POS-E ($b = 0.38$, $p < 0.001$), supporting H5. The same interaction term was also significantly related to emotional exhaustion ($b = -0.23$, $SE = 0.05$, $p < 0.001$) (Figure 3). A simple slope analysis showed that VEGB was associated with greater reductions to emotional exhaustion under higher POS-E ($b = -0.87$, $p < 0.001$) versus lower POS-E ($b = -0.40$, $p < 0.001$), supporting H6.

Discussion

The results were consistent with Study 1 and supported the hypothesised mediation relationship. Here, POS-E notably moderated the relationships between VEGB and both moral credit and emotional exhaustion, as expected, but did not moderate the relationship between VEGB and warm glow. This may be because individuals must already assess a behaviour as ethical for it to produce warm glow (Andreoni, 1989). Thus, warm glow occurs after working towards a preference rather than gauging whether the organisation values the act (Khalil, 2004).

General Discussion and Conclusion

Environmental sustainability is rapidly becoming a strategic imperative for achieving an organisational advantage (see the special issue on scaling sustainability in this journal, Goworek *et al.*,

Table 4. Unstandardized regression results of hypothesis testing (Study 2)

Variables	Warm glow				Moral credit				Emotional exhaustion				Affective commitment			
	b	SE	p	95% CI	b	SE	p	95% CI	b	SE	p	95% CI	b	SE	p	95% CI
Control variables																
Age	-0.02	0.02	0.28	[-0.06, 0.02]	-0.03	0.02	0.05	[-0.07, 0.00]	-0.01	0.02	0.66	[-0.04, 0.02]	-0.01	0.01	0.45	[-0.04, 0.02]
Gender	0.29	0.17	0.09	[-0.05, .63]	0.19	0.15	0.20	[-0.10, 0.48]	-0.12	0.14	0.39	[-0.38, 0.15]	0.21	0.12	0.08	[-0.03, 0.45]
Education	0.07	0.12	0.56	[-0.16, 0.30]	-0.14	0.10	0.17	[-0.33, 0.06]	0.28	0.09	0.00	[0.10, 0.46]	-0.23	0.08	0.01	[-0.39, -0.06]
Tenure	0.02	0.05	0.72	[-0.09, 0.12]	0.05	0.05	0.26	[-0.04, 0.14]	-0.01	0.04	0.80	[-0.09, 0.07]	0.02	0.04	0.46	[-0.05, 0.10]
Independent variable																
VEGB	0.47	0.13	0.00	[0.22, 0.72]	0.69	0.11	0.00	[0.48, 0.90]	-0.63	0.10	0.00	[-0.83, -0.44]	0.07	0.08	0.38	[-0.09, 0.22]
POS-E	-0.01	0.12	0.92	[-0.24, 0.21]	0.55	0.10	0.00	[0.36, 0.74]	-0.10	0.09	0.27	[-0.28, 0.08]				
VEGB * POS-E	0.03	0.07	0.69	[-0.10, 0.15]	0.32	0.06	0.00	[0.21, 0.43]	-0.23	0.05	0.00	[-0.33, -0.13]				
Mediators																
Warm glow																
Moral credit																
Emotional exhaustion																
R ²			0.17				0.42				0.29				0.49	
Bootstrapping 95% CI																
Indirect effects of VEGB																
Via warm glow	0.090			[0.007, 0.214]												
Via moral credit	0.154			[0.025, 0.313]												
Via emotional exhaustion	0.085			[0.013, 0.174]												
Index of moderated mediation																
Via warm glow	0.006			[-0.046, 0.051]												
Via moral credit	0.093			[0.005, 0.201]												
Via emotional exhaustion	0.055			[0.005, 0.118]												

Note: n = 139. VEGB, voluntary employee green behaviour at work; POS-E, perceived organizational support for the environment. 95% CI: based on 5000 bootstrap samples.

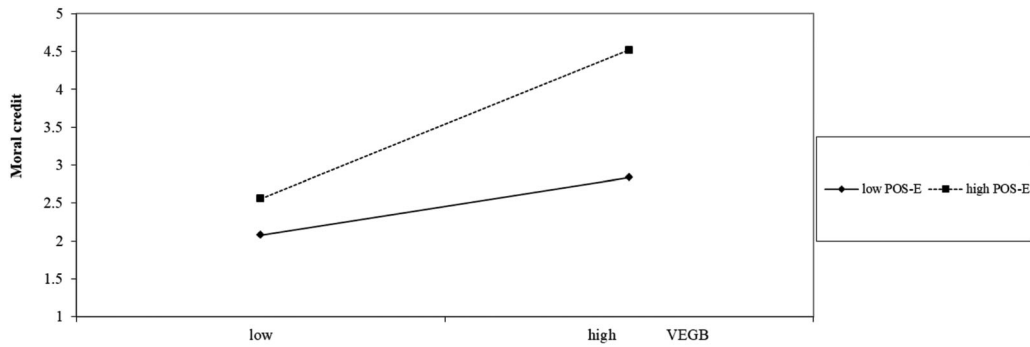


Figure 2. Moderation of voluntary employee green behaviour (VEGB) and perceived organizational support for the environment (POS-E) on moral credit (Study 2)

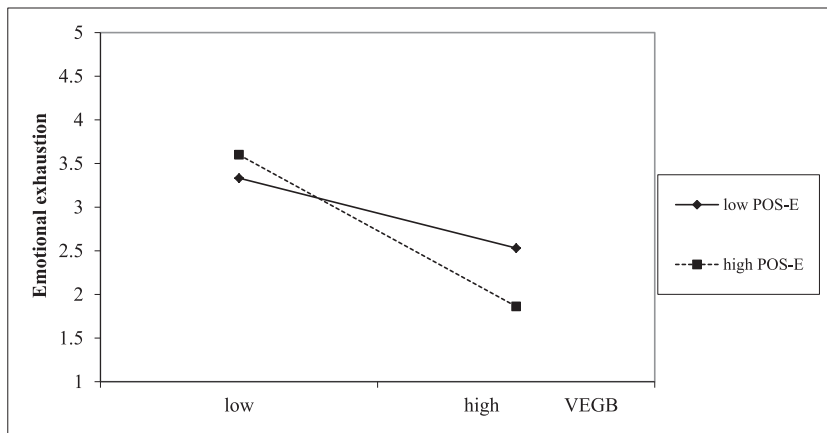


Figure 3. Moderation of voluntary employee green behaviour (VEGB) and perceived organizational support for the environment (POS-E) on emotional exhaustion (Study 2)

2018). This highlights the need for research on the essential micro-foundations of environmental sustainability at the individual level (Akhtar *et al.*, 2018; Ren, Jiang and Tang, 2022). Based on emerging research and industry reports, employees' environmental initiatives (especially VEGB) are important elements of micro-foundations in the quest for organisational sustainability (Lasrado and Zakaria, 2020). To better understand how VEGB affects employees and organisations, we theorised and tested its implications for employee affective commitment. Through two studies, we demonstrated that VEGB was associated with employee affective commitment, as mediated by mechanisms that enhance the sense of warm glow and moral credit while protecting against emotional exhaustion. Meanwhile, POS-E served as a boundary condition on the mediated relationship through moral credit and emotional exhaustion.

Theoretical Implications

The originality of this study lies first in its expansion of the scope of green research by its demonstration of a linkage between VEGB and the non-green outcome of employee affective commitment to the organisation. Thus far, researchers have implicitly assumed that VEGB benefits organisations, with most studies focusing on its antecedents (e.g. Bissing-Olson *et al.*, 2013; Homburg and Stolberg, 2006; Lamm, Tosti-Kharas and Williams, 2013; Peng *et al.*, 2021; Ramus and Steger, 2000; Ren, Tang and Kim, 2020; Zibarras and Coan, 2015) without sufficiently investigating its actual meaning for organisations. This constrains our understanding of VEGB-associated phenomena.

We also addressed extant scholarly calls for information on the broader implications of generalised employee outcomes (Norton *et al.*, 2015; Ren, Tang and Jackson, 2018). Previous

studies have offered insights into the positive links between employee green behaviours and the environmental benefits of organisations (Boiral, Talbot and Paillé, 2015; Kim *et al.*, 2017; Paillé *et al.*, 2014), but there is a lack of evidence on how those behaviours influence non-green domains. We found that employees who voluntarily undertook green behaviours benefitted from better psychological relationships with their organisations. From the behaviour-to-attitude perspective, this expands the scope of green behaviours beyond the narrow focus on ecologically specific outcomes and captures multiple employee roles (VEGB initiators and organisational members).

Second, we clarified the underlying mechanisms and boundary conditions that transform VEGB into affective commitment. Here, we simultaneously examined three possible pathways respective to different aspects of the underlying psychological processes. We applied a resource perspective to consolidate mechanisms under three broad forms (i.e. affective, moral and energy resources) as explanatory mechanisms, finding that employees who performed VEGB experienced pleasure and satisfaction (i.e. gaining affective resources), credited themselves for morally laudable initiatives (i.e. gaining moral resources) and were less emotionally exhausted (i.e. protecting against energy depletion). In turn, this facilitated positive organisational evaluations and increased affective commitment. These findings provide a fuller picture than can be achieved through any single-path perspective, and also address a research gap concerning the theories and mediating mechanisms that explain why VEGB associates with employee outcomes, especially generalised outcomes that are not the initial targets of green behaviours in the environmental domain (Norton *et al.*, 2015; Ren, Tang and Jackson, 2018).

Third, our employee-centred approach enriches the sustainability literature, which has emerged mainly at the macro level and is focused on how and why voluntary environmental management practices are engaged by firms (e.g. Tatoglu *et al.*, 2020) and internationally (see the special issue on scaling sustainability in this journal, Goworek *et al.*, 2018). There is a knowledge gap in the sustainability literature concerning the micro-foundations of environmental initiatives that firms adopt to increase business performance and achieve social change (Akhtar *et al.*, 2018; Ren and Jackson, 2020). This study

builds upon a specific green behaviour concept in the workplace (VEGB) and relates it to an important employee outcome associated with business performance (Wright and Bonett, 2002). Thus, we introduce a resource perspective to VEGB and add precision to COR theory by specifying how the organisational context (POS-E) moderates the resource process induced by VEGB.

Practical Implications

Our findings suggest the importance of organisational interventions aimed at increasing discretionary employee efforts to act pro-environmentally. Conventional environmental management wisdom can be costly for organisations (e.g. training investments, performance incentives, infrastructure updates) (Stefan and Paul, 2008). Thus, the full adoption of environmental management practices must entail a link with organisational competitiveness and economic/financial performance (Rao and Holt, 2005). This study provides much-needed evidence suggesting that positive emotional bonds are forged between employees and organisations when employees can voluntarily engage in environmental protection or avoid environmental harm. Affective commitment is associated with increased performance and reduced turnover, thus enhancing organisational competitiveness (Rhoades, Eisenberger and Armeli, 2001). The antecedents of affective commitment provide a foundation for organisational interventions aimed at enhancing this desirable sense of organisational belongingness that employees feel. For example, a meta-analysis showed that role-related factors such as ambiguity, conflict and autonomy associate with organisational commitment (Cohen, 1992). Organisations should therefore develop robust HRM systems and supportive climates in which employees know what is expected, feel safe when discussing grievances and conflicts, and sense an organisational recognition of ecological behaviours in daily tasks.

Limitations and Future Research

This study had some limitations. First, while we collected data in multiple waves (Podsakoff, MacKenzie and Podsakoff, 2012), the cross-sectional research design limits the potential for causality claims. Thus, future studies should adopt

longitudinal designs or conduct field experiments. Second, the two studies were undertaken in different settings to enhance generalisability, but research should still be conducted in other industrial and national contexts for further generalisability.

Conclusion

This study has investigated how VEGB affected employee commitment to the organisation. We empirically demonstrated that warm glow, moral credit and emotional exhaustion mediated the relationship between VEGB and organisational commitment, with POS-E serving as a boundary condition in the relationships between VEGB and moral credit/emotional exhaustion. This suggests that VEGB has broader and more nuanced implications for organisations in general and employees in particular than previously assumed.

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Shuang Ren (PhD, University of Melbourne) is an associate professor in human resource management at Deakin Business School, Deakin University, Australia. Her research areas include human resource management, Asian management (China, Vietnam), leadership and leader development, and environmental management. She has published in *Personnel Psychology*, *Journal of Management*, *Human Relations*, *Human Resource Management*, *Journal of Organizational Behavior*, *MIT Sloan Management Review*, *Journal of Vocational Behavior*, etc.

Guiyao Tang (PhD, HKBU) is a professor in human resource management at the School of Management, Shandong University, China. Her research areas include organisational leadership, strategic human resource management, green management, and employee pro-environmental behaviour. She has published in scholarly journals such as *Personnel Psychology*, *Human Resource Management*, *Journal of Organizational Behavior*, *International Journal of Human Resource Management*, etc.

Shujie Zhang is a PhD candidate in organisational behaviour at the School of Management, Shandong University, China. Her research interests include employee green behaviour and green human resource management.