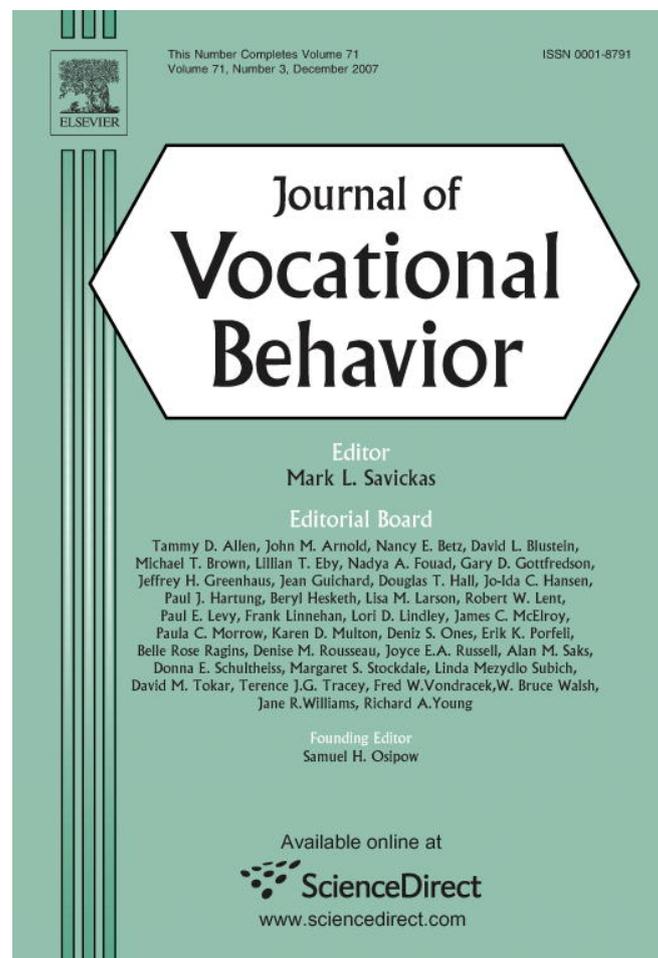


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Burnout and connectedness among Australian volunteers: A test of the Job Demands–Resources model

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Abstract

This study used the Job Demands–Resources (JD-R) model, developed in the context of occupational well-being in the paid workforce, to examine the antecedents of burnout and connectedness in the formal volunteer rural ambulance officer vocation ($N = 487$). Structural equation modeling using self-reports provide strong evidence for the central assumptions of the JD-R model. The findings confirm that burnout fully mediates the relationship between job demands and health problems (Hypothesis 1), and between job demands and determination to continue (Hypothesis 2). In addition, results show that connectedness fully mediates the relationship between job resources and determination to continue (Hypothesis 3). These findings have important practical implications because of the increasing problem of volunteer recruitment and retention.

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1. Introduction

The vocation of the volunteer provides significant benefits to society as well as to the volunteer. Volunteering makes a significant contribution to community social and economic capital, but also enables the civic participation of volunteers in society (Bittman & Fisher, 2006). Volunteers have the opportunity to learn new skills and experience the world of work. As a result of economic rationalist policies, growth in the volunteer sector has become a significant economic and social force that is increasingly and inextricably linked to both public and private sectors (Ross, Greenfield, & Bennett, 1999). Recent figures reveal that volunteer welfare services are worth double the value of services provided by all levels of government in Australia (Bittman & Fisher, 2006).

Given the increasing economic and social benefit that the volunteer sector provides along with the limited pool of volunteers, it has become especially important to focus on building sustainable and healthy volunteer workforces by retaining volunteers, and focusing more on their psychological welfare, training and management (Ross et al., 1999). Whilst there is some evidence of a volunteer personality, that is volunteers are more agreeable and extraverted than paid workers (Elshaug & Metzger, 2001), parallels can be drawn in relation to the working conditions of volunteers and paid workers.

In many cases volunteers work alongside paid workers and their work can be just as complex, responsible, intrinsically important, challenging and stressful. Differences may arise where volunteer hours of availability are less. Then the level of complexity and number of tasks may be less than that of a paid worker (Commonwealth of Australia, 2007). Nevertheless volunteer agencies themselves suggest that human resource policy procedures for paid workers may be appropriate to use with volunteer staff. Further in Canada and the USA, there have been precedent legal cases such that the legal systems are beginning to treat volunteers as employees, applying the same legislation and standards to volunteers that prevail for paid workers. A similar trend is expected to emerge in Australia (Commonwealth of Australia, 2007).

Similarities between paid work and volunteering are most likely in formal volunteering. This is seen as an activity which takes place within the confines of formal organizations, i.e., charitable organizations, and volunteering for emergency services, such as volunteer fire-fighters and ambulance officers. Informal volunteering, on the other hand involves acts undertaken outside of organizations, such as providing unpaid care of adults with disabilities and the frail elderly. Twenty-nine percent of all volunteering in Australia is formal in nature (Bittman & Fisher, 2006). Work variables emanating from the *formal* organizational context such as job control, rewards, choice, time in role and intensity of role are likely to impact on individual well-being regardless of whether the work role is that of a volunteer or paid worker (Ross et al., 1999, p. 725). This study will use the Job Demands–Resources model (Bakker & Demerouti, 2007; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), evolved to explain negative and positive psychological well-being in paid workers. More specifically, we will use the model to examine the role of burnout and connectedness in the retention of Australian (formal) volunteer rural ambulance officers.

1.1. Burnout and connectedness

Burnout is a term first used by psychiatrist Herbert Freudenberger in 1974 to describe a particular type of exhaustion that he had noted in young highly committed volunteers with

whom he was working in a free health care clinic (Schaufeli & Enzmann, 1998). The term burnout has since emerged in the paid work literature to describe an extreme response to emotionally demanding work, particularly in service work, whereby the worker becomes emotionally depleted and unable to work (Beehr, 1995; Jaffe, 1995; Maslach, Schaufeli, & Leiter, 2001). Like job strain, burnout is thought to arise as a consequence of stressful work conditions (e.g., excessive work demands), but is distinguished from job strain in that it involves a longer time frame, results in characteristic negative job-related attitudes, and requires high initial levels of motivation on the part of the worker (Schaufeli & Enzmann, 1998).

Burnout is thought to comprise three primary components: (1) exhaustion, which refers to the depletion of emotional resources, and is characterized by mental, emotional, and physical tiredness; (2) cynicism, which describes the development of impersonal, unsympathetic attitudes toward the recipients of one's services; and (3) feelings of low personal accomplishment. Exhaustion and cynicism are argued by many researchers to be the central components of burnout (Bakker, Demerouti, & Verbeke, 2004; Maslach et al., 2001; Shirom, 2002), and thus we will exclusively focus on these two dimensions. Empirical evidence has shown that burnout has important ramifications for the individual worker including anxiety, depression, lowered self-esteem and substance abuse, and for the workplace, in the form of lowered productivity, absenteeism and turnover (Maslach et al., 2001).

Interestingly, although the concept of burnout first emerged with respect to *volunteers*, the majority of studies have focused on the *paid* work population (Maslach et al., 2001; Schaufeli & Enzmann, 1998). In addition, very few empirical studies have used theoretical models to examine well-being and turnover intentions in the volunteer workforce. Such studies from the unpaid workforce have found that client problems, emotional demands, and organizational factors like lack of co-worker support, and organizational administration contribute to burnout and turnover, indicating similarities with paid workers (Maslanka, 1996; Ross et al., 1999).

A small number of studies of *job strain* and *job satisfaction* in the volunteer workforce appear to support the observation that paid work and volunteer work share many similarities (see Metzer, 2003, for a review). For example Robertson (2000) compared the experience of job strain and job satisfaction between volunteer and paid nursing home staff using the Job Demand–Control (JDC) model (Karasek, 1979). She found that job demands and control predicted levels of strain, and that job control and connectedness predicted levels of job satisfaction for both volunteer and paid staff. Job demands, on the other hand predicted job satisfaction for paid staff only. Further tests of the JDC model in a sample of volunteers working across a range of formal volunteer organizations, showed that high demands were a significant predictor of stress, and high demands, high control and high connectedness were significant predictors of (high) job satisfaction (Metzer, 2003). Parenthetically based on the clusters of predictors of stress and satisfaction and previous research Metzer (2003) concluded that volunteers with additional paid work were more similar to paid workers than volunteers without additional paid work.

Both studies examined the construct of connectedness as a key construct that may have an important role to play in volunteer retention. *Connectedness* is defined as performing work that is interesting and important, feeling appreciated and respected by the organization/others, and feeling connected to the organization's values (Metzer, 2003). These elements underscore the significance of belonging that may be a particularly protective factor for turnover among volunteers (Metzer, 2003). The abovementioned studies suggest that

application of models designed to understand psychological well-being in the paid workforce may provide useful avenues to explore well-being and turnover intention in volunteer workers.

1.2. Using the JD-R model to understand burnout and connectedness

The problem with dominant work psychological models is that they attribute employee wellness to the same demands and resources, irrespective of the *context* under study (Lewig & Dollard, 2003). For instance, the JDC model predicts that quantitative job demands (i.e., workload) combined with low levels of control, produce the most stressful conditions (Karasek, 1979). Furthermore, the Effort–Reward Imbalance (ERI) model (Siegrist, 1996) predicts that high work effort (i.e., workload) and low levels of rewards produce the worst health outcomes. While there is considerable empirical support for the JDC model (De Lange, Taris, Kompier, Houtman, & Bongers, 2003), and the ERI model (Van Vegchel, De Jonge, Bosma, & Schaufeli, 2005), the Job Demands–Resources (JD-R) model (Bakker & Demerouti, 2007; Demerouti et al., 2001) neatly synthesizes the concepts of job demands and job resources, and the literature attesting to the differential relationship of these variables to work-related well-being and withdrawal behaviors, into one overarching model. As the model is flexible in its specification of demands and resources, it can be applied across all occupational groups (Demerouti et al., 2001). The JD-R model proposes that employee well-being is related to a wide range of workplace variables that can be conceptualized as either job demands (the physical, social, or organizational aspects of the job that require sustained physical or psychological effort) or job resources (those aspects of work that may reduce job demands, aid in achieving work goals, or stimulate personal growth, learning and development), irrespective of the occupational context under study (Bakker, Demerouti, & Schaufeli, 2003; Demerouti et al., 2001).

The main premise of the JD-R model is that these two categories of job characteristics initiate two relatively independent processes that explain well-being at work (Bakker & Demerouti, 2007; Schaufeli & Bakker, 2004). According to the first *health impairment process*, high job demands overstretch psychological and physical resources and may lead to negative job strain and in turn, to health problems and negative organizational outcomes (Demerouti et al., 2001). Secondly, the *motivational process* suggests that low job resources inhibit the ability to deal effectively with high job demands and lead to reduced motivation or commitment that eventually results in mental withdrawal or disengagement (Demerouti et al., 2001). In contrast, the availability of job resources increases feelings of belonging to the organization (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007). Such feelings lead to high work engagement (i.e., a fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption), and consequently, to positive organizational outcomes (e.g., low turnover intentions; Schaufeli & Bakker, 2004). To summarize, the JD-R model proposes that job demands are the main initiators of the health impairment process that leads to negative organizational outcomes, while job resources are the most crucial predictors of engagement and consequently, of positive outcomes.

The JD-R model has stimulated much research and its main hypotheses were supported in samples of paid workers among various countries (for a review, see Llorens, Bakker, Schaufeli, & Salanova, 2006). Specifically, Schaufeli and Bakker (2004) tested the JD-R model in four independent service occupational samples ($N = 1698$). They found strong evidence for both the health impairment process (i.e., burnout mediated the relationship

between demands and health problems), and for the motivational process (i.e., engagement mediated the relationship between job resources and turnover intention). Further, they showed that burnout was related to both health problems *and* turnover intentions, whereas engagement was only related to the latter. In other words, overly exhausted and cynical employees not only reported more health complaints, but were also more willing to leave the organization. Evidence for this cross-link is theoretically important because it demonstrates that the processes that explain employee health and crucial work outcomes may be interrelated.

Similarly, support for the two main processes, as well as for the cross-link from job demands to turnover through burnout, was again found in a study of the JD-R model among Dutch call centre workers (Bakker et al., 2003). Recently, Hakanen, Bakker, and Schaufeli (2006) applied the JD-R model among Finnish teachers, and showed that burnout mediated the relationship between various job demands and ill health, while work engagement mediated the relationship between various job resources and commitment (Hakanen et al., 2006). Besides, the cross-link between burnout and commitment was again supported in the latter study. In sum, the JD-R model clearly expands earlier models of work-related well-being by providing important new insights into the dynamics of working conditions and health and engagement in the workplace.

The aim of the current study is to test the JD-R model in a sample of volunteer workers to ascertain if the same processes apply in a non-paid worker sample. Specifically, we used a sample of volunteer rural ambulance officers to develop a better understanding of the relationship between burnout and connectedness on the one hand, and health problems and turnover (intention) on the other hand. This is particularly important considering that high turnover is a crucial problem in the volunteer workforce (Ross et al., 1999). This study was focused on two specific job demands (i.e., time pressure and work–home interference) and two specific job resources (i.e., control and peer support) that have been shown to be important determinants of the well-being of both employees (Bakker & Demerouti, 2007; Bakker & Geurts, 2004; Bakker et al., 2004; Karasek, 1979), and volunteers (Maslanka, 1996; Ross et al., 1999). Further, we operationalized engagement in terms

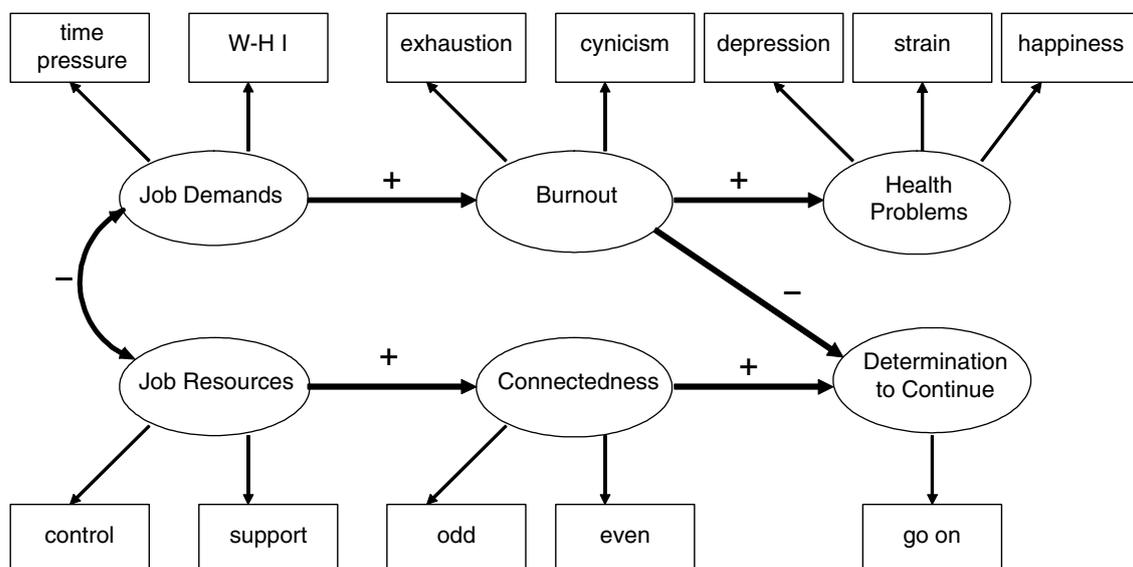


Fig. 1. The hypothesized Job Demands–Resources model. Note. W-HI, work–home interference.

of connectedness to the organization, a concept more applicable to volunteers (Metzer, 2003).

Drawing on the main propositions of the JD-R model, as well as on the results of previous research in volunteers (Metzer, 2003; Robertson, 2000) we hypothesize the following (see Fig. 1):

Hypothesis 1: In line with the health impairment process of the JD-R model, we predict that burnout mediates the relationship between job demands and health problems.

Hypothesis 2: In line with the cross-link between burnout and commitment, we predict that burnout mediates the relationship between job demands and determination to continue.

Hypothesis 3: In line with the motivational process of the JD-R model, we predict that connectedness mediates the relationship between job resources and determination to continue.

2. Methods

2.1. Participants and procedure

The South Australia Ambulance Service operates with a team of full-time career and volunteer staff throughout South Australia servicing an area nearly eight times the size of England. Most rural areas are covered by volunteer ambulance officers, otherwise the service would not exist in these areas. Participants were Volunteer Ambulance Officers (VAO) working in rural South Australia. The main tasks of the VAO are to provide ambulance care for the sick and injured, and to transport patients for example from the site of the accident to the hospital. A total of 1274 questionnaires were distributed to all regional stations in South Australia. Regional team leaders were briefed by South Australian Ambulance Service (SAAS) on the survey and were asked to allocate half an hour on training night so that the survey could be disseminated, completed and returned. Thus, only those VAO present on the night were able to participate in the survey. The surveys were then placed in a sealed envelope and returned with all uncompleted surveys via internal mail to SAAS head office for collection by the first author. VAO were also given the option of returning the survey by mail directly to the researcher if they so wished. VAO were made aware of when the survey was to be distributed allowing them the option of not turning up that night if they were uninterested in participating.

Five hundred and forty-six surveys were returned representing an initial response rate of 43%. This response rate is rather similar to that reported by a separate survey of South Australian VAO (48%) (Fahey & Walker, 2002). However, due to large amounts of missing data on many of these surveys, and the presence of multivariate outliers on 5 surveys, only 487 surveys were used for analysis, representing a final response rate of 38%. Participants were predominantly females (61%) ranging in age from 20 to 71 years ($M = 44.5$, $SD = 10.6$). Ages ranged from 21 to over 60 years with 58% between 30 and 50 years. The majority of the sample was married/partnered (80%), and employed in addition to volunteer work; self employed ($n = 130$, 25.5%); full-time paid work ($n = 139$, 27.3%); part-time paid work ($n = 157$, 30.8%); home duties, ($n = 69$, 13.5%); and unemployed

($n = 15$, 2.9%). Most have worked as volunteers for 5 years and under (65%), spend five or less hours training per week (93%) and were on call between 11 and 40 h per week ($n = 278$, 50.9%); less than 10 h ($n = 43$, 7.9%), 41–70 h ($n = 174$, 22.8%), and >71 h ($n = 101$, 18.5%).

2.2. Measures

Each of the following measures was framed such that participants responded to their *volunteer* job conditions.

2.2.1. Job demands

2.2.1.1. Time Pressure. *Time Pressure* was measured with two adapted items ('my volunteer work requires working very hard/fast') from the Job Demands Scale of the job content instrument (Karasek, 1985). Items were rated from 1 = strongly disagree to 4 = strongly agree. Inter-item correlation was .48.

2.2.1.2. Work–home interference. Interference between volunteer work and home/social life was measured using four adapted items of Holahan and Gilbert's (1979) scale. This scale have been used in previous studies and showed good reliabilities (e.g., Bacharach, Bamberger, & Conley, 1991) and validity (Dollard, Winefield, & Winefield, 2001). Example items are 'How often do the demands of volunteer training interfere with your home, family or social life?' and 'Does the time you spend on call interfere with your home, family, social life?' Items were assessed on a scale from 1 = never or rarely to 4 = always or almost always.

2.2.2. Job resources

2.2.2.1. Job control. The Job Control Scale of the job content instrument (Karasek, 1985) was used. The scale includes nine items designed to measure skill discretion and decision authority. The scale is rated from 1 = strongly disagree to 4 = strongly agree and includes items such as 'My volunteer work allows me to make a lot of decisions on my own' and 'My volunteer work requires me to be creative'. We also added the item 'I am able to select what days I am on call', due to its face validity for the particular group.

2.2.2.2. Peer support. The four-item Social Support Scale of the job content instrument (Karasek, 1985) was used to measure peer support (e.g., 'People I work with are friendly' and 'People I work with are helpful in getting the job done').

All job demands and job resources scales, except the work–home interference scale, were adapted from Karasek's (1985) job content instrument, in order to fit the context of the present study. Karasek's (1985) questionnaire is a commonly used tool for measuring job characteristics. Its reliability and validity has been supported for men and women, full- and part-time employees from the full occupational spectrum (e.g., managers, white- and blue-collar workers, service employees) and from various countries (e.g., United States, Canada, Japan, The Netherlands; Karasek et al., 1998).

2.2.3. Connectedness

The seven-item connectedness scale of the Volunteer Experience Survey (Metzer, 2003) was used to assess levels of perceived appreciation and respect by the organization and the

community. Items include ‘The work I do is important for the community’ and ‘I feel respected in my work role’ and are assessed on a scale ranging from 1 = strongly disagree to 4 = strongly agree. The total scale was highly reliable with $\alpha = .82$. The scale has been shown to have good reliability and validity in a previous formal volunteer sample ($N = 151$); the reliability was .88, and correlations found with job satisfaction ($r = .63$, $p < .01$), autonomy ($r = .58$, $p < .01$), and organizational demands ($r = .28$, $p < .01$) but not with stress.

2.2.4. Burnout

The Exhaustion and Cynicism subscales of the Maslach Burnout Inventory—General Survey (MBI-GS) (Schaufeli, Maslach, Leiter, & Jackson, 1996) were adapted in order to measure burnout among volunteers (see also Ross et al., 1999). The MBI-GS is a thoroughly researched instrument, and there have been numerous studies that support its reliability, and factorial and discriminant validity (e.g., Bakker, Demerouti, & Schaufeli, 2002; Maslach et al., 2001; Schutte, Toppinnen, Kalimo, & Schaufeli, 2000). The *exhaustion* subscale comprises of five items and includes statements such as ‘I feel emotionally drained from my volunteer work’ and ‘Volunteer work is really a strain for me’. The *Cynicism* scale includes five items such as ‘I doubt the significance of my volunteer work’ and ‘I have become more cynical about whether my volunteer work contributes anything’. However, the item ‘I just want to do my job and not be bothered’ was omitted from the scale to improve reliability (see also Schutte et al., 2000). All items of the scales are rated from 0 = never to 6 = every day.

2.2.5. Health problems

This was operationalized using the twelve-item General Health Questionnaire (GHQ-12; Goldberg, 1978). The GHQ-12 is an extensively researched, well-validated and reliable instrument for the identification and measurement of psychological problems (for a review see Campbell, Walker, & Farrell, 2003; Goldberg et al., 1997). Questions include ‘Have you recently lost much sleep over worry?’ and ‘Have you recently felt capable of making decisions about things?’ Items were measured with a four-point Likert scale ranging from 1 = ‘not at all’, 2 = ‘no more than usual’, 3 = ‘rather more than usual’ and 4 = ‘much more than usual’. The total scale showed a good reliability ($\alpha = .87$).

2.2.6. Determination to continue as a VAO

Determination to continue as a VAO was measured by the item: ‘I am determined to continue as a VAO’ and rated on a scale from 1 = strongly disagree to 5 = strongly agree.

2.3. Strategy of analysis

In order to test our mediation hypotheses, structural equation modeling (SEM) analyses were performed using the AMOS software package (Arbuckle, 2005). In general, SEM is considered a preferred method because it provides additional information on the fit of the research model after controlling for measurement error (Holmbeck, 1997). In particular, our research model (Fig. 1) was successively fitted to the data. The research model was compiled of two indicators (time pressure and work–home interference) of the latent job demands variable, whilst control and peer support were the two indicators of the latent job resources variable. Furthermore, exhaustion and cynicism were the two indicators of

the latent burnout variable, while the single ‘determination to continue’ item was used as the indicator of the determination to continue variable. In our attempt to create a parsimonious model, following Bagozzi and Edwards’s (1998) suggestion for partial disaggregated models, instead of including all twelve items of the GHQ as indicators of the latent health problems variable we conducted additional factor analyses (Nasser, Alhija, & Wisenbaker, 2006). These analyses resulted in the expected three sub-factors of the GHQ scale (depression, strain, and happiness; Campbell et al., 2003). Therefore, we included those three sub-factors as indicators of the latent health problems variable. Similarly, instead of including all seven items of the connectedness scale as indicators of the latent connectedness variable, we formed two composites by combining the odd and even numbered items, as proposed by Bagozzi and Edwards (1998).

In order to test Hypotheses 1–3 we followed Holmbeck’s (1997) four-step approach. First, we assessed the fit and significance of path coefficients of the Direct Effects model with the following direct paths: job demands → health problems, job demands → determination to continue, and job resources → determination to continue. The next step was to test the Hypothesized model (Fig. 1). Finally, to test the mediation effects we assessed the fit of the Hypothesized model under two conditions: (a) when the direct effects paths were constrained to zero, and (b) when these paths were not constrained. According to Holmbeck (1997), there is a significant full mediation effect when the addition of the direct paths in the model *does not* significantly improve the fit of the model, and the inclusion of the mediator turns the previously significant direct effects into non-significance (see also Mathieu & Taylor, 2006).

The fit of the models to the data was assessed with the chi-square (χ^2) statistic, the goodness-of-fit index (GFI), and the root mean square error of approximation (RMSEA; Steiger, 1990). In addition, three, less sensitive to sample size, fit indices were used: the incremental fit index (IFI), the comparative fit index (CFI), and the non-normed fit index (NNFI). For each of these statistics, values of .90 or higher are acceptable (Hoyle, 1995), except for the RMSEA for which values up to .08 indicate an acceptable fit to the data (MacCallum, Browne, & Sugawara, 1996).

3. Results

3.1. Descriptive statistics

Means, standard deviations, and correlations among the indicators of the latent variables, as well as the internal consistencies of the scales are presented in Table 1. The majority of the scales showed good reliabilities, with Cronbach’s alpha coefficients satisfying the criterion of .70.

3.2. Mediation effects

To test our hypotheses, we followed the strategy outlined in the Method section. Table 2 shows that the Direct Effects model (M1) fitted very well to the data. Most importantly, analyses revealed that job demands were significantly related to both health problems ($\gamma = .36, p < .001$) and determination to continue ($\gamma = -.34, p < .001$); and job resources to determination to continue ($\gamma = .31, p < .05$) thus, giving the rationale to continue with the mediation analyses. The Hypothesized model (M2; Table 2) also showed a reasonable

Table 1

Means, standard deviations, internal consistencies (Cronbach's alphas on the diagonal), and correlations among variables, $N = 487$

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1 Time pressure	2.25	.48	(.65)											
2 Work-home interference	1.97	.59	.46**	(.86)										
3 Job control	2.99	.25	-.04	-.02	(.60)									
4 Peer support	3.10	.34	-.09*	-.12*	.33**	(.76)								
5 Exhaustion	3.38	3.75	.38**	.53**	-.06	-.12*	(.90)							
6 Cynicism	2.53	3.32	.27**	.36**	-.14**	-.24**	.58**	(.78)						
7 Connectedness 1	3.15	.41	-.12**	-.23**	.39**	.50**	-.17**	-.28**	(.72)					
8 Connectedness 2	3.42	.39	.06	.03	.35**	.46**	.00	-.14**	.67**	(.68)				
9 Health problems (Depression)	0.62	.55	.14**	.23**	-.08	-.06	.39**	.37**	-.07	-.02	(.84)			
10 Health problems (Strain)	1.07	.44	.13**	.25**	-.01	-.07	.31**	.23**	-.04	.10*	.61**	(.74)		
11 Health problems (Happiness)	1.03	.28	.11*	.17**	-.06	-.06	.23**	.26**	-.16**	-.04	.52**	.51**	(.65)	
12 Determination to continue	4.23	.73	-.21**	-.26**	.33**	.12**	-.32**	-.31**	.30**	.13**	-.12**	-.08	-.13**	(—)

* $p < .05$.

** $p < .01$.

Table 2

Results of structural equation modeling (maximum likelihood estimates) of the Job Demands-Resources model for the total sample ($N = 487$) and two random samples ($N_1 = 243$ and $N_2 = 244$)

Model	χ^2	df	GFI	RMSEA	IFI	CFI	NNFI
M1 Direct effects	18.58	17	.99	.01	1.00	1.00	1.00
M2 Hypothesized model	186.79	49	.94	.08	.92	.92	.90
M3 Hypothesized constrained	186.79	49	.94	.08	.92	.92	.90
M4 Hypothesized non-constrained	183.46	46	.94	.08	.92	.92	.89
M5 Hypothesized multigroup (free)	236.53	98	.93	.05	.92	.92	.90
Null model (hypothesized)	1843.12	66	.54	.24	—	—	—
Null model (hypothesized multigroup)	1911.27	132	.54	.17	—	—	—

Note. *df*, degrees of freedom; GFI, goodness-of-fit index; RMSEA, root mean square error of approximation; IFI, incremental fit index; CFI, comparative fit index; NNFI, non-normed fit index.

fit to the data, with all fit indices satisfying their criteria. Inspection of the parameter estimates of M2 showed that all path coefficients were statistically significant and in the expected direction (see Fig. 2). To test the mediation effects of Hypotheses 1–3, we examined the Hypothesized model under two conditions: (a) as constrained (M3) and (b) as non-constrained (M4). Results of the chi-square difference test showed that the addition of the direct effect paths in the constrained model (M3) did *not* increase the fit of the model to the data ($\Delta\chi^2(3) = 3.33, p = .34, n.s.$), which supports the mediation hypotheses. Inspection of the parameter estimates of M4 showed that the once significant direct effects turned into non-significance after the inclusion of the mediators. Specifically, the paths from job demands to health problems ($\gamma = -.08, p = .49$), from job demands to determination to continue ($\gamma = -.08, p = .45$), and from job resources to determination to continue ($\gamma = .41, p = .20$) were all non-significant in M4.

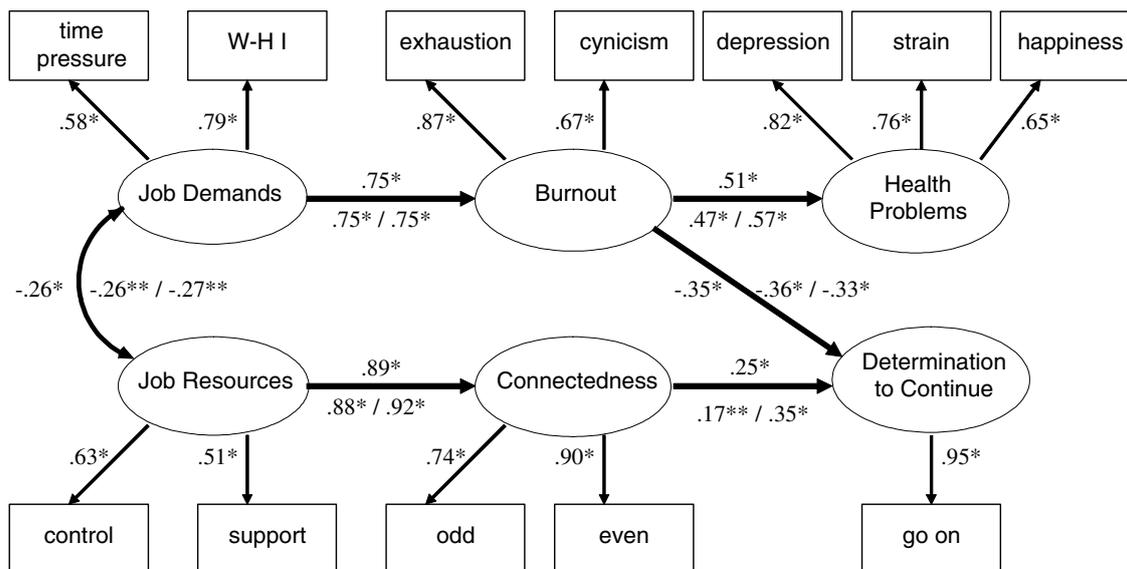


Fig. 2. The Job Demands–Resources model applied to Volunteers (standardized path coefficients). Top: range of coefficients in total sample. Bottom: results of confirmatory multigroup analyses. Path coefficients of the indicators of the latent variables are presented only for the total sample. Note. W-HI, work–home interference; ** $p < .01$, * $p < .001$.

Summarizing, Hypotheses 1–3 were confirmed: burnout fully mediates the relationship between job demands and health problems, and the relationship between job demands and determination to continue. Furthermore, connectedness fully mediates the relationship between job resources and determination to continue. The final model (M3) explained 26% of the variance in health problems and 22% of the variance in determination to continue.

Finally, in an attempt to further support the above results we performed additional multigroup analyses across two random samples ($n = 243$ and $n = 244$) from our total sample ($N = 487$). Specifically, we performed multigroup analyses on M3 and we compared two models: a model where the paths are constrained to be equal in both groups and a model where the paths are not constrained (i.e., are free). Results of the chi-square difference test showed that the constrained model did not show a significantly better fit to the data than the non-constrained model ($\Delta\chi^2(6) = 7.67, p = .26, n.s.$). Thus, these multigroup analyses cross-validate our final model (M3). Results of multigroup analyses are also presented in Table 2.

4. Discussion

While retention has been a significant issue in the third sector, theoretically based research on the factors contributing to the well-being and retention of volunteers has been lacking. The principal aim of this study was to identify the possible predictors and consequences of burnout and connectedness in a group of volunteer ambulance officers. We used the JD-R model, inspired in the context of paid work, to guide research into this issue. Results supported our hypotheses. Particularly, demands were related to health problems and determination (not) to continue through burnout. In addition, job resources were associated with determination to continue through connectedness. Additional multigroup analysis enabled us to validate the findings in two random samples, thus strength-

ening the veracity of our results. To conclude, we found good support for the JD-R model and the three process hypotheses giving us insight into the pathways to a healthy and sustainable volunteer force.

4.1. Applying the JD-R model in volunteers

As a typical work psychological model, the JD-R model has been designed to explain employee wellness. The innovation of the current study is that it provides, for the first time, empirical support for the JD-R Model in a sample of volunteers. The findings supported the central assumptions of the JD-R model. Specifically, job demands were uniquely and positively related to burnout and job resources were uniquely and positively related to connectedness. Furthermore, burnout and connectedness turned out to be crucial for explaining the psychological mechanisms that underlie the relationship between demands and resources on the one hand, and health problems and turnover intentions on the other hand.

In relation to the JD-R model (Demerouti et al., 2001; Schaufeli & Bakker, 2004), findings have shown that high levels of time pressure and work–home interference are able to diminish volunteers' well-being (depression, strain, and happiness), and to increase their intentions to leave the force. That is because, when volunteers have too many things to do, or when their volunteering work interferes too often with their private lives, it is likely that they will become overly exhausted or cynical about their volunteering obligations (i.e., become burned-out). Just like with paid workers (Bakker et al., 2003; Hakanen et al., 2006), burnout as a state of energy deficiency has the dual effect both on volunteers' health, and on their motivation to stay on as a volunteer. Consistent with Hockey's (1997) state regulation model of compensatory control, over time demands deplete one's energy resources and in order to reduce costs to the system, the individual withdraws mentally and down-regulates performance targets to reduce further psychological and physiological costs to the system (Schaufeli & Bakker, 2004).

Next, in line with the motivational process of the JD-R model (Schaufeli & Bakker, 2004; Xanthopoulou et al., 2007), connectedness was found to mediate the relationship between job resources and determination to continue. This implies that when volunteers feel supported by their peers and have a sense of autonomy over their work, they are likely to continue. Existence of resources makes volunteers feel appreciated by the organization and the community, as well as connected to the values of the organization. If volunteers get recognition for what they do, then they are willing to give more. Earlier research used a social exchange explanation for this relationship where turnover intention was thought to derive from an inequitable social exchange perspective (Guerts, Schaufeli, & De Jonge, 1998). For volunteers it is even more prominent that if one is feeling high in energy resources the joys of volunteering and the motivation to continue could be increased accordingly.

The finding regarding the role of connectedness is in line with a recent study by Xanthopoulou et al. (2007) on the role of *personal resources* in the JD-R model. This study among Dutch employees from an electronic engineering company showed that job resources are related to employees' levels of organizational-based self-esteem (OBSE). OBSE is a concept similar to connectedness, since it refers to the degree an individual believes him/herself to be significant and worthy as an organization member (Pierce & Gardner, 2004). The integration of the concept of connectedness in the JD-R model adds

to its predictive validity, particularly because it seems that this concept is highly relevant for the volunteer workforce (Metzer, 2003).

The above findings suggest that paid workforces have more similarities than differences with volunteers when it comes to the understanding of their well-being and turnover intentions, as the same psychological processes seem to apply (Ross et al., 1999). Admittedly, our sample included mainly volunteers who also had other paid work, which may have resulted in more similarities with other paid workers than with volunteers without additional paid work (Metzer, 2003). Nevertheless, the present study supports the ecological validity of the JD-R model by indicating that the principles of the model are also applicable in formal non-paid work contexts. In other words, the theory of the JD-R model may be useful to explain social phenomena that are not necessarily directly related to paid work. Additionally, the current study is the first to apply the whole JD-R model in Australia. In accordance with previous studies that examined and supported the robustness of the JD-R model in various national settings, including The Netherlands, Germany, Spain and Finland (for a review, see Llorens et al., 2006), the present study further confirmed the external validity of the model.

4.2. *Limitations of the study*

The present study has a number of limitations that need to be considered. First, the response rate was somewhat low, and around 10% of the surveys returned were unusable. This low response rate may reflect the fact that volunteers had been asked to participate in a number of surveys throughout the year that the study took place. Second, while the demographics of the respondents showed that this group is representative of the broader rural volunteer ambulance population with respect to age, gender, and length of service, because the survey was voluntary it must be considered that volunteers, who are experiencing symptoms of burnout and low general health and well-being, may have chosen not to complete the survey. Nevertheless, the study is less about levels of burnout and more about the associations between variables.

Third, some scales, and particularly the time pressure and job control scales, had relatively low reliabilities. These scales have been adapted from Karasek's (1985) job content instrument, a highly valid and reliable instrument (Karasek et al., 1998). The fact that the scales were modified in order to fit in the context of volunteering work may explain these low reliabilities. Nevertheless, it is worth mentioning that if low reliabilities have been a serious threat in our study, our results would not have been supportive of our hypotheses. Next, data from this study were derived entirely from self-report questionnaires increasing the chances of common method variance effects. Additionally we are unable to determine causality, since the design is cross-sectional. Although previous research guided the hypotheses of the study, causal connections cannot be assumed. Finally the results of Metzer (2003) and the current study suggest that the findings can be generalized to formal volunteers but not necessarily to informal volunteers.

4.3. *Practical implications*

The results of the present study suggest that in order to retain formal volunteers, volunteer organizations need to: (1) provide a work environment in which volunteers feel valued both by the organization and the communities they serve; (2) ensure that volunteers

understand the organization's values and support those values; (3) make certain volunteers are well supported to perform their role (this includes having access to peer support and having some say in the work that they do); and (4) keep an eye on time pressure and any conflict at home that may be occurring as a result of the volunteer role. This last point is especially important where volunteers show signs of exhaustion or cynicism toward their work.

4.4. Future research

The support provided by this study for the JD-R model has significant implications for volunteering research because it suggests that models and theories of paid employee well-being may assist in understanding volunteer well-being and retention. The present study provides a rich avenue for further research. For example, the role played by work–home interference in burnout and adverse health outcomes is highlighted. Janssen, Peeters, de Jonge, Houkes, and Tummers (2004) have examined negative work–home interference in paid nursing staff using the concepts of demands and resources, and have reported that it partially mediates the relationship between psychological job demands and burnout. Therefore, further studies may prove useful in developing a clearer understanding of the role of work–home interference in the retention of volunteers. Particularly, it is important to clarify whether work–home interference functions mainly as a type of demand as examined in the present study, or whether it is mainly a process variable that explains the transition from demands to negative outcomes.

The main conclusion drawn from the present study is that the JD-R model may be used to explain well-being not only in paid workers but also in volunteers. In other words, the psychological processes that lead to burnout/health complaints and connectedness/determination to continue are the same whether the focus is on a work setting or a volunteering setting. Our finding is important because it suggests that research in understanding volunteering may benefit from research that has been undertaken in the paid workforce. However, this finding by no means suggests that there are no additional factors (e.g., intrinsic motivation, personality factors like altruism) that may be particularly important personal resources for volunteers and may contribute further to our understanding of the topic. For example in their review of the JD-R literature, Cotton, Dollard, and De Jonge (2007) comment that understanding the role played by personality may help qualify the relationship between job characteristics and employee well-being. Additional focus on personality variables could usefully add to an understanding of the relationship between specific volunteer roles and volunteer well-being and retention. For example, there is evidence that volunteers in some areas of work are more extraverted and agreeable but not neurotic, than their paid counterparts (Elshaug & Metzger, 2001). Similarly, Bakker, Van der Zee, Lewig, and Dollard (2006) reported that personality factors such as extraversion may act as a buffer against burnout risk factors in human services work.

5. Conclusion

Society, both locally and internationally, increasingly relies on the goodwill of volunteers to provide services that in many cases were once the responsibility of government. It is therefore important that researchers become more involved in developing a deeper understanding of volunteering so that strategies can be put in place to fully support those

working in volunteer roles. Research from the paid workforce appears to be a promising source of guidance in developing this understanding.

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References

- Arbuckle, J. L. (2005). *Amos 6.0 user's guide*. Chicago, IL: SPSS, Inc.
- Bacharach, S. B., Bamberger, P., & Conley, S. (1991). Work-home conflict among nurses and engineers: Mediating the impact of role stress on burnout and satisfaction at work. *Journal of Organizational Behavior*, *12*, 39–53.
- Bagozzi, R. A., & Edwards, J. (1998). A generalized approach for representing constructs in organizational research. *Organizational Research Methods*, *1*, 45–87.
- Bakker, A. B., & Demerouti, E. (2007). The Job Demands-Resources model: State of the art. *Journal of Managerial Psychology*, *22*, 309–328.
- Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2002). Validation of the Maslach Burnout Inventory—General Survey: An Internet study. *Anxiety, Stress, and Coping*, *15*, 245–260.
- Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2003). Dual processes at work in a call centre: An application of the job demands-resources model. *European Journal of Work and Organizational Psychology*, *12*, 393–418.
- Bakker, A. B., Demerouti, E., & Verbeke, W. (2004). Using the Job Demands-Resources Model to predict burnout and performance. *Human Resource Management*, *43*, 83–104.
- Bakker, A. B., & Geurts, S. A. E. (2004). Toward a dual-process model of work-home interference. *Work and Occupations*, *31*, 345–366.
- Bakker, A. B., Van der Zee, K. I., Lewig, K. A., & Dollard, M. F. (2006). The relationship between the big five personality factors and burnout: A study among volunteer counselors. *Journal of Social Psychology*, *146*, 31–50.
- Beehr, T. A. (1995). *Psychological stress in the workplace*. London: Routledge.
- Bittman, M., & Fisher, K. (2006). *Exploring the economic and social value of present patterns of volunteering in Australia*. Social Policy Research Paper 28, Commonwealth of Australia, Canberra.
- Campbell, A., Walker, J., & Farrell, G. (2003). Confirmatory factor analysis of the GHQ-12: Can I see that again? *Australian and New Zealand Journal of Psychiatry*, *37*, 475–483.
- Commonwealth of Australia. (2007). Volunteering in Australia. <[www.health.gov.au/internet/wcms/publishing.nsf/Content/1C58AAF1DDBDDC3ECA2570970004BF77/\\$File/modelaus.pdf](http://www.health.gov.au/internet/wcms/publishing.nsf/Content/1C58AAF1DDBDDC3ECA2570970004BF77/$File/modelaus.pdf)>. Accessed 17.07.2007.
- Cotton, S., Dollard, M. F., & De Jonge, J. (2007). *A review of the Job Demands-Resources (JD-R) model: A move towards wellness*. University of South Australia, Adelaide: Work & Stress Research Group.
- De Lange, A. H., Taris, T. W., Kompier, M. A. J., Houtman, I. L. D., & Bongers, P. M. (2003). “The very best of the millennium”: Longitudinal research and the demand-control-(support) model. *Journal of Occupational Health Psychology*, *8*, 282–305.
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The Job Demands-Resources model of burnout. *Journal of Applied Psychology*, *86*, 499–512.
- Dollard, M. F., Winefield, H. R., & Winefield, A. H. (2001). *Occupational strain and efficacy in human service workers*. Dordrecht: Kluwer Academic Publishers.
- Elshaug, C., & Metzger, J. (2001). Personality attributes of volunteers and paid workers engaged in similar occupational tasks. *Journal of Social Psychology*, *14*, 752–763.
- Fahey, C., & Walker, J. (2002). *Emergency services in Australia and New Zealand: Problems and prospects for Volunteer Ambulance Officers*. University of Tasmania.
- Guerts, S., Schaufeli, W., & De Jonge, J. (1998). Burnout and intention to leave among mental health-care professionals. A social psychological approach. *Journal of Social and Clinical Psychology*, *17*, 341–362.
- Goldberg, D. P. (1978). *Manual of the general health questionnaire*. Windsor: Nfer-Nelson.

- Goldberg, D. P., Gater, R., Sartorius, N., Ustun, T. B., Piccinelli, M., Gureje, O., et al. (1997). The validity of two versions of the GHQ in the WHO study of mental illness and general health care. *Psychological Medicine*, *27*, 191–197.
- Hakanen, J. J., Bakker, A. B., & Schaufeli, W. B. (2006). Burnout and work engagement among teachers. *Journal of School Psychology*, *43*, 495–513.
- Hockey, G. R. J. (1997). Compensatory control in the regulation of human performance under stress and high workload: A cognitive energetical framework. *Biological Psychology*, *45*, 73–93.
- Holahan, C. J., & Gilbert, L. (1979). Inter-role conflict for working women. *Journal of Applied Psychology*, *64*, 86–90.
- Holmbeck, G. N. (1997). Toward terminological, conceptual, and statistical clarity in the study of mediators and moderators: Examples from the child-clinical and pediatric psychology literatures. *Journal of Consulting and Clinical Psychology*, *65*, 599–610.
- Hoyle, R. H. (1995). The structural equation modelling approach: Basic concepts and fundamental issues. In R. H. Hoyle (Ed.), *Structural equation modelling: Concepts issues and applications* (pp. 1–15). Thousand Oaks, CA: Sage.
- Jaffe, D. T. (1995). The healthy company: Research paradigms for personal and organizational health. In S. L. Sauter & L. R. Murphy (Eds.), *Organizational risk factors for job stress* (pp. 13–39). Washington, DC: American Psychological Association.
- Janssen, P. P. M., Peeters, M. C. W., de Jonge, J., Houkes, I., & Tummers, G. E. R. (2004). Specific relationships between job demands, job resources and psychological outcomes and the mediating role of negative work–home interference. *Journal of Vocational Behavior*, *64*, 131–149.
- Karasek, R. A. (1979). Job demands, job decision latitude, and mental strain: Implications for job redesign. *Administrative Science Quarterly*, *24*, 285–308.
- Karasek, R. A. (1985). *Job Content Instrument: Questionnaire and user's guide (Rev. 1.1)*. Los Angeles: University of Southern California.
- Karasek, R., Brisson, C., Kawakami, N., Houtman, I., Bongers, P., & Amick, B. (1998). The job content questionnaire (JCQ): An instrument for internationally comparative assessments of psychosocial job characteristics. *Journal of Occupational Health Psychology*, *3*, 322–355.
- Lewig, K., & Dollard, M. F. (2003). Can I help you? Emotional dissonance, emotional exhaustion, and job satisfaction among call centre workers. *European Journal of Work and Organizational Psychology*, *12*, 366–392.
- Llorens, S., Bakker, A. B., Schaufeli, W. B., & Salanova, M. (2006). Testing the robustness of the job demands–resources model. *International Journal of Stress Management*, *13*, 378–391.
- MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modelling. *Psychological Methods*, *1*, 130–149.
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, *52*, 397–422.
- Maslanka, H. (1996). Burnout, social support and AIDS volunteers. *AIDS Care*, *8*, 195–206.
- Mathieu, J. E., & Taylor, S. R. (2006). Clarifying conditions and decision points for mediational type inferences in organizational behavior. *Journal of Organizational Behavior*, *27*, 1031–1056.
- Metzer, J. C. (2003). Volunteering work stress and satisfaction in the service professions. In M. F. Dollard, A. H. Winefield, & H. R. Winefield (Eds.), *Occupational stress in the service professions* (pp. 389–409). London: Taylor & Francis.
- Nasser, F., Alhija, A., & Wisenbaker, J. (2006). A Monte Carlo study investigating the impact of item parceling strategies on parameter estimates and their standard errors in CFA. *Structural Equation Modeling*, *13*, 204–228.
- Pierce, J. L., & Gardner, D. G. (2004). Self-esteem within the work and organizational context: A review of the organizational-based self-esteem literature. *Journal of Management*, *30*, 591–622.
- Robertson, M. K., (2000). Comparison of job strain and job satisfaction between volunteer and paid staff in nursing homes. Unpublished Thesis. University of South Australia.
- Ross, M. W., Greenfield, S. A., & Bennett, L. (1999). Predictors of dropout in AIDS volunteers: A longitudinal study. *AIDS Care*, *11*, 723–732.
- Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior*, *25*, 293–315.
- Schaufeli, W., & Enzmann, D. (1998). *The burnout companion to study and practice: A critical analysis*. London: Taylor & Francis.

- Schaufeli, W. B., Maslach, C., Leiter, M. P. & Jackson, S. E. (1996). Maslach Burnout Inventory-General Survey. In C. Maslach, S. E. Jackson & M. P. Leiter (Eds.), *The Maslach Burnout Inventory* (3rd. ed)–Test Manual (pp. 19–26). Palo Alto, CA: Consulting Psychologists Press..
- Schutte, N., Toppinnen, S., Kalimo, R., & Schaufeli, W. B. (2000). The factorial validity of The Maslach Burnout Inventory—General Survey across occupational groups and nations. *Journal of Occupational and Organizational Psychology*, 73, 53–66.
- Shirom, A. (2002). Job related burnout: A review. In J. C. Quick & L. E. Tetrick (Eds.), *Handbook of occupational health psychology* (pp. 245–264). Washington, DC: American Psychological Association.
- Siegrist, J. (1996). Adverse health effects of high-efforts/low-reward conditions. *Journal of Occupational Health Psychology*, 1, 27–41.
- Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate Behavioral Research*, 25, 173–180.
- Van Vegchel, N., De Jonge, J., Bosma, H., & Schaufeli, W. (2005). Reviewing the effort–reward imbalance model: Drawing up the balance of 45 empirical studies. *Social Science and Medicine*, 60, 1117–1131.
- Xanthopoulou, D., Bakker, A., Demerouti, E., & Schaufeli, W. B. (2007). The role of personal resources in the Job Demands–Resources model. *International Journal of Stress Management*, 14, 121–141.