Job demands, job resources and individual innovation at work: Going beyond Karasek's model?

Pilar Martín, Marisa Salanova* and José María Peiró**

Universidad de Zaragoza, * Universitat Jaume I and ** Universidad de Valencia

The job demands-control model is one of the most recognized models in occupational stress research. It has, however, provided contradictory results, and the active learning hypothesis derived from this model has been under-researched in comparison with research on the stress hypothesis. The main aim of this study is to test the Job Demands Resources Model in the prediction of individual innovation at work as an active coping strategy. Results with hierarchical multiple regression analyses provide empirical support for this model. We found a positive relationship between job demands and individual innovation in situations characterized by high job resources. Finally, we discuss the limitations and practical implications of this study.

Demandas y recursos del puesto e innovación del trabajador. El modelo Demandas - Control es uno de los más reconocidos en el ámbito de la investigación sobre estrés laboral. Sin embargo, ha proporcionado resultados contradictorios, al tiempo que la hipótesis del aprendizaje activo derivada de este modelo apenas ha sido investigada en comparación con la hipótesis sobre el estrés. El principal objetivo de este estudio es poner a prueba el modelo Demandas-Recursos del puesto en la predicción de la innovación del trabajador, entendida como una estrategia activa de afrontamiento. Los resultados obtenidos utilizando análisis de regresión jerárquica múltiple proporcionan apoyo para este modelo. En aquellas situaciones caracterizadas por los altos recursos se obtiene una relación positiva entre las demandas del puesto y la innovación del trabajador. En el estudio se discuten además limitaciones e implicaciones prácticas del mismo.

The study of individual innovation in organizations has a short-term tradition. For years, researchers were concerned with the analysis of innovation at an organizational level, paying little attention to individual innovativeness (Martín & Salanova, 2002). Nowadays, individual innovation is beginning to gain wide recognition as a crucial element for effective organizational functioning and survival in the long term (Janssen, 2000). Moreover, empirical evidence considers that innovation is a behavior shared by many workers (West, 1989). Several studies conducted through different samples (West, 1987a, b, 1989, 1997) have offered numerous examples of such innovation behavior, which lead to the introduction of new and improved ways of performing (i.e. through employees suggestions to their boss of new and improved procedures in which work tasks can be done).

One possible definition of individual innovation is '…*the intentional introduction and application within a job of ideas, processes, products and procedures that are new to that job and which are designed to benefit it* …' (West & Farr, 1990, pp. 9). This benefit could include a more appropriate fit between employee resources and perceived external demands. As West

(2002) and West, Utsh, Borril & Dawson (in press) noted, people, groups and organizations are innovative in response to external demands, among other reasons. For example, several studies of work role transitions (i.e., Nicholson & West, 1988; Ripoll, Martín, & Gracia, 1994) have shown that individual innovation is a common response to the demands of new work environments (West, 1987a). Therefore, workers could introduce changes in the content and strategies that characterize their own work roles in order to cope with difficult and stressful environments (Bunce, 1991; Janssen, 2000; West, 1987, a, b), thus improving their mental health. Empirical evidence supports a positive relationship between innovation and well-being (i.e., Bunce & West, 1988, 1994; Martín, Cifre, & Salanova 1999; Munton & West, 1995).

As a coping strategy, individual innovation would represent individual behavioral and cognitive efforts to mitigate, tolerate and master work demands (Folkman & Lazarus, 1980) by playing a moderating role between such job demands and their outcomes (Salanova, Grau, & Martínez, 2005). High job demands would increase the level of arousal among employees (Moya, Serrano, González, Rodríguez, & Salvador, 2005) which, in turn, would lead them to adapt themselves to such demands by modifying their own job environment. In this sense, individual innovation could be seen as a problem-focused coping strategy, which would make active work individual adjustment possible. Several studies (Bunce, 1991; De Jong & Janssen, 2005; Hardy & West, 2000; Ripoll et al., 1994) have shown that job demands, such as role conflict, role overload and job ambiguity, apparently lead to

individual innovation. However, the development of innovative behavior at the workplace is not only related to job demands. The presence of job resources, such as job control (Janssen, 2000; Martín, 1995; West, 1987a, 1989), job feedback (Amabile, 1988; Martín, Martínez, Hernández, & Prieto, 1997) and the opportunity to use one's own skills at work (Martín et al., 1997), foster individual innovation.

Job Demand - Control (JD-C) Model and Job Demands Resources Models and theories

Karasek's model identifies two crucial aspects: Job Demands, the stressors existing in the work environment, and Job Decision Latitude, - defined as '*the extent to which employees have the potential to control their tasks and conduct throughout the working day*' (Karasek, 1979, pp. 290). Karasek's model points out that decision latitude mitigates the negative effects of job demands on employee adjustment, and its key feature is that the combined effect of high demands and low decision latitude, engender a level of strain that exceeds the additive effect of either of the two work environment aspects. Thus a combination of high job demands and high decision latitude characterizes '*high strain jobs*', where those jobs in which job demands and latitude are '*low strain jobs*'. However, this model goes beyond the stress-buffering effect of control. It proposes that a demanding job may actually engender high levels of employee adjustment when high levels of control also characterize the job. Karasek refers to this combination of work characteristics as an '*active job*', which enables the employee to develop new behavior patterns both on and off the job. However, there is a scarcity of studies on this '*active-passive*' dimension of the JD-C, which has been underused in research (Teorell & Karasek, 1996), even when the occurrence of active coping behaviours, active learning and adjustment could be higher for active jobs. Only the more recent formulations of the JD-C model take into account their implications to learn new behavior patterns and adjustment. This body of research has been largely concerned with five groups of outcomes (Taris, Kompier, Lange, Schaufeli, & Schreus, 2003): 1) job satisfaction; 2) job involvement and job commitment: 3) self-efficacy and mastery; 4) job challenge, and 5) other outcomes (i.e., seeking feedback). Despite the fact that individual innovation can be regarded as a coping strategy, which would make active work individual adjustment possible, this body of research has paid little attention to this behavior.

On the other hand and irrespectively of the kind of outcome under research, evidence of the interaction effect derived from this model is contradictory. Some studies have supported a combined effect between job demands and job latitude, whereas others have failed to find such an effect. Potential explanations for those contradictories effects are concerned with the methodological procedures for detecting interaction, and measuring job decision latitude and job demands. In this sense, several authors recommend the use of a hierarchical multiple regression analysis and more focused measures of job control and job demands to correctly test interactions effects between demands and control (Salanova, Peiró, & Schaufeli, 2002). However, even when considering such recommendations, interactions effects between job demands and control are not always found (Martín, 2003). Some researchers (De Jonge, Bosma, Peter, & Siegrist, 2000) claimed that there is a need to

consider more dimensions than those analysed and to pay attention to the adjustment between demands and buffering under study. Therefore, it seems that the extent to which job control buffers the deleterious effects of job demands depends on the adjustment between the kind or level of demand and control under analysis (Martín, 2003). This assumption is consistent with Cohen & Will's (1985) adjustment stress hypothesis, which proposes that a proper adjustment would be that between demands and the kind of buffering under study. So far, further research has been challenged to explore other psychological factors (Janssen, 2000; Gracia, Silla, Peiró, & Fortes, 2006; Merino, Carbonero, Moreno, & Morante, 2006) and the relationships between them. Job Demands – Resources models and theories like Hobfoll's Conservation of Resources Theory, and the Job Demand – Resources model (Bakker, Demerouti, & Euwema, 2005; Demeroutti, Bakker, Nachreimer, & Schaufeli, 2001; Schaufeli & Bakker, 2004) could shape such challenge.

Following Schaufeli and Bakker (2004), it is generally possible to identify two sets of variables in all jobs: Job Demands and Job Resources. Job demands refer to '*those physical, social or organizational aspects of the job that require sustained physical or mental effort and are therefore associated with certain physiological and psychological costs*' (Demeroutti et al., 2001, p. 501). Job resources are '*those physical, psychological, social or organizational aspects of the job that may be functional in achieving work goals, reduce job demands and its associated costs, and stimulate personal growth and development*' (Demeroutti et al., 2001, p. 501). Job control and the opportunity to use one's own skills at work can be regarded as job resources at the task level. On the basis of these two concepts, the so-called models and theories of job demands and resources take into account a wider range of work environment aspects. On the other hand, these models and theories propose several relationships between demands, resources and outcomes under analysis. In this sense, Demeroutti, et al. (2001) developed and tested the Job Demands - Resources Model, and proposed that job demands were associated with exhaustion, whereas the scarcity and lack of job resources were related to disengagement. Schaufeli and Bakker (2004) tested and confirmed Demeroutti et al's model, showing that job demands and lack of resources mainly predicted burnout, whereas available job resources only predicted engagement. However, as Bakker et al. (2005) pointed out, early studies with JR-D models have been concerned with the testing of unique influences of job demands and job resources on some employees' feelings as exhaustion, and the hypothesis that job resources may buffer the impact of job demands has been under-analysed. Finally, Hobfoll´s theory (1989, 2001) mainly suggests that '*the adjustment between economic, social, personal and environmental resources with external demands determines the response direction to stress and resulting outcomes*' (Hobfoll, 2001, p. 339). Despite the important implications however, as far as we know none of these models and theories has explicitly tested the combined effect between job demands and resources of a same domain or level (i.e., task level), regarding individual innovation as an active coping strategy. In this context, the main aim of this study is to test the Job Demands – Resources Model in the prediction of individual innovation at work by testing the combined effect of demands and resources in the same domain.

Hypotheses

According to the previous research outlined above, and after controlling for the effects of socio-demographic variables like gender and age, we expect that job demands and job resources will combine interactively to predict individual innovation (*Hypothesis 1*). This hypothesis is of an exploratory nature given the lack of studies concerned with the analysis of such an interaction effect. However, we can argue with Hobfoll's suggestions, (1989, 2001), that the adjustment between demands and resources, determines the respond direction and the results of stress experience. Moreover and in line with Sargent and Terry's (1998) arguments and Cohen and Will's (1985) stress adjustment hypothesis, the extent to which job resources buffer the effects of job demands depends on the adjustment between the kind of demand and the resource under analysis, therefore we can expect that such an effect will be significant. Furthermore, we expect a main and positive effect of job demands and job resources on individual innovation (*Hypothesis 2* and *Hypothesis 3*, respectively).

Method

Procedure and participants

We handed out the questionnaires used in the current study to the workers, who returned them to the researchers at the Human Resources Department. Participation was voluntary for all employees with guaranteed confidentiality. Of the total of 500 questionnaires distributed, there was a response rate of 65.4% (327 workers returned their questionnaire). Of these 327 workers, we ruled out 73 because of missing data. So, we included a total of 244 participants in this study who were predominantly engaged in direct production lines from 12 Spanish companies of the tile sector. Thus this study covers a wide range of jobs and enterprises, providing a desirable degree of variation in variables to test the hypotheses. Most participants were male (72%), with a mean age of 32.54 years (range 17-61; SD= 8.34).

Appendix 1
Component items of job demands and job resources dimensions

Job demands
1. *I know perfectly what it is expected of me in my job*
2. *I almost always know exactly what I must do in my job*
3. *In my work, there are procedures that indicate how things must be done*
4. *In my work, there are rules that indicate almost everything that I must do or say.*
5. *The aims that I must achieve in my work are clear and specific*
6. *How much information do you receive about your job as to how you do it?.*
7. *Fulfilling my job requirements offers me many opportunities to know how well I do my job*

Job resources
1. To determine what tasks I will do every day
2. To establish the amount of work that I have to do
3. To establish the rules and procedures that indicate how I have to do my work
4. To determine how to resolve the exceptional situations that arise in my work
5. How many opportunities my work offers me to put my own skills into practice?

Italics mean reverse coded

Measures and instruments

Control variables. We included two socio-demographic variables: gender and age. As previous research works have noted (i. e. Janssen, 2000; Martín, 1995; Ripoll et al., 1994; West, 1987a), it is important to control the possibility that socio-demographic differences in the predictor and outcome variables might lead to spurious relationships. We operationalized *gender* as a dummy variable (males= 0 and females= 1). We measured age in years.

Job Demands (task level). In order to test the Job Demands-Resources model, we used a composite of job demands variable. Martin (2003) derived this variable through an exploratory factor analysis. It included items from Rizzo, House and Lirtzman's (1970) role ambiguity scale and from the feedback scale of Hackman & Oldham's (1975) Job Diagnostic Survey (see Appendix 1). A factor emerged, composed of seven items. We reversed and assessed the items to verify ambiguity and lack of information in relation to one's own job. Answers scored on a 5-point Likert scale, ranging from (1) 'a great deal' to (5) 'none'.

Job Resources (task level). We also derived a composite of job resources variable, using an exploratory factor analysis (Martín, 2003). We included the items from Van de Ven and Ferry's (1980) Job Authority scale and one item proposed by Warr (1987), which assesses the opportunity for skill use (see Appendix 1). A factor emerged composed of five items which assessed the amount of workers job control and the opportunity to use their skills. We used a five-point scale (1) 'none', (5) 'a great deal'.

Individual Innovation. We used Whitely's (1987) three-item sub-scale individual content innovation behavior to measure individual innovation. This scale measures how frequently individuals try out new ideas in their work. Responses score on a 5-point scale, (1) '*Never*' to (5) '*Very frequently*'. Examples of these items read as follows: '*How often do you try new ways (procedures or methods) to do your work (task or assignments)?*'.

Data analyses

First to test our hypothesis, we used confirmatory factor analyses as implemented by AMOS (Arbuckle, 1997) in order to test the measurement model. Maximum likelihood estimation methods were used and the input for each analysis was the covariance matrix of the items. The goodness-of-fit of the model was evaluated using relative and absolute indices. The absolute goodness-of-fit indices calculated were the χ^2 goodness-of-fit statistic, Goodness-of-Fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI), and the Root Mean Square Error of Approximation (RMSEA). Because, χ^2 is sensitive to sample size, the probability of rejecting a hypothesized model increases when sample size increases. To overcome this problem, the computation of relative goodness-of-fit indices is strongly recommended. Following Marsh, Balla and Hau (1996) two such fit indices were computed: (1) the Comparative Fit Index (CFI) and (2) the Incremental Fit Index (IFI). Since the distribution of GFI and AGFI is unknown, no critical values exist. Values smaller than .08 for RMSEA are indicative of an acceptable fit and values greater than 0.1 should lead to model rejection. For CFI and IFI, as a rule of thumb, values greater than .90 are considered as indicating a good fit.

We used moderated regression analyses as the recommended method in order to test the interaction effects. Then we conducted a hierarchical multiple regression analysis to detect the main and

interaction effects of job demands and job resources on the dependent variable individual content innovation. We addressed the multicollinearity problem using centred scores (deviations from the mean values). Following the procedures of Cohen & Cohen (1983), we graphically represent significant interaction effects, and generate separate lines of regression from the regression equation to represent the demands-innovation relationship at both relatively high (+1 SD) and low (1 SD) levels of the moderator variable.

Results

Preliminary analyses

We tested two competitive models in order to find out whether job demands and job resources are part of a latent factor (i.e., job characteristics) or they are two correlated latent variables (i.e., job demands and job resources). The (M1) one-factor model did not fit the data ($\chi^2_{(54)}$= 433,137; p<.00; GFI= .71; AGFI= .59; RMSEA= .17; CFI= .57; IFI= .58). The modification indices did not improve this poor model. The (M2) two-factor model of job demands and job resources didn't fit the data very well ($\chi^2_{(53)}$= 192,477; p<.00; GFI= .87; AGFI= .81; RMSEA= .10; CFI= .84; IFI= .85). However, based on the modification indices, two pair of errors were correlated from the ambiguity scale: items 3 and 4, and the two items of feedback scale. These items are also similar in content (see Appendix 1). The revised model fits the data and postulates two no correlated underlying constructs: job demands and job resources ($\chi^2_{(51)}$= 123,239; p<.00; GFI= .92; AGFI= .89; RMSEA= .07; CFI= .91; IFI= .92). In order to compare this revised two-factor model with the revised one-factor model, we performed another CFA with the same two pair of errors correlated, but the model didn't fit the data ($\chi^2_{(52)}$= 313,218; p<.00; GFI= .78; AGFI= .67; RMSEA= .14; CFI= .70; IFI= .71), and the change of Deltha chi-square $\Delta\chi^2$ (189,979) Δdf (1) was significant (p<0.001).

Descriptive analyses

Table 1 presents the means, standard deviations (SD), zero-order Pearson correlations and reliabilities (Cronbach's α) for the variables investigated in this study. All the α values meet the criterion of 0.70 (Nunally, 1978). Results show that gender is negatively and significantly correlated with all the variables, except job demands. In this case the direction of the relationship is positive. Females and younger workers experience higher job demands, have lower autonomy and develop less innovative behavior in their work than men. Age is positively and significantly related to individual innovation: older workers are more innovative than younger employees. Finally, job resources are related to content innovation (i.e., the higher the job resources, the higher individual innovation is).

Regression analysis

We carried out a moderated hierarchical regression analysis in order to test the Job Demands – Resources model in the prediction of individual innovation (see Table 2). Firstly, we included control variables in the regression equation (i.e., gender and age) which yielded a significant effect (F= 10.32, p<.001, R2= .079). This effect was due to gender (β= -.313, p<.001), so females perform lower levels of individual innovation than males. In the second regression step, job demands and job resources yielded a significant effect on individual innovation (F= 13.31, p<.001, R2 change= .092). Job resources exerts a main effect on individual innovation (β= .250, p<.000), whereas Job demands does not. Finally, we saw that the interaction between job demands and job resources was significant (F= 3.38, p<.10, R2 change= .012). Figure 1 shows a graphical representation of the interaction effect. We plotted independent regression lines to represent the relationship between job demands and individual innovation, taking job resources values of 1 SD above and below the mean.

Results show a significant interaction effect between job demands and job resources in the prediction of individual innovation at work. The overall picture reflects that employees are more innovative in response to higher demands when they have high job resources. Thus, job resources would buffer the negative effect of high job demands on individual innovation. This result could indicate that those employees, who have more job resources, develop higher levels of individual innovation, probably in order to cope with high job demands.

Table 1
Descriptive analyses among the variables

Variable	M	SD	α	1	2	3	4	5	6
1. Gender				1					
2. Age	32.54	8.34		-.38**	1				
3. Job demands	2.34	0.71	0.73	.14*	-.11	1			
4. Job rresources	3.28	0.97	0.84	-.18**	.12	-.09	1		
5.Individual innovation	3.10	0.79	0.70	-.27**	.18**	-.11	.35**	1	
6. Job demands *Job resources				-.05	.05	-.09	-.06	.11#	1

p≤0.10; *p≤0.05; **p≤0.01

Table 2
Results for the Demand-Resources model

SOURCE	R2 increment	F	β
Step 1	.079	10.32***	
Gender			-.313***
Age			.006
Step 2	.092	13.31***	
Job demands			-.050
Job resources			.250***
Step 3	.012	3.38#	
Job Demands x Job Resources			.115#
Totals			
R2	.195		
F (6, 237)	9.31***		

p≤0.10; *p≤0.05; **p≤0.01; ***p≤0.001
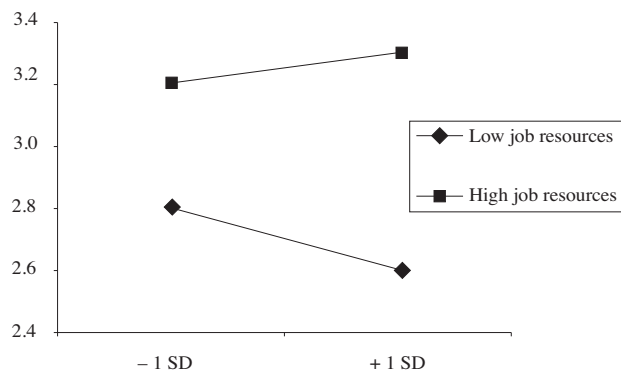β are the unstandarized regression coefficients from the final stage of the regression analysis

Figure 1. Regression of job demands × job resources on innovation

Discussion

The main aim of this study was to test the Job Demands-Resources Model in the prediction of individual innovation at work. Bunce & West (1994) suggested that individual innovation served as a problem-focused strategy used by employees to cope with higher demands actively. That is, workers may innovate their work environments and working methods in order to deal with job demands (Janssen, 2000). Our results support this assumption, depending on the level of job resources that the worker possesses.

Results provided evidence in support of the Job Demands-Resources Model in the prediction of individual innovation at work. Our data show a significant interaction effect between job demands and job resources, supporting the formulated hypothesis (*Hypothesis 1*). In this sense, a positive relationship between job demands and individual innovation emerges in those situations characterized by high resources. This result suggests that workers would cope with high demands by introducing changes in their job content, if they possess high job resources, which supports the conceptualization of individual innovation as a coping focused-problem strategy and follows the suggestions made by Bunce (1991); Bunce & West, (1994); Janssen (2000); Munton & West, (1995) and West, (1989, 1997). Moreover this result is in line with those obtained by authors like Janssen (2000), who found a similar effect between job demands and perceptions of 'effort rewards fairness' upon individual innovation, and could provide some support for the '*active-passive*' dimension of the JD-C model. Job demands have no main direct and significant effect upon individual innovation. Although such a result does not support our Hypothesis 2 and despite the results achieved by Bunce & West (1994) and Martín et al. (1997), West et al. (in press) obtained a similar result. Our data support a positive and significant main effect of job resources upon individual innovation, supporting our Hypothesis 3. Employees would introduce more changes in their job content if job resources were high. This result is consistent with those obtained by several authors (i.e., Amabile, 1988; Janssen, 2000; Martín, 2003; Martín et al., 1999; West, 1987 a, b; West, 1989) in relation to the positive influence of control and the opportunity that using skills has on innovation. Therefore, the evidence obtained in this work could not only improve the existing

knowledge in the development of innovative behaviour. It can be added to those few Job Demands-Resources Model studies (i. e., Bakker et al., 2005) which confirmed that certain job resources may buffer the impact of certain job demands on employees´ reactions. This body of research has been mainly concerned with outcomes as burnout and engagement, but not with individual innovation at work. Moreover, the obtained results show that demanding jobs seem lead to the development of new and improved ways of doing if job resources are high. So, it can be incorporated to the scarce literature that examines the 'active-passive' dimension of Karasek's Model.

In short, our results support the suggestion made by several authors who took into account the need to consider more dimensions than those analysed and to pay attention to the adjustment between the demands and buffering under study. Workers cope with job external demands through the introduction of new and improved ways of doing things, depending on the level of job resources that they possess. In this sense, and as employees seem to consider individual innovation as a proper way of dealing with higher levels of demands, it is necessary to gain a better understanding of the factors influencing the adoption of this particular problem-focused coping strategy (Bunce & West, 1994). This body of research could contribute to the so-called positive psychology (Seligman & Csikszentmihalyi, 2000), which implies a shift from traditional research focusing either on weakness and psychological malfunctioning or general negative outcomes toward positive outcomes and states.

We wish to indicate the limitations of this study. Firstly, given the cross-sectional nature of our data, it is not possible to establish the likely direction of relationships, and the co-relational evidence found does not necessarily reflect causality. As Janssen (2000) and Bunce & West (1994) noted, the direction of the relationship between job demands and individual innovation is unclear, and may well be bidirectional. Employees may innovate in order to cope with higher levels of job demands, but innovation could self-evidently create new workloads. Secondly, we have not considered the role played by individual differences because of the main focus of our interest, this being work characteristics such as job demands and job resources, and their effects on individual innovation.

Finally, our results have also implications on an applied level. An important advantage of the model proposed in this study is that job resources are within the control of the organization. In order to foster individual innovation, and to improve psychological well-being through this behavior, organization interventions have to deal with increasing job resources. In addition, such organizational intervention could be regarded as a primary risk prevention strategy (Boada, De Diego, Agulló, & Mañas, 2005). Thus in the future we need to undertake more research into the interactions at this level, taking into account more demands and resources dimensions.

Acknowledgements

References

Amabile, T.M. (1988). A model of creativity and innovation in organizations. *Research in Organizational Behaviour, 10*, 123-167.

Arbuckle, J.L. (1997). *AMOS users' guide*. *Version 3.6*. Chicago: Smallwaters Corporation.

Bakker, A., Demerouti, E., & Euwema, M. (2005). Job resources buffer the impact of job demands on burnout. *Journal of Occupational Health Psychology, 10*, 170-180.

Boada, J., De Diego, R., Agulló T., & Mañas, M.A. (2005). El absentismo laboral como consecuente de variables organizacionales. *Psicothema*, *17*, 212-218.

Bunce, D. (1991). *Innovation as a response to occupational stress*. Doctoral Thesis. University of Sheffield (England).

Bunce, D., & West, M.A. (1988). Innovation as a response to occupational to occupational stress. *The Occupational Psychologist, 6*, 22-25.

Bunce, D.J., & West, M.A. (1994). Changing work environments: Innovative coping responses to occupational stress. *Work & Stress, 8*, 319-331.

Cohen, J., & Cohen, P. (1983). *Applied Multiple Regression/Correlation Analysis for Behavioral Sciences, 2nd ed*. Hilsdale, NJ: Erlbaum.

Cohen, J., & Wills, T.A. (1985). Stress, social support and the buffering hypothesis. *Psychological Bulletin, 98*, 310-357.

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.

Folkman, S., & Lazarus, R.J. (1980). An analysis of coping in the middleaged community sample. *Journal of Health and Social Behaviour, 46*, 839-852.

Gracia, F., Silla, I., Peiró, J.M., & Fortes-Ferreira, L. (2006). El estado del contrato psicológico y su relación con la salud psicológica de los empleados. *Psicothema, 18*, 256-262.

Hackman, J.R., & Oldham, G.R. (1975). Development of the Job Diagnostic Survey. *Journal of Applied Psychology, 60*, 159-170.

Hardy, G.E., & West, M.A. (2000). *Interpersonal attachment and innovation at work*. Unpublished manuscript, Department of Psychology, University of Sheffield.

Hobfoll, S.E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist, 44*, 513-524.

Hobfoll, S.E. (2001). The influence of culture, community, and the nested-self in the stress process: Advancing Conservation of Resources Theory. *Applied Psychology: An International Review, 50*, 337-370.

Janssen, O. (2000). Job demands, perceptions of effort-reward fairness and innovative behaviour. *Journal of Occupational and Organizational Psychology, 73*, 287-302.

Jong, S. de, & Janssen, O. (2005). Innovative working behavior and stress as a response to role overload and role ambiguity. *Gedrag en Organisatie, 18*(2), 66-82.

Jonge, J. DE, Bosma, H., Peter, R., & Siegrist, J. (2000). Job strain, effort-reward imbalance and employee well-being: A large-scale cross sectional study. *Social Science and Medicine, 50*, 1317-1327.

Karasek, R.A. (1979). Job demands, job decision latitude, and mental strain: Implications for job redesign. *Administrative Science Quarterly, 24*, 285-378.

Martín, P. (1995): *Autonomía en el puesto y búsqueda de oportunidades de innovación durante la fase de entrada*. Tesis de Licenciatura. Universidad de Valencia (Spain).

Martín, P. (2003). *Demandas y recursos del ambiente de trabajo: una extensión del modelo demandas-control*. Tesis doctoral, Universidad de Valencia (Spain). Valencia: Publicaciones Universidad de Valencia. ISBN: 84-370-5635-7.

Martín, P., Cifre, E., & Salanova, M. (1999). Conductas de innovación y bienestar psicológico: validación del instrumento Conductas de innovación de contenidos. *Apuntes de Psicología, 17*, 235-248.

Martín, P., Martínez, I., Hernández, E., & Prieto, F. (1997). *Conductas de innovación en operarios del sector cerámico*. Contribution to the Seventh National Congress of Social Psychology. San Sebastián (Spain), October.

Martín, P., & Salanova, M. (2002). La innovación y la creatividad personales en el entorno organizacional: aproximaciones a su estudio. *Proyecto social, 9*, 145-161.

Marsh, H.W., Balla, J.R., & Hau, K.T. (1996). An evaluation of incremental fit indexes: A clarification of mathematical and empirical properties. In G.A. Marcoulides & R.E. Schumacker (Eds.): *Advanced structural equation modeling techniques* (pp. 315-353). Mahwah, NJ: Lawrence Erlbaum.

Merino, E., Carbonero, M.A., Moreno-Jiménez, & Morante, E. (2006). La escala de irritación como instrumento de evaluación del estrés laboral. *Psicothema*, *18*, 419-424.

Moya-Albiol, L., Serrano, M.A., González-Bono, E., Rodríguez-Alarcón, & Salvador, A. (2005). Respuesta psicofisiológica de estrés en una jornada laboral. *Psicothema*, *17*, 205-211.

Munton, A.G., & West, M.A. (1995). Innovations and personal change: Patterns of adjustment to relocation. *Journal of Organizational Behaviour, 16*, 363-375.

Nicholson, N., & West, M.A. (1988). *Managerial Job Change: Men and Women in Transition*. Cambridge: University Press.

Nunally, J.C. (1978). *Psychometric theory*. New York: McGraw-Hill.

Ripoll, P., Martín, P., & Gracia, F. (1994). *Estrategias de afrontamiento durante el proceso de incorporación a un puesto*. Contribution to the Twenty-third International Congress of Applied Psychology. Madrid (Spain), June.

Rizzo, J.R., House, R.J., & Lirtzman, S.I. (1970). Role conflict and role ambiguity in complex organizations. *Administrative Science Quarterly, 15*, 150-163.

Salanova, M., Grau, R., & Martínez, I. (2005). Demandas laborales y conductas de afrontamiento: el rol modulador de la autoeficacia profesional. *Psicothema*, *17*, 390-395.

Salanova, M., Peiró, J.M., & Schaufeli, W.B. (2002). Self-efficacy Specificity and Burnout among Information Technology Workers: An extension of the Job Demand-Control Model. *European Journal of Work and Organizational Psychology, 11*, 1-25.

Sargent, L.D., & Terry, D.J. (1998). The effects of work control and job demands on employee adjustment and work performance. *Journal of Occupational and Organizational Psychology, 71*, 219-236.

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 Behaviour*, *17*, 173-181.

Seligman, M.E.P., & Csikszentmihalyi, M. (2001). Positive psychology: An introduction. *American Psychologist*, *55*, 5-14.

Taris, T.W., Kompier, M.A.J., Lange, A.H. de, Schaufeli, W.B., & Schreurs, P.J.G. (2003). Learning new behavior patterns: A longitudinal test of Karasek's learning hypothesis among Dutch teachers. *Work & Stress, 17*, 1-20.

Theorell, T., & Karasek, R.A. (1996). Current issues relating to psychosocial job strain and cardiovascular disease research. *Journal of Occupational Health Psychology, 1*, 9-26.

Van de Ven, A.H., & Ferry, D.L. (1980). *Measuring and assessing organizations*. New York: Wiley and Sons.

Warr, P.B. (1987). Wo*rk, unemployment and mental health*. New York: Oxford University Press.

West, M.A. (1987a). Role innovation in the world of work. *British Journal of Social Psychology, 26*, 305-315.

West, M.A. (1987b). A measure of role innovation in the world of work. *British Journal of Social Psychology, 26*, 83-85.

West. M.A. (1989). Innovation amongst Health Care Professionals. *Social Behaviour, 4*, 173-184.

West, M.A. (1997). *Developing creativity in Organizations*. Leicester: British Psychological Society.

West, M.A. (2002). Sparking fountains or stagnant ponds. An integrative model of creativity and innovation implementation in work groups. *Applied Psychology: An International Review, 51*(3), 355-387.

West, M.A., & Farr, J.L. (1989). Innovation at work: Psychological perspectives. *Social Behavior, 4*, 15-30.

West, M.A., & Farr, J.L. (1990). *Innovation and creativity at work: Psychological and Organizational Strategies*. Chichester: Wiley.

West, M., Utsh, A., Borrill, C., & Dawson, J. (In press). Diversity, demands, groups processes and innovation in health care teams.

Whitely, W. (1987). *WOSY* intern document.