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A Clarification of the ERI Model: The Importance of Personality

Ms. Amanda Allisey

Deakin Business School, Deakin University, Melbourne, Australia

Email: afal@deakin.edu.au

Prof. John Rodwell

Deakin Business School, Deakin University, Melbourne, Australia

Email: john.rodwell@deakin.edu.au

Dr. Andrew Noblet

Deakin Business School, Deakin University, Melbourne, Australia

Email: andrew.noblet@deakin.edu.au

A Clarification of the ERI model: The Role of Personality

The present study aimed to investigate the role of personality in the effort-reward imbalance model along with the construct validity of overcommitment in relation to Type A behaviour. The study sample consisted of 898 operational law enforcement personnel from a large Australian police service. Factor analysis revealed that the overcommitment construct was psychologically related to, but distinct from, the Type A dimensions achievement striving, impatience-irritability and hostility despite the hypothesised interrelatedness of the measures. Multiple regression analyses including tests for curvilinear effects revealed that the Type A dimensions made a significant improvement to the prediction of employee wellbeing and job satisfaction. The results of the study provide theoretical implications in terms of the augmentation of the effort-reward imbalance model. [119 words]

Keywords: Attitudes, stress and stress management, organizational design, interpersonal behaviour

Psycho-social stressors are strongly linked to the development and progression of physical and mental ailments (Stansfield & Candy, 2006). A reasonable amount of stress is important to motivate employees and improve performance although, excessive and chronic stress can lead to strain reactions such as depression, anxiety (Stansfield & Candy, 2006) and lower overall wellbeing (Wang, Lesage, Schmitz & Drapeau, 2008). The work environment has been identified as a significant source of psychosocial stress (Michie & Williams, 2003). Specific conditions such as work overload, poor social support, low control and little influence in decision-making are often attributed to negative employee outcomes (Burke & Mikkelsen, 2006). Commonly, work stress models are applied in organizational settings to provide some insight into critical aspects of the work environment. The effort-reward imbalance model has gained popularity in the occupational stress arena in recent years and has been successfully applied to a wide range of occupations and organizations (van Vegchel, de Jonge, Bosma & Schaufeli 2005).

Effort-reward Imbalance Model

The effort-reward imbalance (ERI) theory was originally developed by Siegrist and his colleagues in response to a growing need to understand the sociological triggers of cardiovascular disease (Siegrist, Siegrist & Weber, 1986). The central tenet of the model is that failed reciprocity, in terms of the amount of effort expended at work and the amount of reward received in relation to those efforts, creates excessive distress, thus leading to increased risks to employee health (Siegrist, 1996).

The first formulation of the ERI model included two forms of effort (extrinsic and intrinsic) that interacted with reward thus forming the notion of an ERI. Extrinsic effort is operationalised as

external obligations and demands placed on the employee, while intrinsic effort is defined as a personal pattern of coping with demand at work termed 'need for control' (Siegrist, 1996). Three distinct rewards are identified in the model; money, esteem (eg, respect from superiors/co-workers) and status control (eg, job security).

Since its development the ERI model has been employed in many large-scale studies across a broad range of occupations (van Vegchel, de Jonge, Bosma & Schaufeli, 2005). The majority of this research has generally focused on cardiovascular disease (CVD) outcomes (eg, angina, coronary events, doctor assessed CVD) although, recent studies have also begun to investigate psychological and behavioural outcomes (eg Calnan, Wainwright & Almond, 2000). The most recent conceptualisation of the ERI model retained all three components (ie effort, reward and need for control) however, the 'need for control' element was renamed 'overcommitment' and included as both an independent risk factor for decreased health and a moderator of the effort-reward relationship. The main and interaction effects of the current ERI model are summarised in Figure 1 (see figure 1; Peter & Siegrist, 1999 , pg. 444).

Figure 1 about here

Previous research suggests that the ERI model in general, and overcommitment in particular, has a significant role in the development of disease and illness however, a number of issues relating to the measurement and operationalisation of the key components of the model exist. First, the construct validity of overcommitment has previously been questioned (Prekel, 2005). Exactly what the scale is measuring, and the overlap between overcommitment and theoretically related psychological constructs (eg, Type A dimensions) is relatively unknown. Second, the precise role of overcommitment in the development of disease and illness is inconsistent. The moderating role of overcommitment in the perception of an ERI is tested considerably less frequently than the ERI hypothesis and of those studies that include the interaction many fail to find a significant effect (Tsutsumi & Kawakami, 2004). Potential non-linear relationships may exist although research to-date has tended to assume the variables are linearly related to the various outcomes (van Vegchel et al., 2005).

Construct Validity of Overcommitment

Overcommitment in the ERI literature is generally described as a personality characteristic based on those cognitive, emotional, and motivational elements of Type A behaviour that reflect an excessive ambition in combination with the need to be approved and esteemed (Siegrist, 1998; Hanson, Schaufeli, Vrijkotte, Plomp & Godaert, 2000; van Vegchel, de Jonge, Bakker & Schaufeli, 2002).

The original overcommitment scale (ie, the need for control scale) was developed from the Type A construct and measured six dimensions of Type A behaviour; 1) need for approval, coping with success and failure; 2) competitiveness, independence during challenge and latent hostility; 3) work commitment, hard driving; 4) perfectionism, need for making plans; 5) impatience and disproportionate irritability, and; 6) inability to withdraw from work obligations (Siegrist, Starke, Chandola, Godin, Marmot, Niedhammer & Peter, 2004). Further analyses failed to replicate the hypothesised factor structure and considerable reliability issues were encountered (Appels, Siegrist & De Vos, 1997). In an attempt to improve its psychometric properties and reduce its length the overcommitment scale was reduced to six items reflecting mainly those components related to the 'Inability to Withdraw from Work' subscale with one item related to the disproportionate irritability and impatience subscale (Siegrist et al., 2004). Subsequently, it is relatively unclear exactly what overcommitment, in its widely tested form (van Vegchel et al., 2005) is measuring. For example, is there any overlap between the current overcommitment measure and theoretically related psychological constructs (ie Type A behaviour)?

Type A Personality Construct

Overcommitment was originally designed to encompass those aspects of the Type A personality construct that reflected an excessive need for control, achievement and approval and, were associated with CVD incidence (Matschinger, Siegrist, Siegrist & Dittmann, 1986; Siegrist & Marmot, 2004). The Type A construct has evolved over many years and is generally viewed as a personal style characterised by a strong need for control, chronic and extreme time urgency, impatience, restlessness, competitiveness, desire for recognition and advancement, aggressiveness and free-floating hostility (Friedman & Rosenman, 1974; Jenkins, 1975).

At the time the Type A construct was developed, the widely held belief was that Type A behaviour was an independent risk factor for CVD. Recent research has since suggested that there is no link between the global Type A behaviour pattern and disease however, particular Type A dimensions (eg, hostility) have been suggested as potential critical links to CVD (Myrtek, 2001; Myrtek, 2006).

In particular, achievement striving, impatience-irritability and hostility have been suggested as potential predictors of health and satisfaction within an occupational setting (Spence, Helmreich & Pred, 1987; Myrtek, 2006). Achievement striving is described as a personality trait that relates to a high need for achievement and approval. The impatience-irritability dimension is defined by extreme time urgency and a focus on quantity rather than quality (Spence et al., 1987). Hostility, while difficult to define, generally refers to those cognitive, motivational and affective components of personality that predispose an individual to react with anger, disgust, frustration, contempt and resentment (Buss, 1961; Saul, 1976). Prospective research of the relationship between the aforementioned dimensions of Type A with future development of hypertension has found that those who scored highly on the hostility and impatience-irritability dimensions (but not achievement striving) were more likely to have developed hypertension at the 15-year follow-up (Williams, Barefoot & Schneiderman, 2003; Yan, Liu, Matthews, Daviglius, Ferguson & Kiefe, 2003). In terms of the achievement striving dimension, the relationship with distress and negative physical health outcomes is less understood. Some authors suggest a positive influence of achievement striving on distress that may be related to Type A's tendency to strive for unrealistic achievements (Ward & Eisler, 1987). Alternatively, some studies have suggested that achievement striving may play a protective role in an organisational setting as those characterised by a high need for achievement tend to succeed in occupational and educational settings (Spence et al., 1987; Bluen, Barling & Barns, 1990). In terms of hostility, a recent meta-analysis by Myrtek (2001) found that there was a consistent significant relationship between hostility and CVD status. It is apparent that the Type A construct is multi-dimensional though it remains relatively unclear how these dimensions relate to the current measure of overcommitment.

Testing the ERI model

In general, the moderating role of overcommitment on the perception of an ERI is tested less frequently than the ERI hypothesis (Tsutsumi & Kawakami, 2004). A full test of the model includes both tests of main effects and interactions among the variables. A limited number of studies have included overcommitment in their analyses (van Vegchel, de Jonge et al. 2005). Among those that have a large proportion have found support for its independent effects on a range of outcomes (Tsutsumi & Kawakami, 2004). Those studies that test an interaction between overcommitment and ERI have reported inconsistent support for a moderating influence of overcommitment on ERI (van Vegchel et al., 2005). These inconsistent findings may be due to the uncertainty regarding the overcommitment construct.

A key shortcoming of much of the ERI research is the failure to account for curvilinear aspects of effort, reward and imbalance prior to testing for an interaction. Curvilinear effects would be expected especially when conducting analyses that use employee attitudes (eg, job satisfaction) and general health indices (eg, wellbeing) as the outcome. Significant curvilinear effects are often found with other stress models such as the Vitamin model (Warr, 1990), supporting their use in occupational stress studies.

The present study

The purpose of the present study is two-fold. First, we aim to clarify the overcommitment construct in terms of its relationship with Type A behaviour dimensions. Second, we aim to clarify the role of effort, reward and personality in the prediction of employee wellbeing and job satisfaction using a model that includes main effects, interaction effects and curvilinear aspects of the ERI and Type A variables. Two measures of employee wellbeing are included, context-specific wellbeing (ie, job satisfaction) and context-free wellbeing (ie, general health). It was hypothesised that:

Hypothesis 1. A significant amount of variance will be shared by the overcommitment construct and the Type A behaviour dimensions.

Hypothesis 2. The ERI model, in combination with Type A behaviour, will predict employee wellbeing and job satisfaction.

METHOD

Sample

The study sample consisted of operational law enforcement officers from two large regions within an Australian police service. All employees were sent a copy of the questionnaire via internal mail along with a covering letter from the police chief commissioner (N = 3310). A total of 898 operational employees returned their questionnaires, representing a response rate of 27%. Of the 898 participants, 717 (79%) were male and 843 (94%) were working full-time. In terms of tenure, 260 (29%), 293 (33%) and 345 (38%) employees reported that they had worked with the organisation for nine years or less, ten to nineteen years, and twenty years or more respectively. The majority of respondents were aged between 30 to 39 years (35%) and 40 to 49 years (39%).

Measures

Effort-Reward Imbalance

ERI was measured using a modified version of the self-report scales developed by Siegrist and Marmot (2004). In this study a single-stage response format was preferred over the original two-stage response format, as participants have previously reported difficulty understanding the original questionnaire (Dollard & de Jonge, 2003; Smith, Roman, Dollard, Winefield & Siegrist, 2005).

Effort was measured with five items that assessed employee perceptions of time pressures, amount of interruptions, responsibilities, pressure to work overtime, and increases in their work demands. The three specific types of rewards (monetary, esteem and security) were measured with a composite scale of eleven items. Participants were asked to indicate the extent to which they agreed (or disagreed) with each item on a five-point scale (1 = strongly disagree, 5 = strongly agree). Summed scores were created to measure effort and composite rewards with high scores related to high effort and reward.

Overcommitment

Overcommitment was measured with the recommended six item overcommitment scale (Siegrist & Marmot, 2004). Participants were asked to rate their agreement with the statements on a five-point Likert scale with responses ranging from strongly disagree (1) to strongly agree (5). High scores indicated high levels of overcommitment.

Type A Behaviour

The Type A dimensions achievement striving and impatience-irritability were measured using two subscales that form the Jenkins Activity Survey (Jenkins, Zyzanski & Rosenman, 1971). These subscales were measured with seven and five items respectively. Participants were asked to indicate the extent to which the item statements applied to them on a Likert scale ranging from one to five. Variable response categories were given for each item (eg much less than others/much more than others; very-hard-driving/very relaxed and easy going).

Hostility was measured with six items adapted from the indirect hostility subscale developed by (Buss & Durkee, 1957). Responses were given on a five-point Likert scale with participants asked to indicate how often they had displayed the stated behaviours in the last week. Responses ranged from 'not at all' (1) to 'all the time' (5).

Wellbeing

Wellbeing was measured with the General Health Questionnaire (GHQ – 12), developed by Goldberg and Williams (1988). The scale contained twelve items rated on a four-point scale with responses ranging from 'Much less than usual/not at all' (0) to 'More so than usual/much less than usual' (3). High scores on this measure were indicative of high levels of wellbeing.

Job Satisfaction

Job satisfaction was measured with an adapted version of the satisfaction scale from the Job Diagnostic Survey designed by Hackman and Oldham (1976). Respondents were required to rate three items on a seven point Likert scale, ranging from 'Extremely satisfied' (1) to 'Extremely dissatisfied' (7). These three items were summed to create an overall job satisfaction score, with higher scores associated with higher levels of job satisfaction.

RESULTS

Evaluation of the assumptions revealed that after following the procedures suggested by Tabachnick and Fidell (2001), the data met all requirements for factor analysis and regression analysis. Several missing values were identified however, they were randomly scattered throughout the dataset. In all analyses cases with missing values were treated with listwise deletion. Statistical analyses were

undertaken using SPSS 15.0 for Windows (SPSS Inc, 2006). Descriptive statistics, reliabilities and correlations are presented in Table 1.

Table 1 about here

Factor Analysis

A principal axis factoring analysis (FA) was conducted to investigate the construct validity of overcommitment in relation to Type A behaviour. The data was deemed suitable for FA after an inspection of the correlation matrix revealed many correlations above .3, a Kaiser-Meyer-Olkin value of .86 well above the recommended .6 and a significant Bartlett's Test of Sphericity (Tabachnick & Fidell, 2001). Given that there are unknown relationships between the items, an exploratory method was employed (Henson & Roberts, 2006).

An examination of the eigenvalues and screeplot produced during the FA suggested a five-factor structure. Specifically, five factors with eigenvalues above 1 (Kaiser, 1974) explained 19.5 per cent, 10.9 per cent, 6.2 per cent, 3.5 per cent, and 3.1 per cent of the variance respectively.

In order to aid interpretation, the data were subjected to Oblimin rotation. The rotated solution (Appendix A) revealed the presence of simple structure with each item loading strongly on only one factor and each factor defined by several strongly loading items. The pattern matrix indicated that five items relating to impatience-irritability loaded on factor 1, seven items relating to achievement striving loaded on factor 2 and six items relating to overcommitment loaded on factor 3. A two-factor structure best represented the hostility measure with three items of this scale loading on factor 5 and three items loading on factor 6. Closer examination of these factors revealed that factor 5 was defined by those items relating to 'expressive anger' while factor 6 was best interpreted as 'indirect hostility'.

Regression Analyses

Hierarchical regression analyses were performed for the outcome variables; wellbeing and job satisfaction. To test the full ERI model and the influence of additional Type A dimensions, blocks of independent variables were entered in the order of: (1) demographic variables, (2) effort and reward, (3) overcommitment, (4) the Type A dimensions (achievement striving, impatience-irritability, expressive anger, indirect hostility), (5) the non-linear terms (eg, effort²), (6) the two-way interaction

terms (eg, effort × reward, effort × overcommitment) and, (7) the three-way interaction terms (eg, effort × reward × overcommitment). Prior to their inclusion in the regression analyses the demographic variables were dummy coded (0, 1). Further, the ERI and Type A variables were centred before their non-linear and interaction terms were calculated in order to minimise the influence of multicollinearity (Cohen, Cohen, West & Aiken, 2003).

The results of the regression analyses are presented in Table 2.

Table 2 about here

The results of the multiple regression analyses in Table 2 indicate that the demographic variables had a small but significant effect on employee wellbeing ($R^2 = .02$) and job satisfaction ($R^2 = .02$).

Overall the model tested in this study accounted for a large percentage of the variance in the outcome variables. Specifically, the model accounted for 45.7% of the variance in wellbeing ($F(37, 776) = 19.526, p < .001$) and 32.2% of the variance in job satisfaction ($F(37, 789) = 11.605, p < .001$).

In terms of the ERI model, main effects of effort, reward and overcommitment were found for wellbeing whilst a main effect of reward and overcommitment was found for job satisfaction. The additional Type A dimensions included in the analyses made a significant improvement to the predictive ability of the model after controlling for the effects of the ERI variables. Achievement striving had a positive effect on reported levels of wellbeing and job satisfaction, while impatience-irritability was negatively related to the outcome variables.

Significant non-linear relationships between reward and wellbeing, expressive anger and wellbeing and achievement striving and job satisfaction were found when the squared variables were entered at the fifth step.

Three interactions were significant for the outcome variable wellbeing, the two-way interactions effort × indirect hostility and reward × expressive anger and a three-way interaction of effort × reward × overcommitment. In terms of job satisfaction three two-way interactions were significant. Specifically, the interactions between effort and impatience-irritability, effort and indirect hostility and, reward and expressive anger were significant for the outcome job satisfaction.

DISCUSSION

The first aim of this paper was to clarify the overcommitment construct and its relationship with Type A (H1). The results of the factor analysis indicated that a five-factor structure was present.

Interpretation of the five-factors revealed that theoretical assumptions regarding the interrelatedness of the variables were incorrect. These results indicate that the overcommitment construct is correlated with, but distinct from, the Type A dimensions achievement striving, impatience-irritability and hostility. The factor analysis also revealed that the indirect hostility measure included in this study was best represented by two factors labelled 'indirect hostility' and 'expressive anger'. This finding supports the multi-dimensionality of the hostility construct and the proposition that hostility is comprised of cognitive, motivational and behavioural components that can make it difficult to define (Miller, Jenkins, Kaplan & Salonen, 1995; Miller, Smith, Turner, Guijarro & Hallet, 1996; Donker, Breteker & van der Staak, 2000).

The second aim of this paper was to investigate the influence of Type A behaviour dimensions on the ERI model (H2). Inspection of the regression analyses revealed that employees who were aged 49 years or less reported higher levels of wellbeing however, this effect was relatively small in comparison to the ERI and Type A variables. Overall the results of this study support an additive ERI model in that high effort, low reward and high overcommitment were negatively associated with health outcomes (Siegrist et al., 2004). Further, the moderating effect of overcommitment on effort and reward was supported in relation to wellbeing. The addition of Type A dimensions to the ERI model in this study proved to add considerable predictive utility. In terms of the main effects of the Type A dimensions both achievement striving and impatience-irritability were significant independent predictors of employee wellbeing.

A negative non-linear relationship was found between achievement striving and job satisfaction. When combined with a positive main effect, this result illustrates that employees characterised by a moderate to strong need for achievement tend to report the highest level of job satisfaction while lower levels of achievement striving are typically related to lower levels of job satisfaction. This finding is consistent with previous research that suggests a protective or beneficial effect of achievement striving in an occupational setting (Spence et al., 1987; Bluen et al., 1990). The

higher-order analyses also revealed non-linear relationships between reward and expressive anger on the one hand and wellbeing on the other. When combined with the positive main effect of reward, the negative non-linear result indicates that there is a sharp increase in wellbeing when rewards are increased. At the upper end reward tends to reach a 'ceiling' and limited benefits to wellbeing are achieved after a certain point. The negative non-linear effect of expressive anger in the absence of a main effect suggests that an inverse-U relationship is present. Specifically, the result indicates that very low levels and very high levels of expressive anger are related to low levels of wellbeing. This result is consistent with a large body of research that suggests both anger suppression and excessive expression of anger can be detrimental to mental and physical health (Siegman, 1993; Miller et al., 1996) and, that moderate levels of anger expression are possibly protective of cardiovascular disease (Eng, Fitzmaurice, Kubzansky, Rimm & Kawaghi, 2003).

Numerous moderating effects were significant for both wellbeing and job satisfaction. Specifically, interactions between effort or reward on the one hand and indirect hostility, expressive anger and impatience-irritability on the other indicate that while both high effort and low reward have a negative impact on employee wellbeing, certain personality traits can act to enhance the negative effect. For instance, when the negative main effect of effort is considered in combination with the negative non-linear effect of expressive anger, it suggests that high effort will impact negatively on employee wellbeing. At both very high and very low levels of expressive anger however, high effort leads to significantly lower levels of wellbeing. The general message revealed above is that personality characteristics can have a large impact on employee perceptions of the work environment and subsequently, the way the work environment influences employee wellbeing.

Implications and Future Research

A number of theoretical implications are derived from the results of this study. First, Type A behaviour appears to be a worthwhile, and perhaps necessary, augmentation of the ERI model. Future research utilising the ERI model should include Type A dimensions to ensure that a comprehensive analysis of the influence of personality is conducted. Additionally, in order to strengthen the current findings future studies could investigate the utility of the augmented ERI-Type A model described in this study to predict CVD outcomes.

In terms of the Type A construct and its relationship with health outcomes, the present study provides support for the proposition that specific Type A dimensions (ie, impatience-irritability) are possible pathogenic components (Myrtek, 2001). Further, the presence of curvilinear relationships supports the trend away from assumptions of linearity amongst study variables, particularly within organizational studies. This approach is currently recommended to test more evolved models of work stress (eg. the Vitamin Model; Warr, 1990) and could be employed in future studies utilising the ERI model.

Limitations

There are some limitations that should be considered, namely the cross-sectional nature of the study design and the use of self-report data. Specifically, the sole use of self-report data raises some concerns particularly in terms of common-method variance. Further, the use of a cross-sectional design limits our understanding as to whether the Type A dimensions included in this study measured stable traits or affective states. The use of time-lagged data and objective would have strengthened the findings of this study.

Conclusions

The results of this study have contributed significantly to the literature. The validity of the overcommitment construct in relation to Type A behaviour has been clarified. Although originally developed as a characteristic style of coping based on those Type A dimensions related to a high need for approval and control, the current overcommitment measure appears to be somewhat distinct from the Type A personality construct. Overall the study provided support for an additive ERI model and a moderating effect of overcommitment on combined effort and reward. The addition of the Type A dimensions included in this study and the inclusion of non-linear terms were a valuable extension of the ERI model and subsequently, add to our understanding of the influence that personality has on employee wellbeing and job satisfaction.

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Figure 1: The Effort-Reward Imbalance Model



Source: Adapted from Peter and Siegrist (1999, p 444)

Table 1: Descriptive statistics, reliabilities and correlations among the study variables

	Mean	SD	A	1	2	3	4	5	6	7	8
1 Wellbeing	23.78	5.87	.92	-							
2 Job Satisfaction	12.95	3.95	.79	.39**	-						
3 Effort	18.51	3.77	.79	-.27**	-.11**	-					
4 Reward	35.29	6.60	.81	.49**	.53**	-.21**	-				
5 Overcommitment	16.85	5.40	.83	-.53**	-.26**	.40**	-.36**	-			
6 Achievement Striving	24.99	4.28	.76	.02	.16**	.32**	.05	.24**	-		
7 Impatience-Irritability	15.52	3.78	.75	-.41**	-.20**	.20**	-.25**	.38**	.18**	-	
8 Expressive Anger	5.33	2.52	.74	-.31**	-.10**	.03	-.16**	.24**	-.02	.40**	-
9 Indirect Hostility	6.07	2.26	.66	-.28**	-.12**	-.01	-.10**	.19**	-.08*	.36**	.39**

Note. *p<.05, **p<.001

Table 2: Summary of hierarchical regression analyses for variables predicting wellbeing and satisfaction

Independent Variable	Wellbeing				Job Satisfaction			
	<u>B</u>	<u>SE B</u>	β	ΔR^2	<u>B</u>	<u>SE B</u>	β	ΔR^2
Step 1								
Gender – Male	.13	.45	.01		-.23	.34	-.02	
Tenure – 9 years or less	-1.11	.57	-.09		-.61	.43	-.07	
Tenure – 10-19 years	-.66	.49	-.05		-.39	.37	-.05	
Age – 29 years or less	2.68	.83	.14**		.05	.63	.00	
Age – 30-39 years	1.97	.65	.16**		-.54	.48	-.07	
Age – 40 to 49 years	1.37	.49	.12**		-.24	.37	-.03	
Employment type – Full-time	-.55	.93	-.02	.02*	.04	.70	.00	.02*
Step 2								
Effort	-.17	.05	-.11**		-.03	.04	-.03	
Reward	.24	.03	.28**	.25**	.28	.02	.47**	.27**
Step 3								
Overcommitment	-.35	.04	-.32**	.11**	-.06	.03	-.09*	.00*
Step 4								
Achievement striving	.16	.04	.12**		.16	.03	.17**	
Impatience-Irritability	-.20	.05	-.13**		-.08	.04	-.08*	
Expressive anger	-.06	.10	-.03		.01	.07	.01	
Indirect hostility	-.67	.35	-.26	.07**	.44	.27	.25	.03**
Step 5								
Effort ²	-.02	.01	-.06		-.01	.01	-.05	
Reward ²	-.01	.00	-.08*		-.00	.00	-.02	
Overcommitment ²	-.01	.01	-.04		.00	.00	.02	
Achievement striving ²	.01	.01	.02		-.01	.01	-.09**	
Impatience-irritability ²	-.02	.01	-.05		.01	.01	.04	
Expressive anger ²	-.05	.02	-.10*		.01	.02	.03	
Indirect hostility ²	.03	.03	.15	.03**	-.04	.02	-.29	.01
Step 6								
Effort × impatience-irritability	-.00	.01	-.00		.02	.01	.09*	
Effort × indirect hostility	.03	.02	.07*		-.04	.02	-.09*	
Reward × expressive anger	-.02	.01	-.07*	.01	-.02	.01	-.08*	.02*
Step 7								
Effort × reward × overcommitment	-.00	.00	-.11**	.01	.00	.00	.02	.00

Note. Only significant interactions are reported in the Table. *p<.05, **p<.001

Appendix A. Items, Factors and Factor Loadings for the Overcommitment, Type A and Effort Scales

Items and Factors	Factor Loadings				
	I	II	III	IV	V
I. Impatience-Irritability					
1. Feel like hurrying person along when taking too long to make a point	-.51				
2. Easily irritated	-.76				
3. Do most things in a hurry	-.56				
4. Temper is hard to control/seldom angry	-.54				
5. Feelings waiting in line	.46				
II. Achievement Striving					
1. Job stirs you into action		-.46			
2. Generally very hard-driving/very relaxed		.49			
3. Your level of activity: too slow/too fast		-.52			
4. Take your work much more/much less seriously than most		.68			
5. Set deadlines or quotas in work/other activities		.64			
6. Amount of effort put forth is much more/much less compared to co-workers		.62			
7. Approach life in general much/much less seriously than co-workers		.43			
III. Overcommitment					
1. Overwhelmed by time pressures at work			.42		
2. Start thinking about work problems on waking			.69		
3. Can easily relax and 'switch off' work			-.63		
4. Sacrifice too much for my job			.51		
5. Work still on my mind when I go to bed			.86		
6. Trouble sleeping if I postpone something until tomorrow			.75		
IV. Expressive Anger					
2. Sometimes slam doors when mad				.58	
5. Can remember being so angry I picked up the nearest thing and broke it				.66	
6. Sometimes show my anger by banging on the table				.80	
V. Indirect Hostility					
1. Sometimes spread gossip about people I don't like					.30
3. When I am angry, I sometimes sulk					.82
4. I sometimes pout when I don't get my own way					.76