Promoting employee wellbeing: the relevance of work characteristics and organizational justice

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SUMMARY
Research focusing on the relationship between organizational justice and health suggests that perceptions of fairness can make significant contributions to employee wellbeing. However, studies examining the justice–health relationship are only just emerging and there are several areas where further research is required, in particular, the uniqueness of the contributions made by justice and the extent to which the health effects can be explained by linear, non-linear and/or interaction models. The primary aim of the current study was to determine the main, curvilinear and interaction effects of work characteristics and organizational justice perceptions on employee wellbeing (as measured by psychological health and job satisfaction). Work characteristics were measured using the demand–control–support (DCS) model (Karasek and Theorell, 1990) and Colquitt’s (2001) four justice dimensions (distributive, procedural, interpersonal and informational) assessed organizational justice (Colquitt, 2001). Hierarchical regression analyses found that in relation to psychological health, perceptions of justice added little to the explanatory power of the DCS model. In contrast, organizational justice did account for unique variance in job satisfaction, the second measure of employee wellbeing. The results supported linear relationships between the psychosocial working conditions and the outcome measures. A significant two-way interaction effect (control × support at work) was found for the psychological health outcome and the procedural justice by distributive justice interaction was significant for the job satisfaction outcome. Notably, the findings indicate that in addition to traditional job stressors, health promotion strategies should also address organizational justice.

Key words: workplace health promotion; employee wellbeing; organizational justice; job stress

INTRODUCTION
There is broad recognition in the workplace health promotion literature that psychosocial and organizational working conditions such as employee workloads, decision-making input and social support represent important avenues for protecting and promoting employee wellbeing [e.g. (Noblet 2003; Chu et al., 1997)]. An additional work characteristic, organizational justice, has recently been recognized as a ‘new psycho-social predictor of health’ that should also be taken into account when developing initiatives designed to prevent or reduce work-related ill-health (Elovainio et al., 2004, p. 1). There is a growing body of research-linking perceptions of injustice to a range of adverse health outcomes including lower wellbeing, increased depression and reduced job satisfaction (Kivimaki et al., 2004; Ylipaavalniemi et al., 2005). However, the majority of the research examining the justice–health relationship has been published since 2000 (Fujishiro and Heaney, 2007), and like any rapidly developing field, key elements of this relationship are yet to be fully investigated. For example, there is some uncertainty regarding the ability of fairness perceptions to account for variations in health outcomes after controlling for more established predictors of job stress (especially social support). Similarly, research in
this area has often assumed there is a direct, linear pathway between justice and health (i.e. where the health effects are proportional to the level of justice received), yet there are signs that interaction and non-linear effects may be involved. The current study aims to clarify the relationship between perceptions of justice and employee wellbeing by, first, assessing whether organizational justice contributes to employee wellbeing over and above the influence attributed to more established sources of job stress and, second, by testing for direct, interaction and non-linear effects of organizational justice dimensions. These analyses will not only help to determine whether organizational justice should be considered a key priority for people involved in developing workplace health promotion programs, but they will also shed light on how these conditions could be managed in order to improve health outcomes.

The demand–control–support (DCS) model

The more established job stressors examined in the current study will be measured using the demand–control–support (DCS) model (Karasek and Theorell, 1990). This model is one of the most widely used conceptual frameworks underpinning job stress research and has been found to have strong predictive capacity in a variety of occupational and industry contexts (De Lange et al., 2003). The DCS model proposes that high levels of job strain will be experienced when employees are faced with high job demands, and have relatively low levels of decision-making control and/or support to deal with those demands. Although there is mixed support for the interactions between demand, control and support, the results of cross-sectional and longitudinal research consistently provide strong evidence for the independent contributions of the component variables (see van der Doef and Maes 1999; de Lange et al., 2003 for reviews). We therefore expect the full DCS model (including direct and interaction effects) to provide a worthwhile reference point against which to measure the unique contributions of organizational justice.

Organizational justice: an independent predictor of health?

The term organizational justice is used to describe people’s perception of fairness in organizations (Greenberg, 1990). That is, whether organizational justice is perceived as present or absent within the workplace is a subjective assessment (Colquitt et al., 2001; Tepper, 2001). The concept of justice consists of four main forms: distributive, procedural, informational and interpersonal justice (Colquitt et al., 2001). Distributive justice focuses on the individuals’ perception of how fairly their ‘inputs’ (i.e. effort, experience and education) are rewarded in comparison to referent others (e.g. co-workers), while procedural justice refers to the perceived fairness of the procedures used to make justice-related decisions such as those involved in performance appraisals or promotion applications (Cohen-Charash and Spector, 2001). Studies have found that high levels of procedural fairness can off-set the negative effects of unfavorable distributive outcomes; a phenomenon sometimes referred to as the ‘fair process effect’ [e.g. (Greenberg and Folger, 1983; Shapiro and Brett, 1993)]. Interpersonal justice and informational justice (Greenberg, 1993), often seen as interactional forms of justice, refer to the interpersonal conduct and communication of the parties in charge of the resource allocation decisions (Bies and Moag, 1986; Cohen-Charash and Spector, 2001). Interpersonal justice focuses on the degree to which people are treated with respect and dignity, whereas informational justice refers to the extent to which employees receive timely and accurate information about the decision-making processes, or the outcomes of those processes (Colquitt, 2001).

In terms of studies testing the capacity of organizational justice to make independent contributions to employee health, findings generally indicate that perceptions of fairness provide unique insights into the work–health relationship. For example, Kivimaki et al. found that procedural and relational justice were independent predictors of a range of stress-related outcomes including self-rated health (Kivimaki et al., 2004), CHD risk scores (Kivimaki et al., 2005), minor psychiatric disorders (Elovainio et al., 2002), sickness absence (Kivimaki et al., 2003b) and depression (Ylipaavalniemi et al., 2005). Importantly, these relationships remained after adjusting for well-recognized psychosocial work stressors such as job demand, job control and, to a lesser extent, social support.

Although previous studies suggest that fairness perceptions account for variations in employee health that are independent of the...
DCS components, there are two major limitations of such research that make it difficult to make this conclusion. The first limitation is that the previous justice-stress research has often not comprehensively assessed the two-(demand × control) or three-way (demand × control × support) DCS interactions and it is therefore difficult to assess the extent to which justice would contribute beyond the direct and interaction effects of this model. The second limitation involves the inconsistent application of social support. A proportion of justice–health studies have not assessed work-based support, or have focused on emotional support [e.g. (Elovainio et al., 2002; Kivimaki et al., 2003a)]. In contrast, the support-matching hypothesis suggests that the effectiveness of support is heavily dependent on the degree to which the form and source of support matches the specific needs activated by the stressor [e.g. (Cutrona, 1990; Sarason et al., 1990)]. Disaggregated measures of social support that tap into the commonly recognized forms (emotional, instrumental, informational and appraisal) and sources (supervisors, colleagues, subordinates) of support at work are hence more likely to predict employee health. The current study will address the limitations of previous justice–health research by testing whether the four organizational justice dimensions make independent contributions to employee wellbeing over and above the full DCS model (i.e. direct and interaction effects of demand, control and support). In addition, social support will be operationalized according to the disaggregated definition (i.e. assessing multiple forms and sources).

**Testing for moderating and non-linear effects**

Much of the previous research examining the relationship between perceptions of justice and health has focused on a direct relationship (i.e. where perceptions of justice or injustice lead to increases or decreases in health). In contrast, few justice–health studies have considered the capacity for procedural justice to off-set the negative effects of unfavorable distributive justice decisions; that is, the ‘fair process effect’ (Tepper 2001; Francis and Barling, 2005). Unfavorable distributive justice decisions are considered an inevitable part of modern work life (particularly in an era of faced-paced, unpredictable organizational change) and further clarification of the moderating effects of procedural justice would provide important insights into how justice-related decisions should be managed in order to minimize the associated fall-out. A key aim of the current study will be to address the lack of information on the buffering effects of procedural justice by testing for two-way procedural × distributive justice effects.

Another pathway that has been largely overlooked in the organizational justice literature, and is still uncommon in job stress research, is the possibility that psychosocial working conditions may have a non-linear relationship with health outcomes (Rydstedt et al., 2006). The non-linear effects of working conditions are supported theoretically [e.g. Warr’s (1987) Vitamin model or Gardner’s (1986) activation theory] and, while the job stress research has tended to focus on linear relationships between working conditions and outcome variables, there is empirical evidence suggesting that an under- or over-supply of conditions such as job demands and social support could have deleterious effects on employee wellbeing (De Jonge et al., 2000, Xie and Johns, 1995). However, this latter research has not considered the non-linear effects associated with organizational justice. Despite the negative effects of injustice are well documented, support for their curvilinearity would suggest that the positive effects of organizational fairness may be attenuated at high levels and/or that health and satisfaction would deteriorate when perceptions of justice are high. This being the case, practitioners would need to monitor employees’ justice perceptions and be aware that efforts to improve perceptions of justice may have strong initial benefits, if initially inadequate, as well as diminishing returns if already high. The current investigation will test for curvilinear effects for the DCS and justice variables. In addition to the tests for DCS (demand × control; demand × control × support) and justice (distributive × procedural justice) interactions, the non-linear test will provide important information on how the working conditions examined in this study need to be modified in order to create fairer and less stressful working environments.

**Measuring employee wellbeing**

In the current study, psychological health and job satisfaction will be used to measure employee wellbeing. Both outcomes are
considered to be important dimensions of employee wellbeing and have been used in previous studies examining the relationship between working conditions and individual wellbeing [e.g. (De Jonge and Schaufeli, 1998, Noblet, 2003, Rydstedt et al., 2006)]. These dimensions are based on Warr’s (1996) conceptualization of employee wellbeing whereby psychological health is regarded as a ‘context-free’ measure of wellbeing and, as such, provides an indication of people’s wellbeing irrespective of the setting (i.e. work and non-work) (Warr, 1996). In contrast, job satisfaction is referred to as a ‘context-specific’ measure of employee wellbeing and conveys how people are feeling about themselves in relation to their job. Utilizing both these measures will therefore provide a more detailed understanding of the extent to which adverse working conditions may impact on particular dimensions of wellbeing.

METHODS

Sample
Members of a state-based police force in Australia were notified about the study and asked to fill out a survey. Participation was voluntary and ethics approval was obtained by the relevant bodies. The data used within the present study were drawn from one region, with 1764 sworn members, which included members of the police, recruits, PSOs and reservists. There were 587 respondents, representing a 33.3% response rate, and the respondents were aged as follows: 11.2% was 20–29 years, 31.7% was 30–39 years, 39.0% was 40–49 years, 17.5% was 50–59 years and 0.5% was aged 60 and over. Further, 77.5% of the participants were male and 22.5% were female. In terms of tenure, 1.4% had worked for the police force for less than 12 months, while at the other extreme, 42.1% of the total sample had worked within the police force for more than 20 years. Comparisons with personnel data were undertaken to determine the extent to which the sample was representative of all sworn members within the participating region. Breakdowns on the basis of age were not available; however, according to the gender and tenure profiles of the region, study participants were not significantly different from the larger workforce (e.g. for gender, $\chi^2(1) = 0.13$, ns).

Measures
The questionnaire used in this study consisted of three sections. The first section included scales to address the predictor variables, job demands, job control, social support and organizational justice, while the second section consisted of the outcome or target variables, psychological health and job satisfaction. The third section required respondents to supply the demographic information (i.e. gender, age and tenure).

Job demand
Participants completed an 11 item measure of workload developed by Caplan et al. (1980) to assess job demand, encompassing physical workload (i.e. how often does your job require you to work very fast?) and psychological demand (i.e. how much time do you have to think and contemplate?). The items were answered on a five-point Likert-type scale (1 = ‘rarely’ and 5 = ‘very often’) with higher scores indicating higher levels of job demand (Cronbach’s alpha = 0.74).

Job control
A nine-item scale was used to measure participants’ degree of job control (Karasek, 1985). Participants selected the most appropriate answer for each item on a five-point Likert-type scale (1 = ‘strongly disagree’ to 5 = ‘strongly agree’). Higher scores indicate increased job control (Cronbach’s alpha = 0.72).

Social support
Respondents indicated the extent to which they receive social support from work and non-work sources using a seven-point Likert-type scale (1 = ‘very little’ to 7 = ‘very much’). These two scales were developed by Etzion (1984) and incorporated multiple forms (e.g. emotional, instrumental and appraisal) and sources (e.g. supervisors, co-workers, family and friends) of support. Higher scores on these scales indicate greater support (Cronbach’s alpha = 0.86 for support at work and 0.88 for non-work support).

Organizational justice
Employees’ perceptions of organizational justice were assessed with Colquitt’s (2001) four justice scales, using a total of 20 items (Colquitt,
Seven of the items pertain to procedural justice (Cronbach’s alpha = 0.84), four to distributive justice (Cronbach’s alpha = 0.86), another four to interpersonal justice (Cronbach’s alpha = 0.92) and five to informational justice (Cronbach’s alpha = 0.91). Items were scored according to a five-point Likert-type scale (1 = ‘very often’ to 5 = ‘rarely’). Participants’ scores on each scale indicate the extent to which they perceived each type of organizational justice within their workplace. Higher scores on each scale were indicative of higher perceived justice.

**Psychological health**

The 12-item version of the General Health Questionnaire (Goldberg and Williams, 1988) was used to assess psychological health. The items were scored on a four-point Likert-type scale (0 = ‘much less than usual’ to 3 = ‘more so than usual’) and items summed to create an overall psychological health score for each participant. Higher scores indicated more positive psychological wellbeing (Cronbach’s alpha = 0.91).

**Job satisfaction**

A 16-item scale was used to determine employees’ perceived levels of job satisfaction (Warr et al., 1979). The items were measured on a seven-point Likert-type scale (1 = ‘extremely satisfied’ to 7 = ‘extremely dissatisfied’) and high scores indicate high job satisfaction (Cronbach’s alpha = 0.88).

**RESULTS**

All data were screened and analyzed using SPSS Version 15. Data for the total sample was examined for input errors, missing values and outliers (following Tabachnick and Fiddell, 2001). Cases with outliers identified through Mahalanobis’ distance were deleted. After removing outliers and missing data, psychological health had $n = 546$ and job satisfaction had $n = 555$. Further checks found that one of the variables, job control, needed to have a reflect and square root transformation for the analysis onto psychological health. The seven predictor variables (job control, demand, support at work, non-work support, procedural, distributive, interpersonal and informational justice) were ‘centered’, whereby the means for each variable were subtracted from each participant’s score (Aiken and West, 1991) before they were included in the interaction and squared terms. The squared terms were included in the step before the interaction terms, to more strictly test the interaction effects by removing nonessential multicollinearity (Cohen et al., 2003).

Table 1 summarizes the means and standard deviations for each variable, as well as correlations between the study variables. Demand had a small to moderate significant negative correlation with psychological health and job satisfaction. Job control and work-based support were both correlated to psychological health and job satisfaction, although these associations were relatively small for wellbeing ($r = 0.168$ and $r = 0.370$, respectively) compared to job satisfaction ($r = 0.468$ and $r = 0.658$ respectively). Non-work-based social support had a small to moderate positive correlation with psychological health and job satisfaction. All four types of organizational justice were significantly correlated with psychological health and job satisfaction. Finally, the correlation between the two outcome measures (job satisfaction and psychological health) was significant, indicating that higher levels of the work-specific measure of wellbeing were associated with higher levels of context-free wellbeing.

Two separate hierarchical multiple regressions were undertaken to assess the independent contributions made by the justice dimensions and to test for linear, non-linear and interaction effects. The overall equations displayed in Table 2 significantly explained the variance in psychological health, $R^2_{\text{adj}} = 0.139, F(24, 407) = 3.893, p < 0.001$ and job satisfaction, $R^2_{\text{adj}} = 0.564, F(24, 402) = 23.961, p < 0.001$. The results of these analyses indicate that the majority of the explained variance in both measures of employee wellbeing was attributed to the DCS variables. Although the main effects of the four justice dimensions failed to account for additional variance when examining psychological health, some of the additive effects of the justice dimensions were significant for job satisfaction. Job demand had a significant negative main effect on psychological health and job satisfaction. Work-based social support, positively predicted both psychological health and job satisfaction. Although job control was not significantly related to
psychological health, it did predict job satisfaction. The association between non-work support and the two measures of wellbeing failed to reach significance. Similarly, none of the four forms of justice (i.e. distributive, procedural, interpersonal and informational) demonstrated significant main effects when regressed against psychological health. However, distributive justice, interpersonal justice and informational justice were significantly associated with job satisfaction.

In relation to the proposed DCS and justice interactions, one of the two-way interaction effects (control × support at work) was significantly related to the psychological health variable and the distributive × procedural justice interaction was significantly related to job satisfaction. There was no evidence of curvilinear relationships.

**DISCUSSION**

The aims of the present study were to (i) determine the extent to which organizational justice contributes unique variance to employee well-being over and above more established sources of job stress (e.g. demand, control and support), and (ii) identify the nature of the relationship between the psychosocial working conditions (represented in the DCS and organizational justice models) and employee wellbeing, by measuring for direct, interaction and non-linear effects. Although the proportion of variance in psychological health attributed to organizational justice was not significant, the justice variables added to the explanatory power of the DCS for job satisfaction. In terms of the nature of the relationships between the working conditions and individual wellbeing, the results generally support direct, linear pathways between the psychosocial work characteristics and the measures of wellbeing. The curvilinear effects were not evident in the present study; however, two significant interaction effects were found. In particular, one DCS interaction effect was significantly related to psychological health and the sole organizational justice interaction effect was significantly related to job satisfaction. The theoretical and practical implications of the specific findings will be discussed in the following sections.

**The independent contribution of organizational justice**

Overall, the regression analyses indicate that perceptions of organizational justice were a much stronger predictor of the work-specific measure of job satisfaction than they were when examining the context-free measure of psychological health. It was expected that psychosocial working conditions would capture larger portions of the variance in job satisfaction, as this outcome specifically describes how people feel about themselves in relation to their work (Rydstedt et al., 2006). Nevertheless, the inability of justice to capture a significant proportion of the variance in psychological health is in contrast to previous justice–health research where perceptions of fairness predicted mental health measures even after controlling for the effects of traditional stressors such as job demands and job control [e.g. (Elovainio et al.]]

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**Table 1: Correlations between work characteristics, organizational justice, psychological health and job satisfaction**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Job control</td>
<td>31.78</td>
<td>4.47</td>
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<tr>
<td>2. Demand</td>
<td>39.12</td>
<td>5.02</td>
<td>0.065</td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>3. Support at work</td>
<td>39.03</td>
<td>9.73</td>
<td>0.296**</td>
<td>-0.258**</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>4. Support outside work</td>
<td>47.72</td>
<td>9.73</td>
<td>0.119**</td>
<td>-0.086*</td>
<td>0.508**</td>
<td></td>
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</tr>
<tr>
<td>5. Procedural justice</td>
<td>16.07</td>
<td>5.22</td>
<td>0.229**</td>
<td>-0.096*</td>
<td>0.423**</td>
<td>0.253**</td>
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<td></td>
</tr>
<tr>
<td>6. Distributive justice</td>
<td>9.48</td>
<td>4.00</td>
<td>0.098</td>
<td>-0.241**</td>
<td>0.362**</td>
<td>0.163**</td>
<td>0.522**</td>
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<td></td>
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</tr>
<tr>
<td>7. Interpersonal justice</td>
<td>13.65</td>
<td>3.79</td>
<td>0.301**</td>
<td>-0.022</td>
<td>0.360**</td>
<td>0.150**</td>
<td>0.469**</td>
<td>0.337**</td>
<td></td>
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</tr>
<tr>
<td>8. Informational justice</td>
<td>14.43</td>
<td>4.80</td>
<td>0.269**</td>
<td>-0.079</td>
<td>0.426**</td>
<td>0.169**</td>
<td>0.550**</td>
<td>0.426**</td>
<td>0.703**</td>
<td></td>
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</tr>
<tr>
<td>9. Psychological health</td>
<td>22.64</td>
<td>6.24</td>
<td>0.168**</td>
<td>-0.295**</td>
<td>0.370**</td>
<td>0.236**</td>
<td>0.181**</td>
<td>0.146**</td>
<td>0.180**</td>
<td>0.226**</td>
<td>0.703**</td>
</tr>
<tr>
<td>10. Job satisfaction</td>
<td>68.55</td>
<td>13.63</td>
<td>0.468**</td>
<td>-0.297**</td>
<td>0.658**</td>
<td>0.292**</td>
<td>0.491**</td>
<td>0.485**</td>
<td>0.432**</td>
<td>0.508**</td>
<td>0.452**</td>
</tr>
</tbody>
</table>

*p < 0.05, **p < 0.01.
The lack of effect of organizational justice on psychological health may be due, in part, to an important operational difference between the current investigation and previous justice–health research. Specifically, the measure of social support used in the current study assessed multiple sources (e.g. supervisors and colleagues) and multiple forms (e.g. emotional, instrumental and appraisal) of support. This disaggregated approach is in contrast to the emotion-focused measure adopted in a number of previous studies in this area [e.g. (Elovainio et al. 2002; Kivimaki et al., 2003a)] and may explain why the beta values for work-based support were relatively strong (Table 2). Moreover, the inclusion of the disaggregated social support measures may be one of the key reasons why, after accounting for the DCS conditions, the justice dimensions failed to account for additional variance in the psychological health variable. Unfair outcomes or treatment may still have an impact on job satisfaction, because they are more workplace oriented. However, the consequences of injustice may not be severe or persistent enough to have a discernable impact.

Table 2: Summary of hierarchical regression analysis for variables predicting psychological health and job satisfaction

<table>
<thead>
<tr>
<th></th>
<th>Psychological health</th>
<th></th>
<th>Job satisfaction</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE B</td>
<td>β</td>
<td>B</td>
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<tr>
<td>Step 1</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Demand</td>
<td>-0.216</td>
<td>0.066</td>
<td>-0.163**</td>
<td>-0.523</td>
</tr>
<tr>
<td>Job control</td>
<td>-0.857</td>
<td>0.469</td>
<td>-0.091</td>
<td>0.816</td>
</tr>
<tr>
<td>Support at work</td>
<td>0.126</td>
<td>0.040</td>
<td>0.186**</td>
<td>0.536</td>
</tr>
<tr>
<td>Support outside work</td>
<td>0.054</td>
<td>0.036</td>
<td>0.082</td>
<td>-0.059</td>
</tr>
<tr>
<td></td>
<td>ΔR²</td>
<td></td>
<td></td>
<td>0.132</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demand²</td>
<td>-0.019</td>
<td>0.011</td>
<td>-0.085</td>
<td>-0.007</td>
</tr>
<tr>
<td>Job control²</td>
<td>-0.022</td>
<td>0.014</td>
<td>-0.079</td>
<td>0.019</td>
</tr>
<tr>
<td>Support at work²</td>
<td>0.002</td>
<td>0.003</td>
<td>0.028</td>
<td>0.002</td>
</tr>
<tr>
<td>Support outside work²</td>
<td>0.000</td>
<td>0.003</td>
<td>0.004</td>
<td>-0.007</td>
</tr>
<tr>
<td></td>
<td>ΔR²</td>
<td></td>
<td></td>
<td>0.010</td>
</tr>
<tr>
<td>Step 3</td>
<td></td>
<td></td>
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<tr>
<td>Job control × demand</td>
<td>0.027</td>
<td>0.017</td>
<td>0.080</td>
<td>0.043</td>
</tr>
<tr>
<td>Job control × support at work</td>
<td>0.038</td>
<td>0.011</td>
<td>0.211***</td>
<td>-0.018</td>
</tr>
<tr>
<td>Job control × support outside work</td>
<td>-0.013</td>
<td>0.009</td>
<td>-0.074</td>
<td>0.002</td>
</tr>
<tr>
<td>Workload × support at work</td>
<td>0.010</td>
<td>0.010</td>
<td>0.062</td>
<td>-0.012</td>
</tr>
<tr>
<td>Workload × support outside work</td>
<td>-0.008</td>
<td>0.008</td>
<td>-0.054</td>
<td>0.009</td>
</tr>
<tr>
<td></td>
<td>ΔR²</td>
<td></td>
<td></td>
<td>0.030</td>
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<tr>
<td>Step 4</td>
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</tr>
<tr>
<td>Job control × demand × support at work</td>
<td>0.000</td>
<td>0.002</td>
<td>-0.010</td>
<td>0.002</td>
</tr>
<tr>
<td>Job control × demand × support outside work</td>
<td>0.002</td>
<td>0.002</td>
<td>0.037</td>
<td>-0.001</td>
</tr>
<tr>
<td></td>
<td>ΔR²</td>
<td></td>
<td></td>
<td>0.001</td>
</tr>
<tr>
<td>Step 5</td>
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<td>Procedural justice</td>
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<td>0.074</td>
<td>0.003</td>
<td>0.148</td>
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<tr>
<td>Distributive justice</td>
<td>-0.113</td>
<td>0.092</td>
<td>-0.071</td>
<td>0.638</td>
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<tr>
<td>Interpersonal justice</td>
<td>0.008</td>
<td>0.110</td>
<td>0.005</td>
<td>0.328</td>
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<tr>
<td>Informational justice</td>
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<td>0.091</td>
<td>0.069</td>
<td>0.379</td>
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<tr>
<td></td>
<td>ΔR²</td>
<td></td>
<td></td>
<td>0.007</td>
</tr>
<tr>
<td>Step 6</td>
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<tr>
<td>Procedural justice²</td>
<td>-0.020</td>
<td>0.014</td>
<td>-0.095</td>
<td>-0.016</td>
</tr>
<tr>
<td>Distributive justice²</td>
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<td>0.024</td>
<td>-0.015</td>
<td>-0.058</td>
</tr>
<tr>
<td>Interpersonal justice²</td>
<td>0.006</td>
<td>0.020</td>
<td>0.018</td>
<td>0.057</td>
</tr>
<tr>
<td>Informational justice²</td>
<td>-0.005</td>
<td>0.013</td>
<td>-0.021</td>
<td>-0.019</td>
</tr>
<tr>
<td></td>
<td>ΔR²</td>
<td></td>
<td></td>
<td>0.007</td>
</tr>
<tr>
<td>Step 7</td>
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<td></td>
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<tr>
<td>Procedural justice × distributive justice</td>
<td>0.006</td>
<td>0.025</td>
<td>0.019</td>
<td>0.071</td>
</tr>
<tr>
<td></td>
<td>ΔR²</td>
<td></td>
<td></td>
<td>0.000</td>
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*p < 0.05, **p < 0.01, ***p < 0.001.
on context-free measures of health once the full DCS has been taken into account.

The relatively weak connection between the justice variables and psychological health in the regression results should not diminish the importance of the justice–satisfaction relationship. The majority of working adults spend between one- and two-thirds of their waking hours at work and thus the level of satisfaction they derive from their job can have a large impact on their overall quality of life (Murphy and Cooper, 2000). Both the DCS variables and organizational justice were closely associated with job satisfaction and hence the results of this study suggest that both sets of variables need to be taken into account when developing strategies that can help create more satisfying workplaces.

The influence of individual DCS variables

The multiple regression results involving both psychological health and job satisfaction provided strong support for the individual DCS variables—demand, control and social support. Not only were the additive effects of these three variables significant, but all were significant for at least one of the outcome variables. Work-based social support predicted both psychological health and job satisfaction, suggesting that support provided by supervisors and colleagues can offer valuable opportunities for protecting and enhancing employee wellbeing. In terms of specific strategies to boost social support, the results of this and other research indicate the there is a need for managers, human resource personnel and workplace health professionals to ensure that employees have access to multiple forms (emotional, appraisal, instrumental and informational) and sources (supervisors and colleagues) of support [e.g. (Cutrona 1990; Noblet 2003)]. Direct supervisors, in particular, need to have the capacity to provide this more adaptable style of support as they are often the ones who have the authority and the expertise to address many of the challenges faced by employees.

Job demands predicted both psychological health and job satisfaction. The relationship between demand and the two indicators of employee wellbeing were in the expected direction, with high demands being negatively related to mental health and job satisfaction. This result parallels previous research involving job demands [e.g. (Jeurissen and Nyklicek, 2001)] and indicates that the pace, volume and complexity of the demands faced by employees should be monitored to ensure these do not undermine the wellbeing of employees. The remaining DCS dimension, job control, was closely associated with job satisfaction, although, in a similar manner to a number of other studies, it did not predict psychological health [e.g. (Akerboom and Maes, 2006)]. This result suggests that providing employees with the opportunity for greater skill discretion and decision-making authority may provide important benefits for employees’ job satisfaction.

The direct effects of organizational justice on employee wellbeing

Unlike previous studies examining the relationship between organizational justice and employee-level outcomes [e.g. (Schmitt and Dorfle, 1999; Cohen-Charash and Spector 2001)], the present study included all four dimensions of fairness (i.e. distributive, procedural, interpersonal and informational). Three of the fairness dimensions—distributive, interpersonal and informational justice—predicted the context-specific measure of employee wellbeing. The significant relationship between these forms of justice and job satisfaction suggests that employees are more likely to be satisfied with their jobs if they: (i) perceive they are being fairly rewarded, (ii) believe they are being interacted with in a respectful manner and (iii) receive timely and accurate explanations about the processes leading to the justice-related decision (Colquitt, 2001). There are a number of strategies organizations can adopt in order to promote distributive, interpersonal and informational fairness including; ensuring that equity (rewarding employees based on their contributions) and equality (maintaining reasonable levels of parity between employees) are taken into account when distributing resources such as promotions, bonuses or new work roles; providing all employees involved in a particular justice-related decision with accurate information about the decision-making processes; and giving employees and explanations as to why decision outcomes may have been delayed and carrying out these processes in a friendly manner that is respectful to employees (Cropanzano et al., 2007). Although these strategies are directly
aimed at increasing perceptions of fairness, the findings from this and previous studies indicate they are likely to also enhance job satisfaction (Cohen-Charash and Spector, 2001; Judge and Colquitt, 2004).

Non-linear and interaction effects

The relationships between the psychosocial conditions represented in the current study and the outcome variables were linear. That is, increases or decreases in a certain condition were associated with proportional increases or decreases in the outcome measures. In addition to the significant direct main effects of the DCS components and certain types of organizational justice found in this study, there was also evidence of interaction effects.

The present study tested for both two-way and three-way DCS interaction effects. For the psychological health target variable, the two-way interaction between job control and work-based social support was significant. This result suggests that these two conditions work in a combination to enhance the mental health of employees. For example, a high level of control over work tasks for someone with high levels of support at work would provide an extra ‘bonus’-like benefit in terms of psychological health. Further, this interaction effect suggests that if organizations have to make a choice between allowing employees greater control over their work or alternatively, providing them with a more supportive working environment, they can focus health promotion strategies on first improving social support (because it also has a positive main effect). Similarly, the lack of a significant main effect between control and the context-free measure of wellbeing indicates that focusing purely on increasing the number of opportunities for employees to choose their own work tasks may not necessarily lead to improved psychological health.

Although none of the DCS interaction terms were significantly related to job satisfaction, the procedural justice by distributive justice interaction effect was significant for job satisfaction. The significant relationship between these two types of organizational justice indicates that the positive benefits from the distributive justice main effects can be given a boost when there are also high levels of procedural justice. In a manner similar to previous research, the significant procedural by distributive justice interaction effect appears to indicate that employees who consider the outcomes allocated, or not allocated, to them as unfair will be less dissatisfied if they perceive that the decision-making procedures to decide the allocation of outcomes were carried out in a fair manner [e.g. (Greenberg and Folger, 1983; Shapiro and Brett, 1993)]. This result is particularly relevant to contemporary organizations, as it is difficult to satisfy candidates who have all applied for the same job promotion, for instance, as only one person can be allocated the position. By ensuring that decision-making procedures are fair however, individuals finding themselves in such a circumstance may be more forgiving of the unfavorable decision.

There are two limitations that need to be kept in mind when interpreting the results of the current study. We utilized a cross-sectional study design involving employees from one occupational group (uniformed law enforcement officers). Future research in this area would therefore benefit from testing the combined DCS-justice model across time and with employees from multiple occupations and sectors. Further, due to reliance on self-report data obtained from the same source, for both the predictor and target variables, common method variance is a possibility (Podsakoff and Organ, 1986). However, the latter limitation is more relevant to the target variables, wherein additional objective measures of the outcome variables would have enhanced the validity of the findings.

CONCLUSION

The results of the present study indicate that there is some potential for focusing on organizational justice as a means of protecting and enhancing employee wellbeing. In particular, the strong performance of the DCS across both psychological health and job satisfaction suggests that there would be a considerable value in using this framework and building on this foundation to include organizational justice. Strategies aimed at improving distributive, interpersonal and informational fairness may be particularly useful in achieving higher levels of job satisfaction. Further, processes that consider procedural justice may offset the negative effects of decisions that employees perhaps
deem as low on distributive justice. Overall, the present study has provided additional support for the health promoting potential of the DCS, but more importantly, the findings have added to the growing research base linking organizational justice with employee wellbeing.

FUNDING
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REFERENCES


