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The interaction between organizational justice and job characteristics: Associations with work attitudes and employee health cross-sectionally and over time

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**ABSTRACT:**

The present study investigates to what extent main and interactive effects of overall organizational justice and job characteristics shape employees' work attitudes (organizational commitment, intention to stay) and health (mental health, somatic health) cross-sectionally and over the time of one year. Questionnaire data from 429 Swedish accountants show that generally both organizational justice and job characteristics had main effects on all outcomes at both time points. Interactions between organizational justice and job characteristics were found for every studied job characteristic (demand, control, support), for both time points but mainly for intention to stay and somatic health. The results show that perceptions of organizational justice and job characteristics can have additive and multiplicative synergetic effects for work attitudes and employee health.

**KEYWORDS:** organizational justice; overall justice; job characteristics; DCS model

A central issue in organizational research concerns how to create organizations where the employees are both healthy and willing to give their best for the benefit of their organizations (e.g., Barnard, 1938; Katz & Kahn, 1978). From the various factors the literature has identified as central for achieving such beneficial effects, the present paper uses two sets of explanatory factors as points of departure. The first of these is concerned with creating organizational structures, policies and procedures that make employees more likely to be engaged, motivated and healthy. Research based on this starting point focuses on leadership, human resource management as well as organizational practices and policies to ensure that employees are treated according to ethical standards and in accordance with labor law and antidiscriminatory acts (cf. Pfeffer, 1997). A major model pertaining to this approach is the concept of justice at the workplace (Cropanzano et al., 2007), which highlights how organizational policies and practices are perceived by employees. However, within the organizational structure, employees work at different places, in different teams, positions, and jobs. The other point of departure, therefore, is job design, that is, organizations' attempts to create job characteristics that foster employee health, well-being as well as positive attitudes towards work and the organization. A prominent theory based on this approach is the Job Demand-Control-Support (DCS) model (Johnson and Hall, 1988; Karasek and Theorell, 1990). A substantial body of literature has established main effects of both organizational justice and job characteristics on work-related attitudes and health, in the sense that fair treatment and positive job characteristics, respectively, have been found to be associated with more favorable work attitudes and better health.

Given that employees are exposed to and perceive organizational policies and practices as well as their immediate work environment simultaneously, there are surprisingly few studies on if and how perceptions of organizational justice and job characteristics in combination may have an influence on employee attitudes and health. There are two possible ways in which such combinatory or synergetic effects may arise. First, organizational justice and job characteristics

may have additive effects; that is, beyond the effect of justice perceptions, employees' experiences of their immediate work environment are likely to have an additional impact on work- and health-related outcomes. Second, organizational justice and job characteristics may have multiplicative effects, which would be the case if the effects of justice partly depend on how employees perceive their job characteristics.

Some research has been conducted following this line of reasoning, but none of the previous studies on organizational justice has taken into account the full range of work environment perceptions that cover all three components of the DCS model. In addition, although it is likely that management efforts to improve both fair treatment of employees (Colquitt et al., 2001) and job design (Häusser et al., 2010) have beneficial consequences for employees, few studies have systematically tested how justice and job characteristics together may affect both work-related outcomes (such as organizational commitment and intention to stay) and employee health and well-being (such as mental and somatic health). Furthermore, there is limited knowledge of whether main and interactive effects of organizational justice and job characteristics hold over time, since the bulk of previous research has been based on cross-sectional data (de Jonge and Kompier, 1997; Holtz and Harold, 2009).

Accordingly, this study makes an important contribution to the existing literature as it has the following aims: (a) to test the main and interactive effects of organizational justice and job characteristics (job demands, job control, social support) for employees, (b) to investigate such effects on both work- and health-related outcomes (organizational commitment, intention to stay, mental health, somatic health), and (c) to examine such relations both cross-sectionally and over time in order to test for the longevity of the proposed effects.

### **Organizational justice and employee well-being**

Perceptions of justice in organizations can stem from different sources and entities, and are communicated by organizational representatives ranging from the CEO and the board, over the different levels of management down to the immediate supervisor. Employees derive justice information from the philosophy and the visions of the organization together with policies and practices with which the organizational goals and strategies are enforced. Furthermore, employees form an overall fairness judgment that pertains to the organization (Ambrose and Schminke, 2009; Lind, 2001b; van den Bos and Lind, 2002) from recognizing and evaluating what decisions are made at the organizational level, the kinds of procedures used, as well as how the organization treats the employees and provides them with information.

While justice initially was defined in terms of the fairness of decision outcomes (distributive justice), subsequent research has also identified dimensions pertaining to the procedures that lead to decisions (procedural justice), to the treatment people receive (interpersonal justice), and to the fairness of explanations (informational justice) (Colquitt, 2001; Cropanzano et al., 2001). In recent years, several researchers have suggested a shift towards assessing overall organizational justice perceptions (cf. Ambrose and Schminke, 2009). It has been argued that overall organizational justice covers the breadth of the individual dimensions of the justice concept, even constitutes a more parsimonious and accurate depiction of people's experiences of justice, accounts for variance beyond the separate dimensions, and exerts a more proximal influence on outcomes (see Ambrose and Schminke, 2009; Lind, 2001a).

There are different perspectives on why individuals care about justice in the first place. Based on instrumental models, it could be argued that justice serves economical, self-interested reasons (see Cropanzano et al., 2001; Thibaut and Walker, 1975). Based on relational models one may say that justice serves identity-fostering purposes by reaffirming group status (Tyler and Blader, 2003; Tyler et al., 1992). In the field of social exchange theories, it is argued that justice triggers individuals to see their work relation as a social exchange relationship (Colquitt

et al., 2013). When employees evaluate the employer as fair, they may feel obligated to reciprocate the benefit of fairness received from the organization (Blau, 1964; Masterson et al., 2000). These feelings of reciprocation are then expected to be expressed in positive work attitudes such as organizational commitment and intention to stay (Colquitt et al., 2013).

Organizational justice has also been regarded as an antecedent of employee health (Judge and Colquitt, 2004; Ndjaboué et al., 2012). The models of justice have so far not been too explicit about the reasons or mechanisms for why justice matters for people's health. In their review on justice perceptions and health outcomes, Robbins et al. (2012) describe a possible causal association in which lack of justice is understood as being a job stressor that creates psychological stress reactions, like negative emotional states and perceived stress, and fosters more long-term chronic conditions such as depression and other health impairments. These results pertain to the lack of justice, and it may be expected that the presence of justice then prevents these negative reactions and stress perceptions. This expectation aligns with the idea proposed in the multiple needs model in which Cropanzano et al. (2001: p.177) suggest that justice perceptions fulfill psychological needs and, as predicted by self-determination theory (Deci and Ryan, 2000), fulfillment of psychological needs is related to higher psychological well-being. When employees have the perception that their organization and employer are fair, this may therefore create positive affect (Colquitt et al., 2013), and thus also better well-being (Diener, 2000). If the organization treats its employees fairly, organizational actions in different situations become more predictable for employees and give them feelings of certainty and control, which in turn has been shown to be linked to well-being (Lind and van den Bos, 2002).

When investigating the general assumption of beneficial main effects of organizational justice, it is pivotal to take into account outcomes from both the work and health domain. Organizational commitment, which is one of the most frequently studied attitudes in the work domain, has central importance to organizations as a committed workforce extends helpful

behaviors beyond formal requirements, and performs better (Meyer et al., 2002). Another outcome highly relevant for this line of research is the intention to stay in the organization, as it is a good indicator of the state of the workforce but also something which may have important implications for management because employee turnover can be very costly for the organization (Mobley et al., 1979; Pfeffer, 1997). Based on the notion that workers' well-being has been put into relation with organizational effectiveness (Wright and Cropanzano, 2004), in addition to being of central importance for the workers themselves, we examine the effects of justice also on health outcomes, namely both mental and somatic health.

Looking at the empirical evidence for these expected links, perceptions of organizational justice have been associated with positive work attitudes like organizational commitment (Colquitt et al., 2001; Meyer et al., 2002) and work behaviors like intention to stay (Aryee et al., 2002; Cohen-Charash and Spector, 2001). However, longitudinal evidence for the association between organizational justice and outcomes in the work domain is still rather scarce and pertains mainly to turnover intention (for examples see Bal et al., 2011; Sparr and Sonnentag, 2008), and we found very few studies reporting on justice as a predictor of organizational commitment over time (for an exception see Michel et al., 2010). However, the longitudinal justice–health link has been investigated more often and perceptions of organizational justice have been linked to subsequent health indicators like somatic and mental health (Elovainio et al., 2002; Robbins et al., 2012). Consequently, we expect the following:

*H1: Organizational justice is positively associated with a) organizational commitment, b) intention to stay, c) mental health, d) somatic health.*

### **Synergetic effects of organizational justice and job characteristics**

The second point of departure adopted to improve the likelihood of a healthy and committed workforce deals with job design, the immediate workplace and the work tasks in a given

occupation. The immediate work environment, as reflected in perceived job characteristics, may affect employees' well-being because the perceived conditions of the work environment can make it more or less likely that psychological needs of employees can be fulfilled. For instance, Van den Broeck et al. (2008) showed that job characteristics satisfy psychological needs, and there is ample evidence for positive job characteristics to have beneficial effects on employees' degree of motivation, and also in terms of how satisfied and psychologically healthy they are (Hackman and Oldham, 1976; Häusser et al., 2010; Karasek and Theorell, 1990).

According to the Job Demand-Control-Support (DCS) model (Johnson and Hall, 1988; Karasek, 1979), which has been widely applied across occupational and industry contexts (de Lange et al., 2003), job characteristics are typically discussed with respect to job demands, job control and social support (de Jonge et al., 2010; Karasek and Theorell, 1990). Given the inconsistent evidence for the proposed interactions between these three job characteristics (see Beehr et al., 2001; for reviews of high-quality studies see de Lange et al., 2003; van der Doef and Maes, 1999), the bulk of research on employee attitudes and well-being has focused on the main effects of job demands, job control and social support (de Lange et al., 2003). Consequently, the present study focuses on the separate effect of each of the job characteristics job demands, job control and social support, in addition to the effects of organizational justice.

*Job demands.* The job demand component of the DCS model is often defined in terms of quantitative aspects such as workload and time pressure (Karasek et al., 1998; van der Doef and Maes, 1999). That is, work is understood as being more demanding if there is too much work to do in comparison to the time available, and jobs characterized by such high demands are proposed to influence work attitudes, psychological well-being, and health outcomes negatively. The reasoning behind such predictions is that meeting job demands requires effort which impairs the energy level, makes recovery necessary and may even result in insufficient recovery (Bakker and Demerouti, 2007). In self-determination theory, the need for competency

is defined as achieving desired outcomes, managing challenges, and to feel effective by successfully acting and meeting requirements (Van den Broeck et al., 2008). With regard to the psychological needs perspective, high job demands may threaten the fulfillment of competency needs, as high demands may make it more difficult to complete tasks on time and to a certain standard (Fernet et al., 2013).

Considering job demands in conjunction with organizational justice, it appears likely that there are additive effects, such that job demands are related to work and health outcomes beyond the effect of organizational justice. Both organizational justice and job demands are relevant for the prediction of employee well-being but they both fulfill different functions and pertain to different domains. Organizational justice pertains to the organizational level and fulfills the function of giving employees an indicator of whether to trust the organizations' authorities and also give rise to the experience of positive affect. Job demands pertain to the task level; they may be challenging but also able to drain resources of the employee and, in this case, potentially threaten the fulfillment of psychological needs. The empirical results are somewhat contradictory. For instance, meta-analytic studies and literature reviews have found a high workload to be associated with higher levels of organizational commitment (Mathieu and Zajac, 1990), but also with a stronger inclination to leave the organization (Griffeth et al., 2000) and with poorer mental (Luchman and González-Morales, 2013) as well as physical health (van der Doef and Maes, 1998). In sum, we therefore expect:

*H2: When controlling for organizational justice, job demands are negatively associated with a) organizational commitment, b) intention to stay, c) mental health, d) somatic health.*

At the start of the section, we also made the point that synergetic effects not only mean additive effects but can also be realized through interactive effects in the sense that a given job

characteristic, such as job demands, may change the way in which organizational justice is related to outcome factors. Few previous studies have analyzed the interplay between job demands and organizational justice in relation to well-being and work attitudes. Heponiemi et al. (2008) specifically studied how perceptions of organizational justice (interactional and procedural dimensions) and job demands (excessive work load) relate to time-based work–family conflict, which is often related to lower individual well-being. The other study on synergetic effects in relation to well-being and work attitudes, by Janssen (2001), analyzed interactive effects of job demands and justice (in terms of a balance between efforts and rewards at work) on work and supervisor satisfaction. In both studies, significant interaction terms were found which showed that perceptions of high quantitative work demands were associated with weaker beneficial effects of justice. This is in accordance with what could be expected theoretically: factors in the work environment which negatively affect well-being (such as high job demands), may exert their influence by reducing the overall positive influence that high organizational justice is expected to have on employee well-being. A similar effect could be expected for work attitudes, and therefore we propose:

*H3: Job demands moderate the association between organizational justice and its outcomes, such that the association between justice and outcomes is weaker when job demands are high.*

*Job control.* The job control component of the DCS model refers to the extent to which employees have opportunities to influence their tasks and general work activity (Häusser et al., 2010). In other words, having control means that employees have discretion to decide upon the order in which tasks are carried out, or are free to choose how best to solve a certain task satisfactorily (Karasek, 1979; Karasek and Theorell, 1990). Job control is often theorized to affect work attitudes and well-being positively, and such beneficial effects can be attributed to job control making it easier to deal with job requirements, facilitating the achievement of work

goals or even stimulating skill development at work (Bakker and Demerouti, 2007). Job control caters to one of the central constructs of self-determination theory (Deci and Ryan, 2000), namely autonomy, which is described as individuals' need for exerting influence over what they experience and how they behave. In addition to this, the need for autonomy involves acting in agreement with one's own values (Deci & Ryan, 2000), and can be fulfilled by for instance having the opportunity to make choices of one's own (Deci and Ryan, 2000; Van den Broeck et al., 2008). In contrast to job control, which according to the DCS model, involves having decision latitude and is defined as the autonomy to make work-related decisions (de Jonge et al., 2010), need for autonomy is defined as the desire to self-organize behavior and experiences (Deci and Ryan, 2000). Job control may then make it more likely for employees to fulfill the need for autonomy (Fernet et al., 2013), and job control should therefore be positively related to employee well-being, even when the effect of justice has been accounted for. Previous research has shown both organizational justice and job control to be positively associated with work attitudes and health-related outcomes (e.g. Spell and Arnold, 2007), and both are beneficial yet different sources for the satisfaction of different psychological needs at the workplace. Therefore, we expect:

*H4: When controlling for organizational justice, job control is positively associated with a) organizational commitment, b) intention to stay, c) mental health, d) somatic health.*

In terms of interactive effects, we would expect that the positive effects of organizational justice on well-being outcomes are stronger when job control is high since both organizational justice and control over one's job constitute resources for the individual, and both are known to relate to more positive work attitudes and higher well-being. In line with this, Chen et al. (2010) found that the positive effect of high justice perceptions (distributive justice) on job satisfaction and organizational commitment was stronger among individuals reporting high control over work

time than among those with low control. On the basis of this, the following hypothesis is proposed:

*H5a: Job control moderates the association between organizational justice and its outcomes, such that the association between justice and outcomes is stronger when job control is high.*

Out of the three job characteristics in the DCS model, job control has been tested in combination with organizational justice in previous research to a greater extent than demands and support. In the evidence available, three studies have found that high job control reduced the negative effects of low justice on various outcomes (e.g., sickness absence, job satisfaction, turnover intention and psychological distress) (Elovainio et al., 2005; Haar and Spell, 2009; Rousseau et al., 2009). This finding is contrary to the results of Chen and our Hypothesis 5a. Hence, there may be an alternative way in which job control may affect the relation between justice and its outcomes – high control can compensate for low justice. More specifically, when employees perceive low organizational justice (which hampers need fulfillment at work), the possibility to exert control at work may serve to reduce the otherwise negative consequences resulting from low perceived justice at work. An alternative hypothesis for how job control and justice may interact therefore is:

*H5b: Job control moderates the association between organizational justice and its outcomes, such that high job control compensates negative effects of low organizational justice.*

*Social support.* Social support, which was added to the Demand-Control model to better account for the psychosocial work environment (Johnson and Hall, 1988), refers to the availability of support by others in the work environment, at the workplace or in the work team. Social support is regarded as being associated positively to employee well-being while social

isolation and lack of support is considered as harmful. Social support caters to the need to relate and belong to a work group and to have colleagues to confide in (Van den Broeck et al., 2008). Social support from the work environment, such as colleagues, specifically targets the importance of receiving help with the specific work task while organizational justice pertains to an individual perception that the organizational authorities keep to fair behavior and moral conduct. A recent review of prospective studies concluded that both social support and organizational justice play important roles in shaping employee outcomes (Ndjaboué et al., 2012). Thus, we argue that social support exerts additive effects beyond organizational justice:

*H6: When controlling for organizational justice, social support is positively associated with a) organizational commitment, b) intention to stay, c) mental health, d) somatic health.*

Regarding interactive effects, the theoretically based expectation is the same for social support as for job control, because both these job characteristics represent resources at work (Bakker and Demerouti, 2007). Hence, we would expect that the positive effects of organizational justice on attitudinal and well-being outcomes are stronger when social support is high, in the sense that organizational justice and social support reinforce one another (Ndjaboué et al., 2012). Again, however, the empirical evidence on interactive effects between organizational justice and social support is slim and contrary to our expectation. In a previous study, which investigated the combination of distributive and procedural justice with co-worker support for the prediction of psychological distress, Rousseau et al. (2009) found that high social support buffered the negative effects of low organizational justice. Therefore, also for social support, we pose two competing hypotheses:

*H7a: Social support moderates the association between organizational justice and its outcomes, such that the association between justice and outcomes is stronger when social support is high.*

*H7b: Social support moderates the association between organizational justice and its outcomes, such that high social support compensates negative effects of low organizational justice.*

## **METHOD AND ANALYSIS**

### **Data collection procedure**

Data for this study were collected with questionnaires sent out to employees of a private Swedish organization, with two cover letters, one from the organization and one from the research group. The latter contained a description of the objectives of the study, instructions on how to fill out the questionnaire, and information about confidentiality and data treatment. A postcard reminding those who had not replied was sent out after approximately two weeks and a second reminder with a new copy of the questionnaire was sent out after almost a month's interval. The first wave of data collection (T1) started in September 2008 and was concluded in late October 2008. The second data collection wave (T2) started in August 2009 and was completed in November 2009, resulting in a time lag of around 12 months between the two waves of the data collection. At the initiative of the company the questionnaires were accompanied by a voucher for a paperback book at T1 and a scratch-ticket at T2.

### **Sample**

The sample consisted of employees at an accounting firm that specialized in providing organizations with financial consulting and advising. Their headquarters is located in a large Swedish city, but there are offices dispersed across Sweden. The research group was given

access to all employees in the organization. At T1, the sample consisted of 782 employees from which 567 usable responses were returned (73 %). At T2, the sample consisted of 806 employees from which 579 usable responses were returned (72%). Of those who responded at T1, 429 subjects had complete data also at T2, for a longitudinal response rate of 76%. Women constituted the majority of the sample (59 %), the mean age ranged from 23 to 68 years ( $M = 42$ ,  $SD = 11$ ), 71 per cent had a university or college degree, 56 per cent were parents with children under the age of 12 years, 82 per cent worked full-time, and the average length of tenure was 7 years ( $SD = 7$ ).

To investigate if there were any differences between respondents who participated at both time points and those who only participated at T1, an analysis of non-response was conducted. This analysis revealed that there were no differences in gender, level of education, job demands, social support, mental health and somatic health between the two sets of respondents. However, those who participated in both waves reported significantly higher T1 levels of organizational justice, job control, organizational commitment, intention to stay, and were older as compared to the T2 dropouts ( $p < .05$ ). While this shows that the effective sample used to test predictions within and over time was fairly representative of all T1 responders, it also suggests that the effective sample may have had somewhat better justice perceptions and more positive work attitudes.

### **Measures**

If not stated otherwise, the response alternatives ranged from 1 (strongly disagree) to 5 (strongly agree). The outcome measures were assessed at both time points (T1 and T2) and the predictors (demographics, justice, job characteristics) at T1. Internal consistency (reliability) was calculated with Cronbach's alpha.

*Organizational justice* was assessed with a scale developed by van der Vliet and Hellgren (2002) based on suggestions by Lind (2001a). The three-item scale reflects a general sense of being fairly treated by the employer, the items being “I feel that my employer treats me fairly”, “My employer’s judgments are usually fair” and “I find that my employer behaves fairly towards me”. A high score reflects feelings of fairness ( $\alpha=.86$ ).

*Job demands* were measured with a scale by Beehr, Walsh and Taber (1976) of role overload. The three items measure a feeling of having too much to do in too little time (e.g., “It fairly often happens that I have to work under a heavy time pressure”). A high score represents higher quantitative workload ( $\alpha=.72$ ).

*Job control* was measured with a scale based on Hackman and Oldham (1975) and Walsh, Taber and Beehr (1980), and adapted by Sverke and Sjöberg (1994). The four-item scale measures the extent of autonomy and influence over how the work is carried out, an example being “There is scope for me to take own initiatives in my work”. A high score indicates a stronger sense of control ( $\alpha=.82$ ).

*Social support* was measured with a three-item scale based on Caplan, Cobb, French, Harrison, and Pinneau (1975) on social support by colleagues, an example being “I always receive the help I need from my co-worker when difficulties in my work arise”. A high score reflects a sense that social support is available ( $\alpha=.79$ ).

*Organizational commitment* was measured with three items from Allen and Meyer’s (1990) affective commitment scale, an example item being “I enjoy discussing my organization with people outside it”. A high score reflects strong affective commitment to the organization ( $\alpha_{T1}=.78$ ,  $\alpha_{T2}=.79$ ).

*Intention to stay* was measured with a three-item scale developed by Sjöberg and Sverke (2000), an example item being “I am actively looking for other jobs” (reverse coded). A high score reflects weak intention to leave the job ( $\alpha_{T1}=.85$ ,  $\alpha_{T2}=.83$ ).

*Mental health* was assessed with the 12-item General Health Questionnaire (GHQ-12) by Goldberg (1979), an example item being “Over the past two weeks, have you felt constantly under strain?” The response scale went from 1 (always) to 4 (never). A high score indicates a greater degree of mental health ( $\alpha_{T1}=.85$ ,  $\alpha_{T2}=.84$ ).

*Somatic health* was measured with a scale by Hellgren, Sverke and Isaksson (1999), based on Andersson (1986). The scale consists of ten items, a high score reflecting the absence of physical health complaints, such as back pain, heart or chest problems and neck/shoulder pain ( $\alpha_{T1}=.74$ ,  $\alpha_{T2}=.76$ ).

For *demographic variables*, we included age (in years), gender (1=woman, 0=man) and socio-economic status in terms of education (1=university or college degree, 0=lower education). These demographics were chosen as control variables as they in previous research have been shown to be relevant for health (Kawachi, 2006) and work attitudes alike (Bal et al., 2011).

## **Analysis**

Separate hierarchical moderated regression analyses were performed for each outcome variable, within time (T1 outcome measures) and over time (T2 outcome measures). The additive and interactive effects of organizational justice and each of the components of the DCS model were tested in separate analyses. Demographic variables were first entered into the model to control for their influence on the outcomes. Organizational justice was added in Step 2, while in the third step one job characteristic was included in the regression equations. In Step 4, the two-way interaction between organizational justice and the job characteristic was entered into the model. The interaction terms were created with the cross-product of the standardized variables.

Following McClelland and Judd (1993), the interactions were tested on a 10 per cent level of significance due to the difficulty of discovering interaction effects because of the relatively low statistical power of interaction terms in field studies.

## RESULTS

Descriptive statistics (means, standard deviations, intercorrelations) for the variables are presented in Table 1. The regression results are displayed in three tables (Table 2 for job demands, Table 3 for job control, Table 4 for social support).

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### **Main effects of organizational justice**

In all regression models, organizational justice had positive associations with the work outcomes (organizational commitment and intention to stay) and health outcomes (mental and physical health). This supports Hypotheses 1a-d both cross-sectionally and over time.

### **Synergetic effects of job demands and organizational justice**

Regarding Hypothesis 2, concerning the main effects of job demands, we found that job demands improved the prediction of the outcomes beyond organizational justice in six out of eight times. Job demands were not predictive of T1 organizational commitment and the relation between job demands and T2 organizational commitment was not negative as proposed but positive although the bivariate correlation was non-significant, thus suggesting a suppressor effect. Hypothesis 2a is therefore not supported. The results provide partial support for Hypothesis 2b, as demands were negatively associated with intention to stay cross-sectionally but not over time. The negative associations between job demands and health outcomes, both

cross-sectionally and over time, provide complete support for Hypothesis 2c (mental health) and 2d (Somatic health).

Hypothesis 3 concerned the interactive effect between organizational justice and job demands. A marginally significant positive interaction was found for T1 organizational commitment. As can be seen in Figure 1, the slope for justice was steeper ( $B=.46$ ,  $t=9.66$ ,  $p<.001$ ) when job demands were high than when job demands were low ( $B=.35$ ,  $t=7.29$ ,  $p<.001$ ). Contrary to predictions, the positive effect of organizational justice on commitment was stronger when job demands were high. There was a significant positive interaction for the prediction of T1 intention to stay (see Figure 2); the slope for justice was steeper ( $B=.49$ ,  $t=10.02$ ,  $p<.001$ ) when demands were high as compared to low ( $B=.36$ ,  $t=7.28$ ,  $p<.001$ ). In other words, under the condition of low demands, the relationship between organizational justice and intention to stay was weaker. Thus, even though we found two interactions for the work outcomes, the shape of the interactions was different than expected in Hypothesis 3. Concerning health outcomes, there was an interaction effect for somatic health cross-sectionally (Figure 3) and over time (Figure 4). For T1 and T2 somatic health, the high demand slope was steeper ( $B_{T1}=.19$ ,  $t=5.46$ ,  $p<.001$ ;  $B_{T2}=.15$ ,  $t=4.17$ ,  $p<.001$ ) than the low demand slope ( $B_{T1}=.07$ ,  $t=1.95$ ,  $p=ns$ ;  $B_{T2}=-.01$ ,  $t=-0.20$ ,  $p=ns$ ). As can be seen in the figures, again, the shape of interactions was different than expected in Hypothesis 3. Contrary to predictions, there was a positive association between organizational justice and somatic health when job demands were high, whereas for low job demands organizational justice was unrelated to somatic health. Regarding the time aspect, we found mostly cross-sectional interactions but for somatic health, the interaction was significant even over time.

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### **Synergetic effects of job control and organizational justice**

Hypothesis 4 stated that job control has main effects beyond justice on work attitudes and well-being. Job control indeed was positively related to all outcome variables at T1 and T2, after controlling for the effects of demographics and organizational justice. Hypothesis 4a-d therefore receives full support.

The two alternative Hypotheses 5a and 5b dealt with the interaction effect between organizational justice and job control. Concerning work attitudes, a positive justice x control interaction was found for T1 intention to stay, such that the low control slope was steeper ( $B=.44$ ,  $t=9.18$ ,  $p<.001$ ) than the high control slope ( $B=.29$ ,  $t=5.91$ ,  $p<.001$ ). This means that organizational justice had stronger relations to intention to stay under the condition of low job control compared to high job control. Under the condition of high job control, in contrast, the intention to stay was higher and less depending on the gradient of organizational justice as can be seen in Figure 5. No significant interactions were found for organizational commitment. Turning to health outcomes, no significant interactions were found for mental health but marginally significant interactions were found for T1 (Figure 6) and T2 (Figure 7) somatic health; the low control slope was steeper ( $B_{T1}=.13$ ,  $t=3.73$ ,  $p<.001$ ;  $B_{T2}=.08$ ,  $t=2.19$ ,  $p<.001$ ) than the high control slope ( $B_{T1}=.06$ ,  $t=1.67$ ,  $p=ns$ ;  $B_{T2}=.01$ ,  $t=0.22$ ,  $p=ns$ ). The shape of the interactions for somatic health was similar to the one found for intention to stay such that high job control partly or fully compensated low organizational justice. To summarize, Hypothesis 5a is not supported but Hypothesis 5b is partly supported for intention to stay and fully supported for somatic health. Again we found more support for cross-sectional interactions and, similar to the results for job demands, the only longitudinal effect was found for somatic health.

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### **Synergetic effects of social support and organizational justice**

Hypothesis 6 expected main effects of social support beyond justice on the work and health outcomes. As was the case for job control, social support also exerted positive main effects and improved the prediction for all four outcomes both within and across time. Hypotheses 6a-d can therefore be supported.

Regarding the two alternative predictions on the interaction between organizational justice and social support, Hypotheses 7a and 7b, a significant negative interaction effect was found for T1 intention to stay. The low support slope ( $B=.50, t=10.62, p<.001$ ) was steeper than the high support slope ( $B=.28, t=5.42, p<.001$ ). The shape of the interaction is illustrated in Figure 8, which shows that the association between organizational justice and intention to stay was stronger when social support was low. It also shows that when organizational justice was low, individuals experiencing high social support were more inclined to remain with their organization as compared to those with low support. No significant interaction was found for organizational commitment. For the health outcomes, there was no significant interaction on mental health, but a negative interaction between organizational justice and social support was marginally significant for T2 somatic health. The low support slope ( $B=.10, t=2.84, p<.001$ ) was steeper than the high support slope ( $B=.02, t=.55, p=ns$ ). The shape of the interaction (see Figure 9) shows that high social support fully compensated for low organizational justice. To summarize, Hypothesis 7a is rejected while Hypothesis 7b is partly supported for intention to stay (cross-sectionally) and somatic health (over time). Considering time aspects, there was only one significant interaction within time (T1 intention to stay) and one marginally significant interaction over time (T2 somatic health).

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Please insert Figure 8 and 9 around here  
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## **DISCUSSION**

The present study draws upon two points of departure that are commonly considered to create successful and healthy organizations: organizational justice as an indicator of attempts at creating organizational structures, policies and procedures that make employees likely to be committed, and job characteristics reflecting organizations' attempts to stimulate a job design that fosters employee health. While there is a vast amount of evidence for the effects of either organizational justice or job characteristics on work and health outcomes, little is known about how the two concepts work in combination. Because employees experience both the treatment from the organizations and the conditions at work, our ambition was to study what synergetic effects perceived organizational justice and job characteristics may have for employee work attitudes and well-being. Consequently, the present study investigated the main and interactive effects of these perceptions. Specifically, the three aims of the present study were to investigate (1) the main and interactive effects of organizational justice and all three components of the DCS model, (2) for the prediction of work and health outcomes alike, (3) both cross-sectionally and over time.

### **Synergetic effects of organizational justice and job characteristics**

Overall, organizational justice was found to have positive main effects on work outcomes (organizational commitment and intention to stay) and health outcomes (mental and physical health), both cross-sectionally and over time. This is in line with what can be expected based on theories on organizational justice (Colquitt et al., 2001; Colquitt et al., 2013), as well as the idea that organizational justice acts as a resource in the workplace, which is believed to fulfill

psychological needs (Cropanzano et al., 2001). This finding also parallels earlier empirical studies and, whereas previous research has typically demonstrated effects of different dimensions of justice, our study indicates that main effects on both work and health outcomes can be established using a global measure of organizational justice (see also Ambrose and Schminke, 2009).

Given that only limited research has studied the effects of job characteristics after controlling for fairness perceptions, we also investigated how job demands, job control and support added to the prediction of work and health outcomes, over and above the effects of organizational justice. In line with both theory (Karasek and Theorell, 1990) and earlier empirical studies (Häusser et al., 2010; van der Doef and Maes, 1999), we found job control and social support to relate positively to organizational commitment, intention to stay, and mental and physical health, while job demands generally evidenced negative associations with the outcomes. The results for organizational commitment represent an exception when it comes to job demands, and deserve some commentary. Although there was also a positive main effect of demands on T2 organizational commitment, it should be noted that the bivariate correlation between demands and commitment was non-significant both cross-sectionally and over time, which indicates that our finding is likely the result of statistical suppression. Even if our finding is in line with the meta-analysis by Mathieu and Zajac (1990) and the possibility that those who work harder may develop more commitment, the present finding should therefore be interpreted with caution.

The fact that job characteristics were found to be relevant for work attitudes and well-being even after controlling for justice perceptions also indicates that both points of departure (organizational structure and job design) are important for organizations to consider. More specifically, these results show that organizations should preferably work with a combination of strategies to create workplaces that shape favorable work attitudes and sustainable well-being

in their workforce. The fact that job characteristics added to the prediction of work attitudes and well-being beyond organizational justice also suggests that justice and positive job characteristics, such as job control and social support, are different pools of resources that, in their different ways, can contribute to need fulfillment and, thus, together create positive synergetic effects.

In a more detailed analysis of the nature of these synergetic effects, we furthermore probed the idea that job characteristics may not always simply add to the effects of organizational justice (additive combination), but may perhaps also alter the relationship between organizational justice and outcomes (interactive combination). Our results showed that this may be the case for some of the outcomes. While slightly less than half of the interactions were significant, there were significant interactions for each of the job characteristics, and for both time points. Overall, organizational justice was found to have stronger effects when employees perceived high job demands, low job control or low social support. A general observation is that the perceived job characteristics appeared to buffer the negative effects of low organizational justice on work attitudes and well-being. It may be that with low organizational justice, fulfillment of psychological needs may be more at risk (Cropanzano et al., 2001; Deci and Ryan, 2000), which then can be compensated by job characteristics which in themselves can be need fulfilling (Fernet et al., 2013; Van den Broeck et al., 2008).

*Job demands.* In terms of interactive effects between organizational justice and job demands, Hypothesis 3 predicted that the association between justice and outcomes is weaker when job demands are high. Our results do not support this hypothesis and the significant interactions we obtained revealed other patterns of moderation. We found that high job demands strengthened the positive effect of organizational justice on T1 organizational commitment (while the interaction term for T2 commitment was non-significant). Although this interaction effect was not strong, it may be that low perceptions of justice are generally detrimental for employees'

commitment to their organization, while for employees who perceive their organization as fair it may be possible that higher rather than lower demands may contribute to enhance commitment levels. This is in contrast to results of previous research, since the two studies that have investigated interactive effects between organizational justice and demands (Heponiemi et al., 2008; Janssen, 2001) have both found high demands to reduce the positive effect of justice. One possible explanation for our finding may be that employees who perceive a high workload may be more involved in their work and more affectively committed to their organization (e.g. Mathieu and Zajac, 1990), perhaps in combination with feeling treated in a fair manner by the organization. This finding thus suggests that organizational justice may be related to even more commitment when employees perceive their work as demanding.

In the case of intention to stay and somatic health, high job demands did not decrease the positive effects of high organizational justice, as suggested in Hypothesis 3. Instead, we found that the associations between justice and these outcomes were stronger when job demands were high. More specifically, when the employer was not perceived as particularly fair high job demands appeared to aggravate the negative effects of low organizational justice on intention to stay and somatic health. Based on self-determination theory (Deci and Ryan, 2000), it could be argued that employees who are left vulnerable in their needs fulfillment by low justice perceptions will indicate even lower intention to stay and somatic health when work environment factors that undermine their resources and need satisfaction, such as high job demands, are perceived.

*Job control.* The present study predicted an interactive effect between job control and organizational justice but provided two alternative hypotheses regarding the nature of this interaction. No support was found for Hypothesis 5a, which predicted that the association between justice and outcomes is stronger when job control is high. The results rather revealed that high job control (partly) compensated the negative effects of low organizational justice on

intention to stay (cross-sectionally) and somatic health (both within and over time). This finding, which is in line with Hypothesis 5b, indicates that high levels of influence over one's work may compensate for low levels of justice, at least when it concerns somatic health and partly also with respect to intention to stay. Although this finding is not in line with all previous research (e.g. Chen et al., 2010), it is similar to the findings by Rousseau et al. (2009) who found the same effect for psychological distress, Haar and Spell (2009) who studied the prediction of job satisfaction and turnover intention, and Elovainio et al. (2005) who predicted sickness absence.

*Social support.* Just like for job control, we provided two alternative hypotheses regarding how social support may interact with organizational justice. Again, the results rejected the hypothesis that a positive job characteristic, in this case social support, reinforces the positive association between justice and outcomes (H7a). Rather, just as for job control, the results provide some evidence for the alternative hypothesis (H7b) which predicted that low organizational justice may be compensated by high social support. Interestingly, the empirical evidence once again concerned the same outcomes, namely intention to stay (only within time) and somatic health (only over time). Although social support was not able to boost the positive effects of high organizational justice, when employees perceived their organization as less fair they had more positive work attitudes and reported better health if they experienced high, as compared to low, social support. While Rousseau et al. (2009) found a similar effect for psychological distress, a health outcome, the present study found an interaction in the same direction on intention to stay, a work outcome, and over time for somatic health, a health outcome. Thus, the present study adds to the literature by replicating the finding with health (Rousseau et al., 2009) and also extends knowledge that similar mechanisms can be found for work outcomes.

### **Effects on work and health outcomes**

The second aim of the study was to investigate to what extent main and synergetic effects of organizational justice and job characteristics have a differential impact on various work and health outcomes. Four major conclusions can be drawn. First, our findings reveal a rather consistent pattern showing that organizational justice explained more variance in work as compared to health outcomes. Second, we found that job characteristics almost always contributed to explaining additional variance in both types of outcomes; however, their relative contribution to explaining workers' reactions was higher for health outcomes than for work outcomes. Third, the additive synergies that both types of influences – pertaining to overall organizational justice and more workplace-bound job characteristics – exerted was higher for work attitudes, for which the tested variables explained more variance, than for health outcomes. Fourth, synergetic interactive effects between organizational justice and DCS components were mainly found on intention to stay and somatic health (while no such interactions were found for organizational commitment [with one exception] and mental health). Generally, the shape of the interactions was similar across DCS components, indicating that when employees perceive their work environment demanding and negative (i.e., characterized by high job demands, low job control, or low social support), the effects of organizational justice appear to be stronger.

### **The time perspective**

The third aim of the present study was to evaluate whether the main and interactive effects of organizational justice and job characteristics differ depending on the time perspective, that is, when the outcomes are assessed at the same time as the predictors or after a one-year time lag. Main effects related to perceptions of organizational justice and their additive synergies with job characteristics were established for work attitudes and well-being outcomes in a cross-sectional perspective as well as over time. This finding adds to the literature not only by including effects of both organizational justice and organizational characteristics but also in

showing that such additive effects could be found both cross-sectionally and over a one-year time lag. The present results are especially important since the literatures on organizational justice and job characteristics appear to develop more or less in isolation, and consideration of the time perspective is largely missing in the justice literature (one exception is a synthesis of prospective studies linking justice to health Ndjaboué et al., 2012) and to some extent also in the DCS literature (for an exception, see de Lange et al., 2003).

Although our results indicate that additive effects of justice and job characteristics on work and health outcomes can be obtained over the course of one year, they provide less strong support for interactive synergy effects. The fact that interactive effects for work outcomes were obtained only cross-sectionally may indicate that such outcomes develop quickly and may perhaps not last over a one-year time period. While significant interactions between justice and job characteristics over time were found only for somatic health, no such interaction effects over time were found for mental health. It should also be noted that although we found strong support for additive effects over time and some support for interactive effects over time, causality cannot be established. Clearly, this mixed picture highlights the importance of investigating time lags for the identification of such interaction effects for various outcomes (cf. Zapf et al., 1996).

### **Methodological considerations**

There are some aspects of the present study that deserve commentary. Given that the study was conducted using a sample of well-educated employees in a single country, the present results require replication in different countries and from employees on different hierarchical levels, and in different settings (e.g. organizational change, as it has been suggested that the effects of justice are stronger under uncertainty; see van den Bos and Lind, 2002). Given that we focused on a set of job characteristics proposed by the DCS framework (Johnson and Hall, 1988;

Karasek, 1979), future studies may add to the literature by including different job characteristics derived from other theoretical frameworks. For instance, meaningfulness and feedback, aspects included in another prominent job characteristics model (Hackman and Oldham, 1976), may be worth exploring. As those aspects are resources, it may be that meaningfulness and feedback can amplify the positive effects of high organizational justice or that those factors compensate the negative effects of low organizational justice. It would also be relevant to focus on the job demands–resources model (Bakker and Demerouti, 2007) to cover a broader range of demands and resources at work.

Furthermore, in this paper we analyzed the combined effect of organizational justice and each DCS component separately. While we realize that all three job characteristics may be present in a real-life work situation, rather complex analyses are required to evaluate the relative contribution of each job characteristic in the presence of the others, and above that, each of their interactions with organizational justice on the outcomes at both points in time. As interaction effects are difficult to statistically detect in field studies (McClelland and Judd, 1993), a more complex analysis would have increased the risk to miss existing interactions due to a too conservative approach. Finally, as previous research has studied the effects of justice and different DCS components separately (Rousseau et al., 2009), the same approach was chosen for this study in order to be able to compare our findings earlier evidence, and thus contribute to the existing scientific debate on potential synergetic effects of organizational justice and different types of job characteristics.

Despite our predictions, considering the findings on interactions obtained in the present study, what strikes us is the question whether positive interactive effects, such that the positive effects of organizational justice are increased by positive job characteristics such as job control and social support, are likely to occur in organizational settings. The fact that our predictions about amplification effects, by combining high justice and positive job characteristics (H5a, H7a),

were not supported by the data could indicate that it is hard to achieve positive synergetic effects between organizational justice and positive job characteristics such as job control and social support. However, previous research does not support this view (Chen et al., 2010). Instead, it might be that interaction studies with justice may have the drawback of possible ceiling effects if the mean levels are generally high. Indeed, the means of the dependent variables were relatively high although not extreme, which suggests that this might have been an issue. Future studies can either include criterion variables with a lower mean, study a sample with even more variation in levels of outcome variables, or include experimental designs to study the combined effects of organizational justice and job characteristics further.

### **Practical implications**

The results of the present study have some implications for organizations. Given that perceptions of organizational justice were associated not only with stronger commitment and a willingness to remain with the organization, but also with better mental as well as somatic health, our findings highlight the importance for managers to strive at promoting justice in their organizations (Cropanzano et al., 2007; Patient and Skarlicki, 2010). The generally strong effects of justice indicate the relevance of management training programs and organizational interventions aimed at enhancing justice in the workplace but also at increasing the awareness of how lack of justice may impair employees' work attitudes and health – and in the long run the effectiveness of the organization.

The present research also support the importance of promoting good working conditions for the employees, as reflected in opportunities for control, the provision of social support, and job demands that are not too taxing (cf. Karasek and Theorell, 1990). A most interesting practical implication is that justice perceptions and job characteristics were found to have additive effects, which points to the relevance for management to focus both on organizational practices

and policies to promote perceptions of fairness and on job design efforts to create good working conditions in order to create such additive synergies. Managerial training programs, organizational interventions as well as union efforts and collective bargaining could not exclusively focus on reducing all potential sources of injustice, especially since it is impossible to reconcile all different interests and opinions in an organization (Cropanzano et al., 2007). Rather, these efforts would therefore benefit from focusing also on the improvement of working conditions in order to promote employee work attitudes and well-being.

In terms of multiplicative synergies (the interactions between justice perceptions and job characteristics), the finding that the effects of justice on health and work outcomes generally were stronger under conditions when demands were higher, job control lower and social support weaker has additional implications. Given that low perceptions of justice were associated with less favorable work attitudes and well-being – and that these effects were aggravated by high demands, low control and low support – organizations need to focus especially on promoting job design when the organization is not perceived as especially fair. Through such efforts, organizations have a good opportunity of fostering employee health, well-being as well as positive attitudes towards work and the organization.

### **Conclusion**

The present paper combines the literatures on organizational justice and job characteristics. More specifically, the aim was to investigate main and interactive effects of overall organizational justice and job characteristics, derived from the DCS model (Johnson and Hall, 1988; Karasek, 1979), on both work and health outcomes within and across time. In terms of additive effects, we found main effects of both justice perceptions and experiences of the work environment, for both work and health outcomes, within as well as over time. This finding clearly indicates that organizations need to work both on a policy level to achieve fair treatment

of the employees (through leadership, human resource management as well as organizational practices and policies) and with job design to achieve a healthy work environment. With respect to interactive synergies, organizational justice and the three components of the DCS model (job demands, job control and social support) had interactive effects on both work outcomes (mainly intention to stay) and health outcomes (only somatic health). Our results indicate that when employees perceive their work environment as demanding in terms of high job demands, low job control or low social support, organizational justice effects on work attitudes and health outcomes are stronger.

Table 1. Descriptive statistics and correlations among the research variables

No. Variable	T1		T2		1	2	3	4	5	6	7	8	9	10	11
	M	SD	M	SD											
<i>Controls T1</i>															
1 Age (in years)	42.42	11.02	.	.	—	.	.	.	.	.	.	.04*	.16**	.14**	-.07
2 Gender (woman)	0.59	0.49	.	.	-.16***	—	.	.	.	.	.	-.14**	-.12*	-.16**	-.22***
3 Education (university)	0.71	0.45	.	.	-.15***	-.29***	—	.	.	.	.	.11*	.02	.10*	.19***
<i>Predictors T1</i>															
4 Organizational Justice	3.69	0.81	.	.	.13***	-.17***	.10*	—	.	.	.	.48***	.47***	.34***	.19***
5 Job Demands	3.48	0.84	.	.	-.05	-.01	.13**	-.19***	—	.	.	.07	-.10*	-.17***	-.17***
6 Job Control	3.87	0.68	.	.	.22***	-.26***	.17***	.48***	-.10*	—	.	.32***	.39***	.40***	.26***
7 Social Support	3.90	0.81	.	.	-.00	.03	.02	.35***	-.28***	.34***	—	.24***	.24***	.23***	.16**
<i>Outcomes T1, T2</i>															
8 Org. Commitment	3.62	0.82	3.44	0.90	.06	-.11*	.10*	.49***	-.02	.38***	.32***	—	.59***	.33***	.10*
9 Intention to Stay	4.33	0.87	4.16	0.90	-.12*	-.07*	.04	.52***	-.26***	.42***	.33***	.54***	—	.42***	.18***
10 Mental Health	3.32	0.39	3.30	0.41	.11**	-.05	.09	.31***	-.28***	.41***	.32***	.28***	.33***	—	.36***
11 Somatic Health	4.28	0.56	4.30	0.56	.03	-.19***	.14**	.29***	-.20***	.33***	.23***	.13**	.22***	.42***	—

Notes: Correlations between T1 predictors and T1 outcomes (below the diagonal) and T2 outcomes (above the diagonal). Scale range: 1-5 for all variables except mental health (1-4), age (years, and gender and education (0-1)). \* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$ . N=429

Table 2. Hierarchical moderated regression analyses – interaction between Organizational Justice and Job Demands

	<u>Organizational Commitment</u>								<u>Intention to Stay</u>							
	T1				T2				T1				T2			
	Step1	Step2	Step3	Step4	Step1	Step2	Step3	Step4	Step1	Step2	Step3	Step4	Step1	Step2	Step3	Step4
<i>Step 1:</i>																
Age (in years)	.05	.01	.01	.01	.03	-.02	-.02	-.02	.10*	.05	.05	.05	.15**	.09*	.09*	.09*
Gender (woman)	-.06	-.00	-.00	-.00	-.10*	-.05	-.05	-.05	-.03	.03	.03	.03	-.09	-.03	-.03	-.03
Education (university)	.08	.04	.04	.03	.07	.43	.03	.03	.04	-.00	.02	.02	.02	.02	.02	-.02
<i>Step 2:</i>																
Justice (J)		.40***	.41***	.41***		.43***	.44***	.44***		.45***	.42***	.42***		.45***	.45***	.45***
<i>Step 3:</i>																
Job Demands (D)			.06	.06			.09*	.09*			-.15***	-.15***			-.01	-.01
<i>Step 4:</i>																
J x D				.06 <sup>+</sup>				.03				.07*				.03
$\Delta R^2$	.02*	.22***	.01	.01	.02*	.21***	.01*	.00	.02	.26***	.03***	.01*	.03**	.19***	.00	.00
Total $R^2$ (adj.)	.01**	.24***	.24***	.24***	.02*	.23***	.24***	.24***	.01	.27***	.29***	.30***	.03**	.22***	.22***	.22***
	<u>Mental Health</u>								<u>Somatic Health</u>							
	T1				T2				T1				T2			
	Step1	Step2	Step3	Step4	Step1	Step2	Step3	Step4	Step1	Step2	Step3	Step4	Step1	Step2	Step3	Step4
<i>Step 1:</i>																
Age (in years)	.05**	.04*	.04*	.04*	.05**	.04	.04	.04	.01	-.01	-.01	-.01	-.05	-.06*	-.06*	-.06*
Gender (woman)	-.01	.01	.01	.02	-.05*	-.03	-.03	-.03	-.09***	-.07*	-.07*	-.07*	-.11***	-.10***	-.10***	-.10***
Education (university)	.04*	.03	.05*	.05*	.03	.02	.03	.03	.05	.04	.05*	.05	.07*	.06*	.07**	.07**
<i>Step 2:</i>																
Justice (J)		.11***	.09***	.09***		.13***	.12***	.12***		.15***	.13***	.13***		.09**	.07**	.07**
<i>Step 3:</i>																
Job Demands (D)			-.10***	-.10***			-.05*	-.05*			-.10***	-.10***			-.10***	-.10***
<i>Step 4:</i>																
J x D				.01				.01				.06**				.08**
$\Delta R^2$	.03**	.08***	.06***	.00	.04***	.09***	.01*	.00	.04***	.07***	.03***	.01	.07***	.02**	.03***	.02**
Total $R^2$ (adj.)	.02*	.10***	.15***	.15***	.04***	.13***	.14***	.14***	.04***	.10***	.13***	.14***	.07***	.09***	.11***	.13***

Notes: +  $p < .10$  \*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$ . N=429.

Table 3. Hierarchical moderated regression analyses – interaction between Organizational Justice and Job Control

	<u>Organizational Commitment</u>								<u>Intention to Stay</u>							
	T1				T2				T1				T2			
	Step1	Step2	Step3	Step4	Step1	Step2	Step3	Step4	Step1	Step2	Step3	Step4	Step1	Step2	Step3	Step4
<i>Step 1:</i>																
Age (in years)	.05*	.01	-.02	-.02	.03	-.02	-.04	-.05	.10**	.05*	.01	.03	.15**	.09*	.06	.07
Gender (woman)	-.06	-.00	.02	.02	-.10*	-.05	-.04	-.04	-.03	.02	.05	.05	-.09	-.03	-.01	-.01
Education (university)	.08	.04	.03	.02	.07	.04	.03	.03	.04	.00	-.02	-.01	.02	-.02	-.04	-.03
<i>Step 2:</i>																
Justice (J)		.40***	.33***	.33***		.43***	.38***	.38***		.45***	.37***	.36***		.45***	.36***	.36***
<i>Step 3:</i>																
Job Control (C)			.16***	.17***			.11*	.11*			.21***	.19***			.20***	.19***
<i>Step 4:</i>																
J x C				.02				.02					-.08**			-.05
$\Delta R^2$	.02*	.22***	.03***	.00	.02*	.21***	.01*	.00	.02	.26***	.04***	.01**	.03**	.19***	.03***	.00
Total $R^2$ (adj.)	.01*	.24***	.26***	.26***	.02*	.23***	.24***	.24***	.01	.27***	.31***	.32***	.03**	.22***	.25***	.25***
	<u>Mental Health</u>								<u>Somatic Health</u>							
	T1				T2				T1				T2			
	Step1	Step2	Step3	Step4	Step1	Step2	Step3	Step4	Step1	Step2	Step3	Step4	Step1	Step2	Step3	Step4
<i>Step 1:</i>																
Age (in years)	.05**	.04*	.02	.01	.05**	.04	.02	.02	.01	-.01	-.03	-.02	-.05	-.06*	-.07**	-.07*
Gender (woman)	-.00	.01	.03	.03	-.05*	-.03	-.02	-.02	-.09**	-.07*	-.05	-.05**	-.10***	-.10***	-.08**	-.09**
Education (university)	.04*	.03	.02	.02	.03	.02	.01	.01	.05	.04	.03	.03	.07*	.06*	.05	.05
<i>Step 2:</i>																
Justice (J)		.11***	.06**	.06**		.13***	.08*	.08**		.15***	.09**	.09**		.09**	.04	.04
<i>Step 3:</i>																
Job Control (C)			.13***	.14***			.11***	.12***			.13***	.12**			.11***	.10**
<i>Step 4:</i>																
J x C				.01				.02					-.04+			-.04+
$\Delta R^2$	.03*	.08***	.08***	.00	.04***	.09***	.05***	.00	.04***	.07***	.04***	.01	.07***	.02**	.03***	.01
Total $R^2$ (adj.)	.02*	.10***	.18***	.18***	.04***	.13***	.18***	.18***	.04***	.10***	.14***	.14**	.07***	.09***	.11***	.12***

Notes: +  $p < .10$  \*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$ . N=429.

Table 4. Hierarchical moderated regression analyses – interaction between Organizational Justice and Social Support

	<u>Organizational Commitment</u>								<u>Intention to Stay</u>							
	T1				T2				T1				T2			
	Step1	Step2	Step3	Step4	Step1	Step2	Step3	Step4	Step1	Step2	Step3	Step4	Step1	Step2	Step3	Step4
<i>Step 1:</i>																
Age (in years)	.05	.01	.01	.01	.03	-.02	-.02	-.02	.10**	.05*	.05*	.07	.27***	.24***	.25***	.25***
Gender (woman)	-.06	-.00	-.02	-.02	-.10	-.05	-.06	-.06	-.03	.03	.01	.02	-.03	.03	.02	.02
Education (university)	.08*	.04	.04	.05	.07	.04	.04	.04	.04	-.00	.00	.01	.07	.06	.07	.07
<i>Step 2:</i>																
Justice (J)		.40***	.34***	.34***		.43***	.39***	.39***		.45***	.40***	.39***		.30***	.27***	.26***
<i>Step 3:</i>																
Social Support (S)			.14***	.14***			.08*	.08			.15***	.13**			.12*	.12*
<i>Step 4:</i>																
J x S				-.02				-.01				-.11***				-.03
$\Delta R^2$	.02*	.22***	.03***	.00	.02*	.21***	.01*	.00	.02	.26***	.03***	.02***	.03**	.19***	.01*	.00
Total R <sup>2</sup> (adj.)	.01*	.24***	.26***	.26***	.02*	.23***	.24***	.23***	.01	.27***	.29***	.31***	.03**	.22***	.23*	.23
	<u>Mental Health</u>								<u>Somatic Health</u>							
	T1				T2				T1				T2			
	Step1	Step2	Step3	Step4	Step1	Step2	Step3	Step4	Step1	Step2	Step3	Step4	Step1	Step2	Step3	Step4
<i>Step 1:</i>																
Age (in years)	.05**	.04*	.04*	.04*	.05**	.04	.04*	.04	.01	-.01	-.01	-.00	-.05	-.06*	-.05*	-.05
Gender (woman)	-.00	.01	.01	.01	-.05*	-.03	-.04	-.04	-.09**	-.07*	-.08**	-.08**	-.11***	-.10***	-.11***	-.10***
Education (university)	.04*	.03	.03	.03	.03	.02	.02	.02	.05	.04	.04	.04	.07*	.06*	.06*	.06*
<i>Step 2:</i>																
Justice (J)		.11***	.08***	.08***		.13***	.11***	.11***		.15***	.11***	.11***		.09**	.06*	.06*
<i>Step 3:</i>																
Social Support (S)			.10***	.10***			.06*	.06**			.09**	.09**			.07*	.06*
<i>Step 4:</i>																
J x S				.01				.02				-.04				-.04+
$\Delta R^2$	.03*	.08***	.05***	.00	.04***	.09***	.01**	.00	.04***	.07***	.02**	.01	.07***	.02**	.01*	.01
Total R <sup>2</sup> (adj.)	.02*	.10***	.15***	.15***	.04***	.13***	.14***	.14***	.04***	.10***	.13***	.13***	.07***	.09***	.10***	.10***

Notes: +  $p < .10$  \*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$ . N=429.

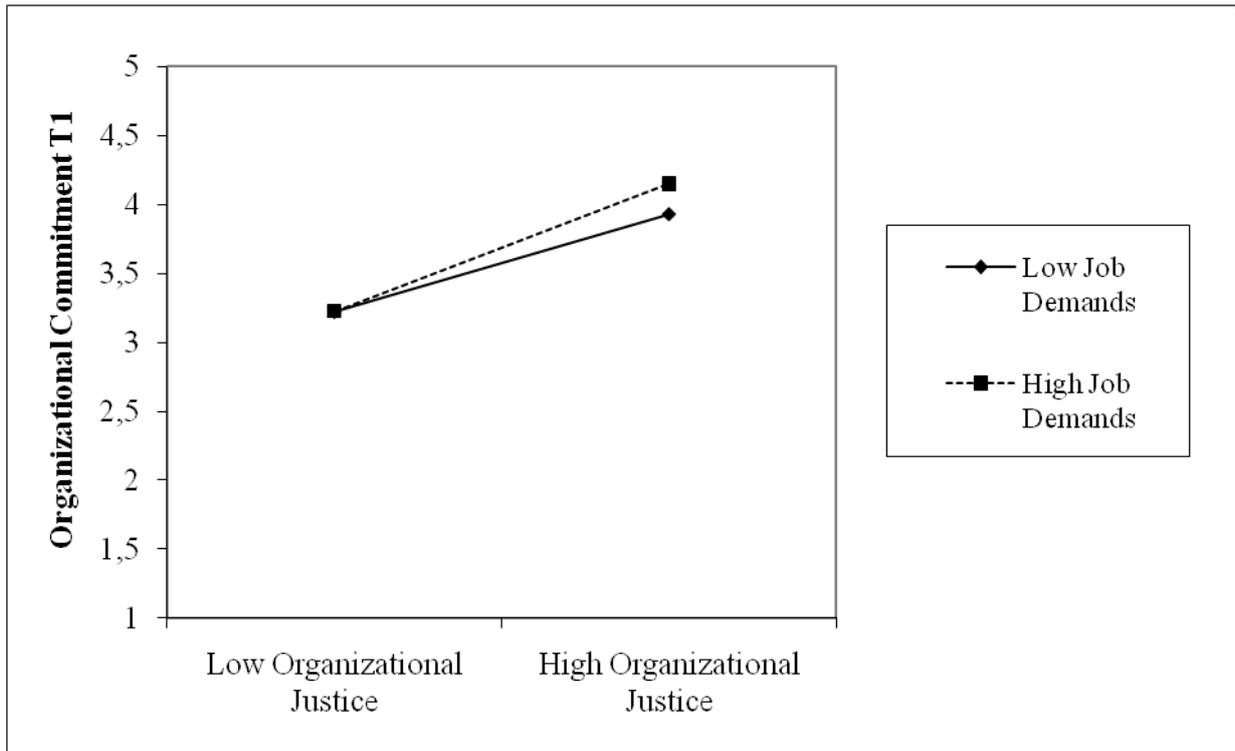


Figure 1. Interaction between T1 Organizational Justice and T1 Job Demands in relation to T1 Organizational Commitment

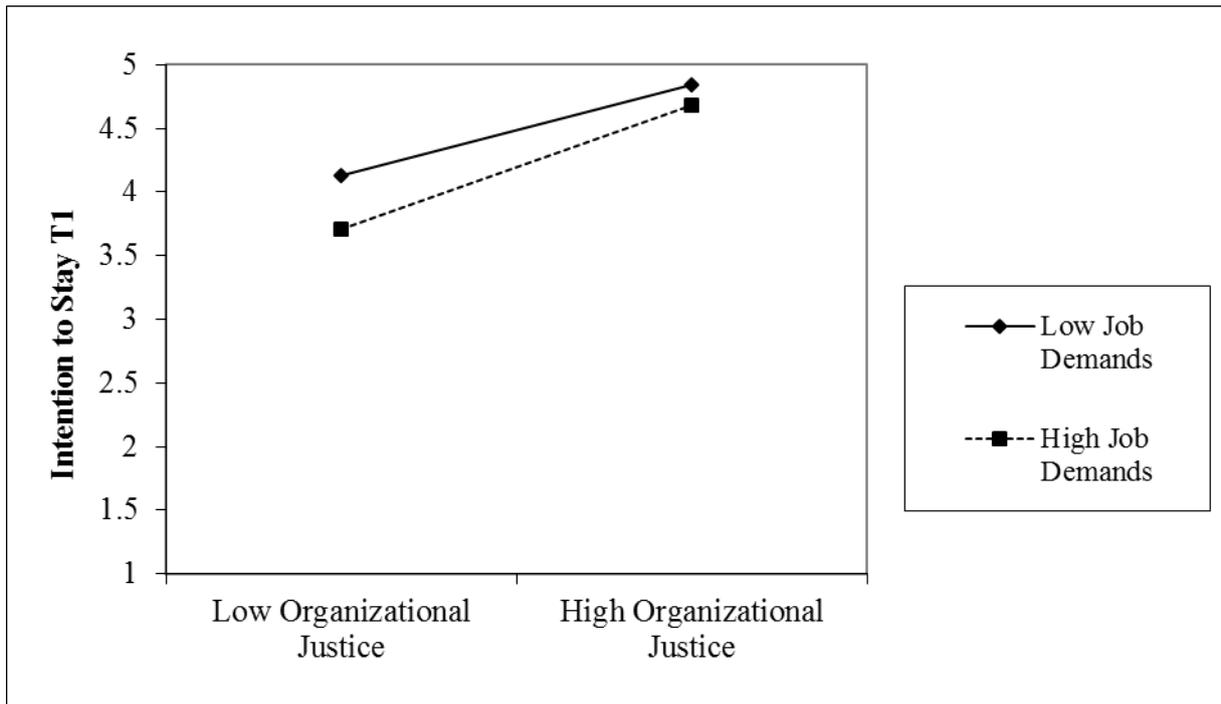


Figure 2. Interaction between T1 Organizational Justice and T1 Job Demands in relation to T1 Intention to Stay

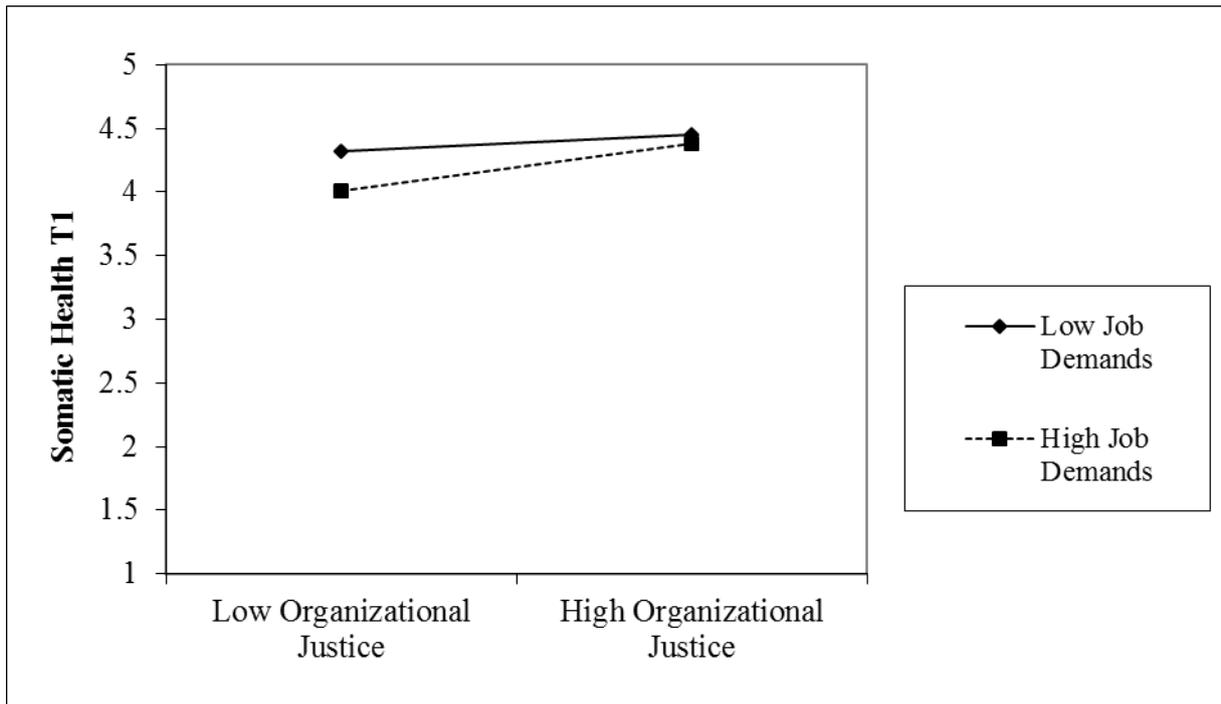


Figure 3. Interaction between T1 Organizational Justice and T1 Job Demands in relation to T1 Somatic Health

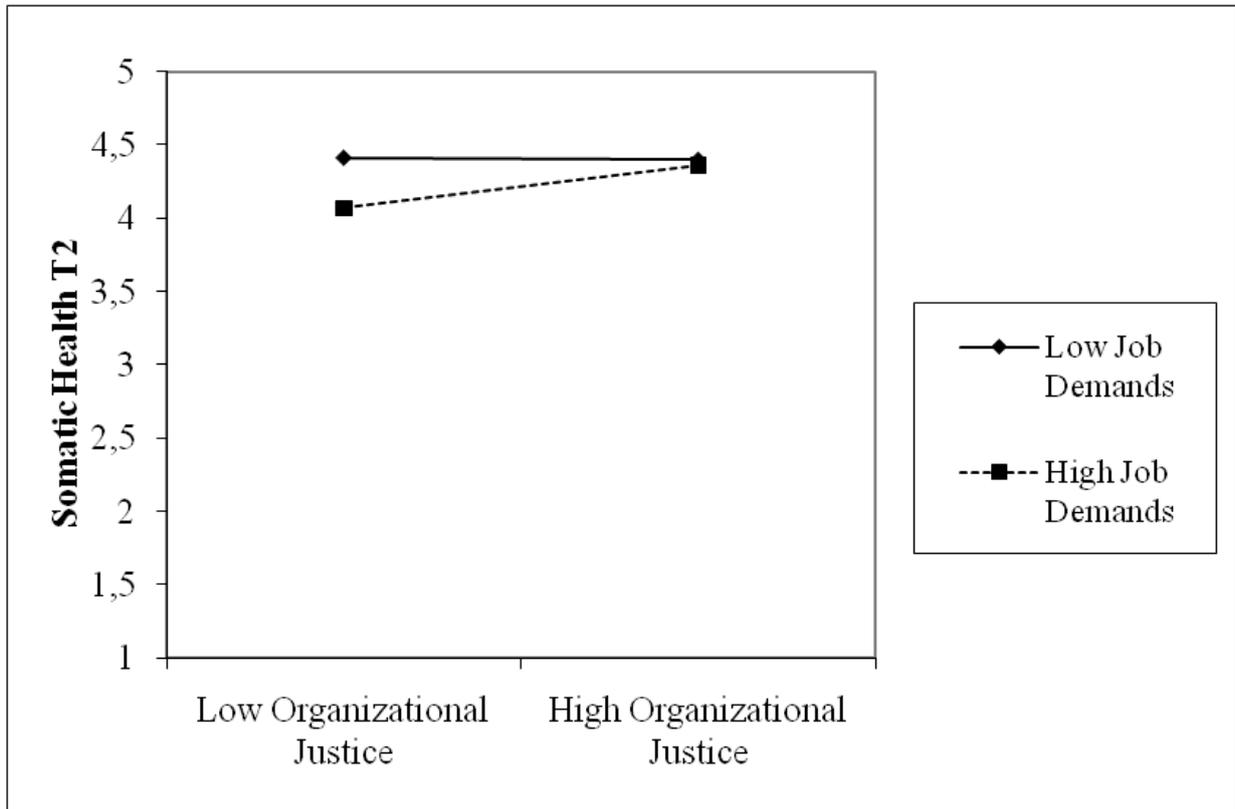


Figure 4. Interaction between T1 Organizational Justice and T1 Job Demands in relation to T2 Somatic Health

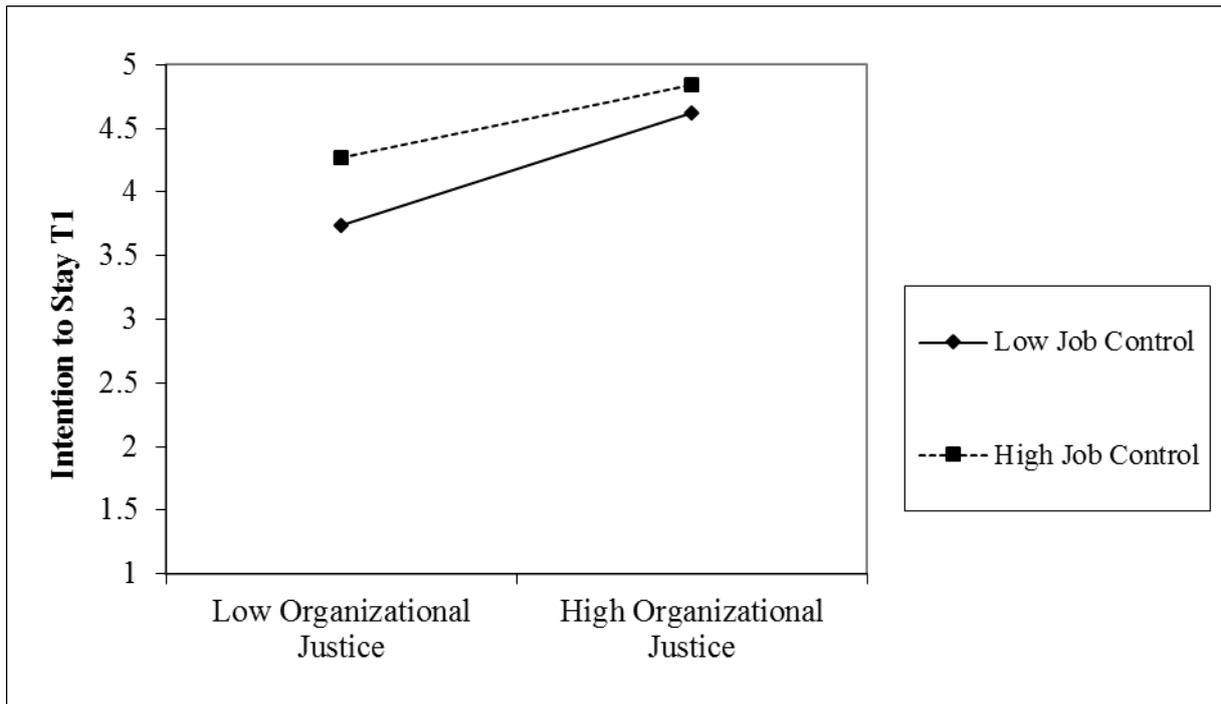


Figure 5. Interaction between T1 Organizational Justice and T1 Job Control in relation to T1 Intention to Stay

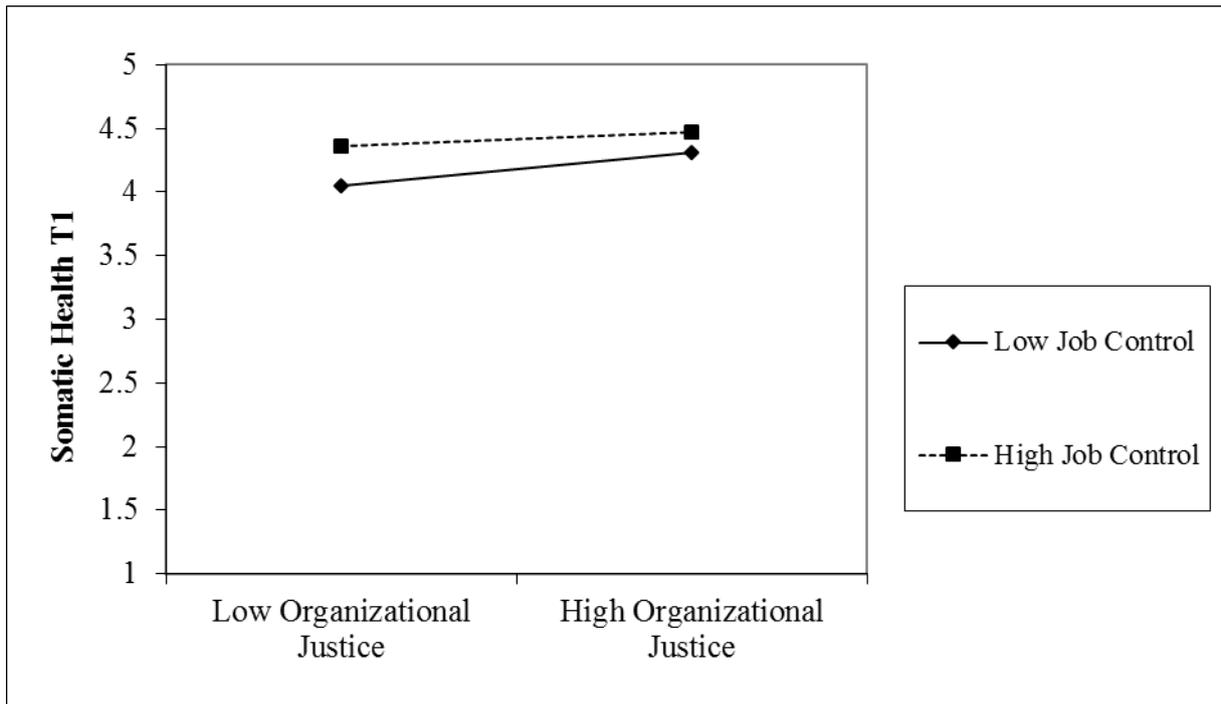


Figure 6. Interaction between T1 Organizational Justice and T1 Job Control in relation to T1 Somatic Health

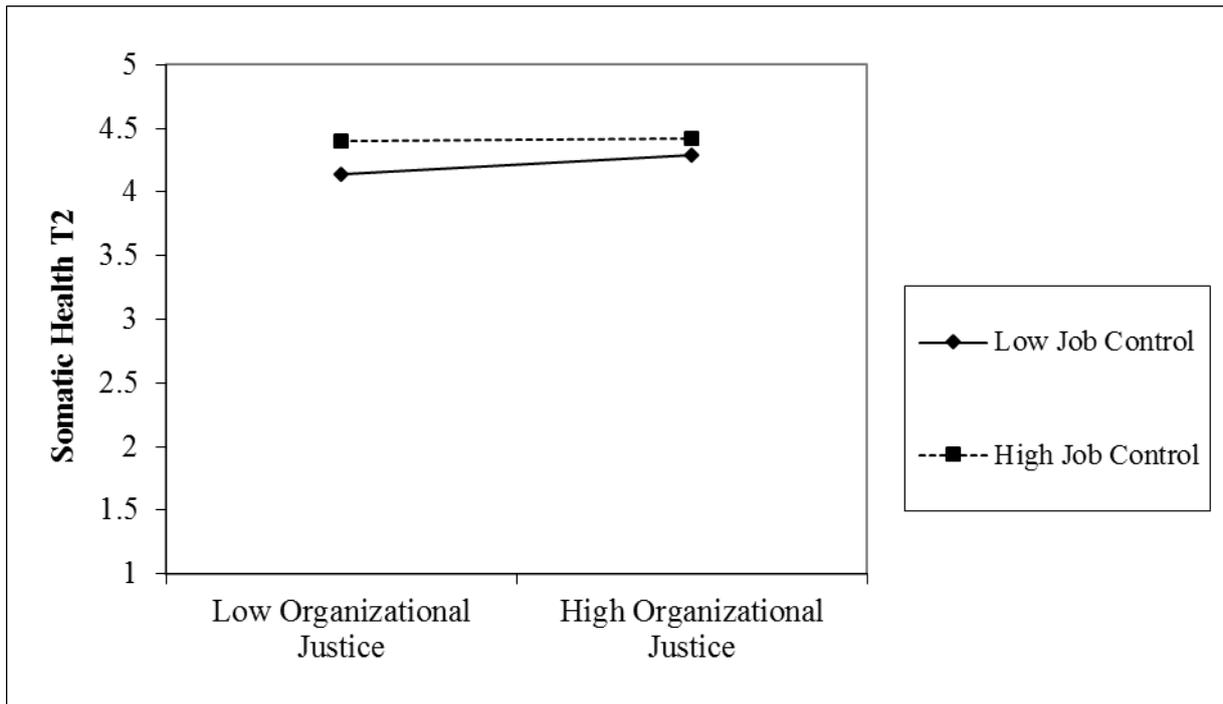


Figure 7. Interaction between T1 Organizational Justice and T1 Job Control in relation to T2 Somatic Health

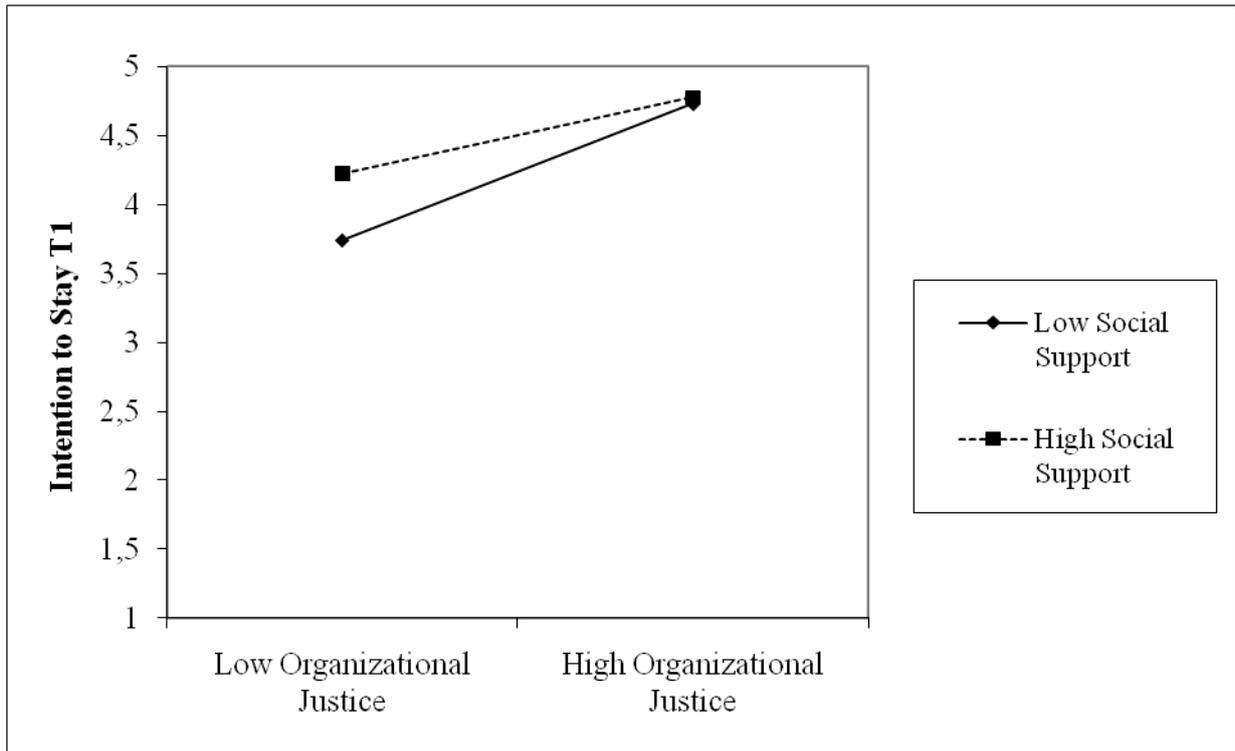


Figure 8. Interaction between T1 Organizational Justice and T1 Social Support in relation to T1 Intention to Stay

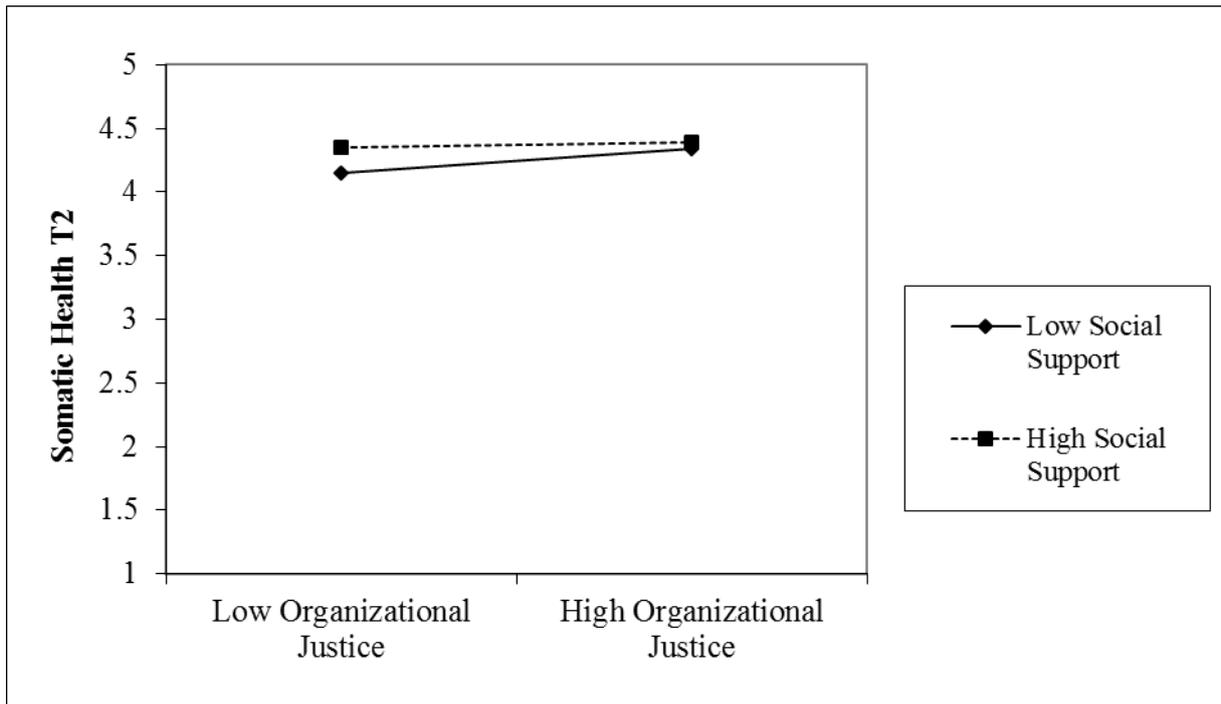


Figure 9. Interaction between T1 Organizational Justice and T1 Social Support in relation to T2 Somatic Health

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