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Running head: ORGANIZATIONAL JUSTICE AND HEALTH

Organizational justice and health: Studying mental preoccupation with work and social support as mediators for lagged and reversed relationships

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Abstract

Organizational justice perceptions are considered a predictor of health and well-being. To date, empirical evidence about whether organizational justice perceptions predict health or health predicts organizational justice perceptions is mixed. Furthermore, the processes underlying these relationships are largely unknown. In this paper, we study whether bidirectional relationships can be explained by two different mediation mechanisms. First, based on the allostatic load model, we suggest that the relationships between organizational justice perceptions and different health indicators are mediated through mental preoccupation with work. Second, based on the affective perception and affective reaction assumption, we investigate if the relationships between different health indicators and organizational justice perceptions are mediated by social support at work. Using a large-scale Swedish panel study (N=3236), we test the bidirectional mediating relationships between procedural justice perceptions and self-rated health, depressive symptoms, and sickness absence with a cross-lagged design with three waves of data. Significant lagged effects from procedural justice to health were found for models predicting depressive symptoms and sickness absence. Mental preoccupation with work was not found to mediate the longitudinal relationship between procedural justice perceptions and indicators of health. Significant lagged effects from health indicators to procedural justice were found for models involving self-rated health, depressive symptoms and sickness absence. Social support mediated the longitudinal relationships between all three health indicators and procedural justice. Results are discussed in light of previous studies and implications for theory and practice are outlined.

Keywords: organizational justice; procedural justice; health; mental preoccupation; social support; cross-lagged

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Organizational justice and health: Studying mental preoccupation with work and social support as mediators for lagged and reversed relationships

But perhaps the greatest strength of justice research is in its potential for improving the effectiveness of work organizations while simultaneously improving the lives of employees (Cropanzano & Ambrose, 2015, p. 13)

Organizational justice is an important topic for employees and can be defined as an individual's perception of fairness at the workplace (Cropanzano, Byrne, Bobocel, & Rupp, 2001). In a large number of studies, organizational justice perceptions have been related to work-related attitudes and behaviors like performance, withdrawal, commitment, and job satisfaction (Colquitt, Conlon, Wesson, Porter, & Ng, 2001; Colquitt et al., 2013; Rupp, Shao, Jones, & Liao, 2014). In recent years, organizational justice, as an aspect of the work environment, has been scrutinized in its influence on individuals' well-being and health, and found to relate to outcomes such as affect, health problems, or sickness absence (Ndjaboué, Brisson, & Vézina, 2012; Robbins, Ford, & Tetrick, 2012). Few studies have investigated how the justice–health relationship unfolds over time, and most of these are prospective studies including two time points only (Elovainio et al., 2015; Elovainio et al., 2013; Kivimäki, Elovainio, Vahtera, & Ferrie, 2003). It has also been acknowledged that well-being and health may affect perceptions of the work environment. In other words, there is a possibility that reversed relationships also exist (Kawachi, 2006). However, findings have been contradictory, in particular when it comes to the existence of an effect from health to organizational justice. For instance, in a study based on a military sample with two time points (Lang, Bliese, Lang, & Adler, 2011) an effect from health to organizational justice was found, while other studies found mixed results (Ybema & van den Bos, 2010), and yet others found

only relationships from justice perceptions to health indicators (Elovainio et al., 2015). Hence, there is a need for more longitudinal studies with representative samples and repeated measurements of both justice perceptions and health to allow testing of bidirectional relationships to advance understanding of what effect precedes the other.

The present study contributes to this stream of research by investigating whether there are bidirectional relationships between perceptions of procedural justice and three indicators of health: *self-rated health*, a strong predictor of morbidity and longevity (Idler & Benyamini, 1997), *depressive symptoms*, an indicator of mental well-being, and *sickness absence*, a behavioral consequence with high costs for both individuals and organizations (Black & Drost, 2011). The use of a variety of health indicators thus offers a more comprehensive view on how justice relates to different indicators of health. Furthermore, a particular contribution of this study is that we investigate relationships with a full panel design over three time points, with data roughly representative of the Swedish population. We therefore systematically investigate the potential existence of reversed effects between organizational justice perceptions and health.

While direct effects between justice perceptions and indicators of health have gained empirical support (Robbins et al., 2012), rather limited attention has been given to the underlying processes. Lack of research in this area presents a significant gap. Many different potential mechanisms for explaining the organizational justice–health relationship have been put forward, but empirical studies testing these relationships are scarce (Eib, von Thiele Schwarz, & Blom, 2015; Elovainio, Kivimäki, Vahtera, Keltikangas-Järvinen, & Virtanen, 2003; Judge & Colquitt, 2004; Manville, Akremi, Niezborala, & Mignonac, 2016). Building on the allostatic load model (McEwen, 2008), we argue for a mediating effect of mental preoccupation with work (a cognitive state characterized by obtrusive work-related thoughts). Therefore, our second contribution is to add to the literature

by testing one underlying process for the relationship from organizational justice perceptions to indicators of health. Moreover, studies about underlying processes to explain relationships from health to justice are missing. Building on the affective perception and reaction assumption (Lang et al., 2011), we propose a mediating effect of social support at work for the potential effects from health indicators to organizational justice perceptions. The approach of testing processes for reversed effects in occupational health is novel and a third contribution of this paper, since it adds to the understanding of how organizational justice and health as well as health and organizational justice impact each other.

Theory and Hypotheses

Researchers have theorized on the justice–health relationship using classical justice theories like equity theory (Greenberg, 2010; Kalimo, Taris, & Schaufeli, 2003), uncertainty management model (Elovainio et al., 2005; Judge & Colquitt, 2004), group-value model (De Boer, Bakker, Syroit, & Schaufeli, 2002; Howard & Cordes, 2010), and fairness theory (Fujishiro & Heaney, 2009). Other researchers have made use of stress theories like transactional stress theory (Greenberg, 2004; Lang et al., 2011; Spell & Arnold, 2007; Tepper, 2001), effort-recovery model (Manville et al., 2016) or the allostatic load model (Eib et al., 2015; Elovainio et al., 2009). However, despite the diversity of paradigms framing the majority of the justice–health research, most theories clearly point out (in)justice as the cause and health (problems) as the consequence whereas few explanations have been put forward for the alternative direction of health as a cause of justice perceptions (for an exception, see Lang et al., 2011).

Organizational justice refers to employees' fairness perceptions at the workplace regarding the perceived fairness of the allocation of resources (distributive justice), fairness of the decision-

making processes (procedural justice), and the treatment and explanations employees receive from organizational representatives (interpersonal and information justice) (Colquitt, 2001). In this paper, we focus on procedural justice as one of the structural elements of justice, as procedural justice tends to be attributed to decisions and processes by the organization (Rupp & Cropanzano, 2002). Procedural justice has a prominent role in theory (Thibaut & Walker, 1975; Tyler & Blader, 2003) and empirical studies (Colquitt et al., 2013). Procedural justice is also the most often studied justice dimension in the justice–health literature (Robbins et al., 2012). In the following, we first focus on the relationship between organizational justice and health before elucidating on the relationship between health and organizational justice.

How Justice Perceptions Influence Health

Just like perceptions of justice have been found to relate positively to health, low justice perceptions have been regarded as a relevant workplace stressor (Vermunt & Steensma, 2001) that can cause health problems and strain (Ganzel, Morris, & Wethington, 2010). Low procedural justice can elicit perceptions of unpredictability and powerlessness. Also, perceptions of low procedural justice are likely to trigger anxiety as procedural justice perceptions relate to employees' self-esteem and self-evaluations of one's standing in the organization (Blader & Tyler, 2009). Furthermore, as procedural justice tends to be intrinsic to organizational processes the organization and cannot easily be evaded, we argue that low procedural justice is a stressor of prolonged nature, and thus, is likely to affect a variety of indicators of impaired health in a long-term manner.

In the occupational health literature, two mechanisms have been discussed as underlying the causal relation between stressors at work and health; the psychophysiological and the behavioral

lifestyle mechanism (see Kompier & Taris, 2011). The first one holds that long-term exposure to low organizational justice undermines recovery and health through sustained activation of bodily systems. The second one suggests that stressors at work undermine self-control, which increases negative health behaviors such as alcohol intake, smoking, or a sedentary lifestyle. Empirically, there is some evidence for the psychophysiological pathway to explain how justice relates to health over time (Eib et al., 2015; Elovainio et al., 2003; Manville et al., 2016) whereas health behaviors as a mediator between justice perceptions and health has not been empirically supported (Elovainio et al., 2003). We therefore focus on the psychophysiological explanation of the justice–health relationship.

The allostatic load model has been described as “the dominant theoretical perspective in stress physiology” (Ganster & Rosen, 2013, p. 1086) as it underlines the process by which psychosocial stressors translate into physical and mental harm over time. When a current stressor activates the physiological system, the body accommodates its parameters to adjust to the environment, a process called ‘allostatis’ (McEwen, 2000). Allostatic processes can have a short-term impact on psychological, physiological and psychosomatic systems, which in itself is not harmful. However, the new balance of system parameters following stressor exposure comes at a physiological cost, called ‘allostatic load’. The allostatic load model holds that harm is done to the body, if this activation of bodily systems is sustained, like under conditions of repeated or chronic stress. In other words, continuous or repeated stressors can have negative consequences in the long-run as they may build up allostatic load which impacts the immune system, cardiovascular system and metabolic system, and can lead to psychological disorders like depression (Ganster & Rosen, 2013; Juster et al., 2011).

As such, cognitive processes play an important role in sustained activation of bodily systems (Brosschot, Pieper, & Thayer, 2005). The activation of a stressor can be prolonged if a person does not let go of, for instance, negative work-related thoughts. The term *mental preoccupation with work* refers to such a cognitive state of anxiety about future events (i.e. worry and anticipatory stress) and rumination in the context of work (Eib et al., 2015). We argue that mental preoccupation with work is elicited by low justice perceptions, which produce allostatic load over time which, in turn, increases the risk for impaired health. Mental preoccupation with work is a concept that taps into the prolongation of the mental representation of a stressor, which makes it similar to concepts like perseverant cognitions (Brosschot, Gerin, & Thayer, 2006) and the opposite, psychological detachment (Sonnentag, 2012). Empirically, Eib et al. (2015) showed that overall organizational justice perceptions related to mental preoccupation with work one year later and that mental preoccupation with work mediated the relationship between organizational justice and mental health. Similarly, Elovainio et al. (2009) argued that low justice perceptions may affect health through prolonged activation of the stress response. Moreover, Manville et al. (2016) highlighted the important mediating role of ruminating and worrying thoughts for the association between justice perceptions and recovery.

Procedural justice fulfills two important purposes: self-evaluation and predictability. Self-evaluation refers to the notion that low procedural justice can elicit negative evaluations about one's standing, value and self-esteem (Tyler & Blader, 2003). Procedural justice also has an instrumental value because employees are not only more likely to get a voice but also to predict according to which rules decisions are made at the workplace. In addition, employees use procedural justice to gauge whether to trust organizational authorities (van Prooijen, 2009). Therefore, low procedural justice constitutes a workplace stressor that may elicit a state of being

unable to withdraw from work. Recent studies on recovering from injustice (Barclay & Saldanha, 2016; Barclay & Skarlicki, 2009) suggest that employees linger on their justice perceptions for a long time. In sum, for the relationship between organizational justice and health, we predict:

Hypothesis 1: There is a time-lagged effect of procedural justice on a) self-rated health, b) depression, and c) sickness absence.

Hypothesis 2: Mental preoccupation with work mediates the time-lagged effect of procedural justice on a) self-rated health, b) depression, and c) sickness absence. Specifically, there is a significant indirect effect of procedural justice at T1 through mental preoccupation with work at T2 to the three health indicators at T3.

How Health Influences Justice Perceptions

Most of the available research on organizational justice and health points to low justice perceptions as a work stressor that can result in health problems. While this perspective is generally accepted and empirically well established, it is also plausible that health outcomes may affect perceptions of justice. Few studies, often with only two measurement points, have investigated the so-called reversed effects, from health indicators to organizational justice perceptions, and findings are mixed. Elovainio et al. (2015) found no relationships from justice perceptions to psychological distress and sleep problems over the course of four years, and this is in line with another earlier study from Finland (Kivimäki et al., 2003). Other studies report some indications of causality from justice perceptions to health outcomes although effect sizes were small (Elovainio et al., 2003) and evidence was not consistent across justice facets and outcomes (Ybema & van den Bos, 2010). Another study found a relationship from poor health to procedural justice, but not for interactional justice when the follow-up time was several years (Elovainio et al., 2013). Finally, one study

reported consistent effects from justice to health outcomes across justice dimensions, but these had been studied over a shorter follow-up time frame of three to six months (Lang et al., 2011).

In the occupational health literature, two basic mechanisms have been discussed to explain the ‘reverse’ effects from health to work stressors: health status triggers a different perception of the same work environment and/or health status triggers a real change in the work environment (de Lange, Toon, Michiel, Irene, & Paulien, 2005; Kompier & Taris, 2011; Tang, 2014). Similar to the two mechanisms described in the work stress literature, Lang et al. (2011) put forth the ‘affective perception’ and ‘affective reaction’ assumptions to explain the relationship between health and organizational justice perceptions.

Changes in perceptions of the work environment are likely, as more fatigued employees perceive their work environment more negatively over time and report higher job demands and lower levels of supervisor social support across time (De Lange, Taris, Kompier, Houtman, & Bongers, 2004). This perception effect was termed ‘true strain-stressor process’ (Zapf, Dormann, & Frese, 1996) or ‘stressor creation hypothesis’ (Spector, Zapf, Chen, & Frese, 2000). The perception effect assumes that unhealthy workers perceive their work environment as more ‘gloomy’ over time whereas healthy workers color their work environment perceptions as more ‘rosy’ over time. As Tang (2014) writes, “healthy workers are more likely to re-interpret their jobs positively over time as they are able to maintain engaged in their work, accumulate, and conserve job resources (eg, develop good rapport with co-workers), and ultimately, increase job proficiency” (p. 442). Unhealthy workers, on the other hand, perceive their job demands as more exhausting, may have less positive mood and affect towards others, and may have a tendency to recall negative information. The ‘affective perception assumption’ (Lang et al., 2011) proposes that individuals with impaired health, psychological distress, and depressive symptoms view their

work environment, and specifically justice at the workplace, more negatively. In line with this, research shows that perceptions of justice are influenced by psychological states and well-being, for instance, individuals in a negative mood are more likely to perceive unfairness (van den Bos, 2003).

The change of situation explanation suggests that the behavior of unhealthy individuals creates a worse work environment over time (see Kompier & Taris, 2011). The argument is that individuals with reduced health tend to express negative affect (anger, frustration, disappointment) to co-workers, supervisors, and other organizational members, as well as make use of emotion-focused coping strategies. Depressed or emotionally exhausted individuals are likely to withdraw from others, which undermines a successful development of positive social rapport with coworkers and supervisors (Daniels & Guppy, 1997; Tang, 2014). Such behavior, in turn, may lead organizational members to avoid these individuals and, as a result, employees with health problems may feel a lack of support and perceive their work environment and organizational authorities as less fair. Research shows that sick people are perceived differently only based on their nonverbal behavior, e.g., the way they look like or how they walk (Sundelin et al., 2015). The ‘affective reaction’ assumption (Lang et al., 2011) suggests that health may undermine fairness perceptions because the work environment has actually changed due to colleagues and supervisors reacting to the unhealthy individual. Few have tested these two mechanisms against each other, but evidence suggests that both ideas have merit (de Lange et al., 2005). Over the course of two years, both the perception and the change explanation are relevant and are difficult to distinguish from one another.

Regarding explaining the potential reversed effects from health to justice, we predict social support plays a vital role. It has been suggested that healthy individuals have better chances of

getting promoted, getting recruited in better jobs, and receive more support or more interesting tasks (De Lange et al., 2004). Moreover, unhealthy individuals may underperform and receive less support from colleagues in return, or may isolate themselves, and in return get less involved, have less information or options at work to voice their opinion (De Lange et al., 2004; Kompier & Taris, 2011). For sickness absence, the link to social support and perceptions of justice may be most apparent. Being absent frequently or for a longer time may mean that colleagues have to cover and take on extra work, and, thus, may view the absent worker as less valuable to their team. Decisions are made without involving the individuals on sick leave, who, upon return to work, may feel less knowledgeable, less involved and less in control over essential procedures at work. In other words, social support may play a mediating role, helping to understand the relationship from health to organizational justice over time. Although the mediation link between health and justice through social support has not been tested before, there is some earlier evidence supporting our prediction. Previous research has shown that depressive symptoms may influence later perceptions of social support at work (Magnusson Hanson, Chungkham, Akerstedt, & Westerlund, 2014). In a cross-lagged model, Ibrahim, Smith, and Muntaner (2009) found that self-rated health, depression and psychological distress were predictive of social support over two years. Several studies found 'reversed' effects from various health indicators to social support (De Lange et al., 2004; Firth-Cozens & Hardy, 1992; Melamed, Armon, Shirom, & Shapira, 2011). In sum, for the relationship between health and organizational justice, we therefore predict:

Hypothesis 3: There is a time-lagged effect of a) self-rated health, b) depression, and c) sickness absence on procedural justice.

Hypothesis 4: Social support at work mediates the time-lagged effect of procedural justice on a) self-rated health, b) depression, and c) sickness absence. Specifically, there is a significant

indirect effect of procedural justice at T1 through social support at work at T2 to the three health indicators at T3.

Method

Sample and Procedures

The study population consisted of the participants of the SLOSH (Swedish Longitudinal Occupational Survey of Health) study; a longitudinal cohort survey with a focus on the association between work organization, work environment, and health. SLOSH started in 2006 for which a representative sample of the Swedish working population was invited to participate. Since then, questionnaires have been administered every second year, following the original SLOSH participants, but also adding new participants over time (open cohort design). Response rates varied between the waves, but always exceeded 50% and today, the total SLOSH data consist of 40,877 individuals. Both SLOSH and the present study have been approved by the Regional Research Ethics Board in Stockholm.

Participants are followed by means of postal questionnaire in two versions, one for those currently in paid work and one for those permanently or temporarily outside the labor force. The current paper included participants, who responded to the questionnaire for those in paid work in 2010, 2012 and 2014 ($N=4079$). After exclusion of self-employed and farmers, and those who had answered less than three items of the procedural justice or depressive symptoms items, the study sample consisted of 3236 participants. Of these, 58% were women, the average age was 48.83 ($SD = 8.57$, range: 22-71), 44% had a university degree, and 57% were married or cohabiting.

Comparing those, who answered the questionnaire for working people in 2010 and who were followed through all three waves, to those, who answered the questionnaire for working people in 2010 but were not followed through all three waves due to missing data, we found: slightly more

of the eligible participants were women (56.43% vs. 43.57%, $p < .01$) and had a university degree (40.06 vs. 32.46, $p < .001$). Also, included participants were younger (48.67 vs. 50.35, $p < .001$) and experienced slightly less procedural justice at baseline (3.26 vs. 3.40, $p < .001$). No differences were found with regard to marital status, self-rated health, depressive symptoms, or sickness absence.

Measures

Procedural justice was assessed by 7-items reflecting whether the decision-making procedures at the workplace are accurate, correctable, consistently applied, and whether the procedures include opinions from the people involved (Moorman, 1991). Example items are: ‘Decisions are taken on the basis of correct information’ or ‘Bad decisions can be revoked or changed’. Responses were given on a 5-point scale reaching from 1=‘totally agree’ to 5=‘totally disagree’. Thus, higher values reflect perceptions of low procedural justice (Cronbach Alpha: .90 (2010), .91 (2012), .90 (2014)).

Mental preoccupation with work was operationalized with two items from the Siegrist et al. (2004) subscale to measure inability to withdraw from work (‘As soon as I get up in the morning I start thinking about work problems’ and ‘When I get home, I can easily relax and ‘switch off’ (reverse coded)’). Responses were given on a 4-point scale reaching from 1=‘totally disagree’ to 4=‘totally agree’. These items reflect involuntary preoccupation with work (bivariate correlation: .55 (2010), .57 (2012), .55 (2014)).

Social support was assessed with two items from the demand-control-support questionnaire (DCSQ, Theorell et al., 1988) reflecting a supportive work environment (‘There is good collegiality at work’ and ‘My co-workers are there for me’). Responses were given on a 4-point

scale reaching from 1='totally agree' to 4='totally disagree'. Thus, higher values reflect perceptions of low social support at work (bivariate correlation: .65 (2010), .65 (2012), .63 (2014)).

Self-rated health was measured with a single item ("How would you rate your general state of health?") answered on a 5-point scale reaching from 'very good' to 'very bad'. Thus, higher values indicate worse health. The validity and reliability of this item has been shown in various studies and the item is considered a reliable and valid global health measure (Idler & Benyamini, 1997).

Depressive symptoms were measured with a brief validated subscale from the Hopkins Symptom Checklist (SCL-90), the SCL-CD₆ (Magnusson Hanson, Westerlund, et al., 2014). After an introduction phrase stating: 'How much during the last week have you been troubled by...' six core symptoms of depression are mentioned, e.g. 'Lethargy or low in energy' or 'Feeling blue'. The participants were asked respond on a five-point scale ranging from 1='not at all' to 5='extremely'. Higher values reflect higher depression severity (Cronbach Alpha .90 (2008), .90 (2010), .90 (2012)).

Sickness absence was measured with one question about how many days in total the person had been on sick leave during the past 12 months. Responses are given on a 5-point scale with response with the following response options: None, 1-7 days, 8-30 days, 31-90 days, and 91 days or more.

Results

Descriptive statistics, correlations, and internal reliabilities are presented in Table 1. Internal reliabilities were excellent and correlations were all in the expected direction. In line with recommendations (Little, Preacher, Selig, & Card, 2007), we analyzed our cross-lagged panel design with structural equation modeling (SEM) techniques.

Insert Table 1 about here

Measurement Invariance

Before testing the hypotheses, we examined configural and metric invariance for the latent variables (procedural justice, mental preoccupation with work, social support, and depressive symptoms) to make sure our hypotheses could be tested accurately (Vandenberg & Lance, 2000). Following recommendations in the literature (Cole & Maxwell, 2003; Little et al., 2007), the measurement errors of the same item over time were allowed to correlate.

Specifying the same factor structure at T1, T2, and T3 for procedural justice perceptions provided an acceptable fit to the data ($\chi^2 = 1524.89$, $df = 183$, CFI .967, RMSEA .048, SRMR .024) as did setting the factor loadings of all items to be equal across the three time points ($\chi^2 = 1538.94$, $df = 195$, CFI .967, RMSEA .046, SRMR .025, $\Delta\chi^2 = 14.05$, $\Delta df = 13$, $p = ns$). For mental preoccupation with work and social support, the model fit for configural invariance were excellent ($\chi^2 = 0.35$, $df = 3$, CFI 1.00, RMSEA .000, SRMR .001 and $\chi^2 = 5.48$, $df = 3$, CFI 1.00, RMSEA .016, SRMR .005). The models did not significantly worsen when testing metric invariance ($\chi^2 = 3.18$, $df = 5$, CFI 1.00, RMSEA .000, SRMR .007, $\Delta\chi^2 = 2.83$, $\Delta df = 2$, $p = ns$) and $\chi^2 = 6.77$, $df = 5$, CFI 1.00, RMSEA .010, SRMR .006, $\Delta\chi^2 = 1.29$, $\Delta df = 2$, $p = ns$). For depressive symptoms, the model fit was acceptable ($\chi^2 = 2162.64$, $df = 129$, CFI .950, RMSEA .069, SRMR .038), and setting the loadings of the items equal across time did not change the fit significantly ($\chi^2 = 2178.05$, $df = 139$, CFI .950, RMSEA .067, SRMR .038, $\Delta\chi^2 = 15.41$, $\Delta df = 10$, $p = ns$). To summarize, results provided evidence for metric measurement invariance over time for procedural justice perceptions, mental preoccupation with work, social support, and depressive symptoms.

Conceptual Model Testing

After confirming the adequacy of the measurement model, we specified and tested the different structural models (see tables 2, 3, and 4). Direct effects were tested by estimating the two lagged effects over time (for instance, from justice perceptions T1 (T2) to a health indicator T2 (T3)). Mediation was tested by estimating the longitudinal path 'a' (for instance, from a health indicator T1 to the mediator social support at T2) and the longitudinal path 'b' (for instance, from social support at T2 to procedural justice at T3). Furthermore, we examined the significance of the indirect effects, the product of path 'a' and path 'b', and the bias-corrected confidence intervals of the indirect effects generated by bootstrap procedures based on 5,000 samples.

In order to set the independent and dependent variables on one metric, self-rated health and sickness absence were translated into latent variables. Specifically, these latent variables had one single indicator with the residual variances fixed to $(1 - \text{reliability}) * \text{sample variance}$ (Hayduk, 1987). As is often done, we assumed a reliability of .70 (Wanous, Reichers, & Hudy, 1997). Furthermore, the analyses involving self-rated health and sickness absence were tested with the robust maximum likelihood (MLR) estimator in Mplus. Analyses involving depressive symptoms were computed with the maximum likelihood estimator (ML). Model fit (Hu & Bentler, 1995) was assessed with the comparative fit index (CFI), the root mean square error of approximation (RMSEA) and the standardized root mean square error of approximation (SRMR). Differences in model fit were assessed based on the chi-square difference test for nested models. We used the full-information maximum likelihood (FIML) technique to deal with missing values in the variables. FIML provides unbiased and efficient estimates and is recommended in the literature (Enders & Bandalos, 2001).

Model 1 included the temporal stability effects between the constructs. For instance, procedural justice at T1 was specified to predict procedural justice at T2 and at T3, and procedural justice at T2 was set to predict procedural justice at T3. At T1, procedural justice, the two mediators (mental preoccupation with work, social support), and the respective health indicator (self-rated health, depressive symptoms, or sickness absence) were set to correlate freely. The error covariances between concepts (procedural justice, the two mediators, and the respective health indicator) between T2 and T3 were estimated freely. All the stability effects (also called autoregressive effects) were significant and in the predicted direction.

Model 2 extended Model 1 by adding the two cross-lagged effect from procedural justice perceptions on the respective health indicator. To achieve a more parsimonious model and a simpler interpretation, the lagged effects were constrained to be equal. For self-rated health, Model 2 did not fit better than Model 1, indicating that the addition of the cross-lagged effects are not meaningful in predicting self-rated health over time, while for depressive symptoms and sickness absence Model 2 fitted better than Model 1.

Model 3 extended Model 2 by adding the paths from procedural justice T1 (T2) to mental preoccupation with work at T2 (T3) and from mental preoccupation with work T1 (T2) to the respective health indicator at T2 (T3). Again, the lagged effects were constrained to be equal. Model 3 fitted better than Model 2 for all health indicators.

Model 4 extended Model 3 by including the two cross-lagged effects of the respective health indicator on justice perceptions. Again, the lagged effects were constrained to be equal. Model 4 fitted better than Model 3 for all health indicators.

Model 5 extended Model 4 by adding the paths from the respective health indicator at T1 (T2) to social support at T2 (T3) and from social support at T1 (T2) to procedural justice at T2 (T3).

Again, the lagged effects were constrained to be equal. This model was the best fitting model for all health indicators. Estimates from Model 5 are displayed in Figures 1, 2, and 3 for all three health indicators.

Insert Table 2, 3, and 4 about here

Hypothesis 1 predicted a significant time-lagged effect from justice perceptions to the three health indicators. For self-rated health, Model 2, which included the lagged effects, did not fit better than Model 1 without these lagged paths ($\Delta\chi^2 = .03$, $\Delta df = 1$, $p = ns$). Additionally, the estimates from Model 5 (as displayed in Figure 1) show that procedural justice at T1/T2 did not have significantly time-lagged effects to self-rated health at T2/T3 ($\beta = -.00$, $p = ns$). For depressive symptoms, Model 2 fitted better than Model 1 ($\Delta\chi^2 = 15.99$, $\Delta df = 1$, $p < .05$) and estimates from Model 5 (as displayed in Figure 2) reveal that procedural justice at T1/T2 was significantly related to depressive symptoms at T2/T3 ($\beta = .03$, $p < .05$). For sickness absence, Model 2 fitted better than Model 1 ($\Delta\chi^2 = 26.17$, $\Delta df = 1$, $p < .05$) and estimates from Model 5 (as displayed in Figure 3) reveal that procedural justice at T1/T2 was significantly related to T2/T3 sickness absence ($\beta = .07$, $p < .001$). Together with the findings from the comparative model fit tests, these results provide support for Hypothesis 1 b and c.

Insert Figure 1, 2 and 3 about here

Hypothesis 2 predicted that mental preoccupation with work mediates the relationship between procedural justice and health indicators. For self-rated health, Model 3, which included

the mediation paths, did not fit better than Model 2 ($\Delta\chi^2 = .53$, $\Delta df = 2$, $p = ns$). As can be seen from the estimates displayed in Figure 1, procedural justice at T1 was not significantly related to mental preoccupation with work at T2 ($\beta = -.01$, $p = ns$) and mental preoccupation with work at T2 was not significantly related to self-rated health at T3 ($\beta = .00$, $p = ns$). Equally, the indirect effect was not significant (effect $.000$, $SE=.000$, $p = .789$, 95%CI $-.001$, $.000$). For depressive symptoms, Model 3, which included the mediation paths, fitted better than Model 2 ($\Delta\chi^2 = 31.56$, $\Delta df = 2$, $p < .05$). As can be seen from the estimates displayed in Figure 2, procedural justice at T1 was not significantly related to mental preoccupation with work at T2 ($\beta = -.01$, $p = ns$) but mental preoccupation with work at T2 was significantly related to depressive symptoms at T3 ($\beta = .08$, $p < .001$). However, the indirect effect was not significant (effect $-.001$, $SE=.001$, $p = .425$, 95%CI $-.003$, $.001$). For sickness absence, Model 3 did not fit better than Model 2 ($\Delta\chi^2 = 1.39$, $\Delta df = 2$, $p = ns$). As can be seen from the estimates displayed in Figure 3, procedural justice at T1 was not significantly related to mental preoccupation with work at T2 ($\beta = -.01$, $p = ns$) and mental preoccupation with work at T2 was not significantly related to sickness absence at T3 ($\beta = .01$, $p = ns$). The indirect effect was also not significant (effect $.000$, $SE=.000$, $p = .584$, 95%CI $-.001$, $.000$). These results do not provide support for Hypothesis 2.

Hypothesis 3 predicted that there are significant time-lagged effects from health indicators to procedural justice. Adding the lagged effects from self-rated health T1 (T2) to justice perceptions T2 (T3) improved model fit for self-rated health significantly ($\Delta\chi^2 = 19.21$, $\Delta df = 1$, $p < .05$). Self-rated health at T1/T2 was significantly related to procedural justice at T2/T3 ($\beta = .06$, $p < .001$). The model for depressive symptoms was also improved with the additional paths ($\Delta\chi^2 = 17.39$, $\Delta df = 1$, $p < .05$). Similarly, the lagged effects from depressive symptoms to procedural justice were significant ($\beta = .04$, $p < .05$). For sickness absence, the model including the lagged effects from

sickness absence to procedural justice also fitted better ($\Delta\chi^2 = 16.83$, $\Delta df = 1$, $p < .05$) and the lagged effects were significant ($\beta = .06$, $p < .001$). Together, these results provide support for Hypothesis 3 a, b, and c.

Hypothesis 4 predicted that social support mediates the relationship between health indicators and procedural justice. For all health indicators, including the mediation paths improved model fit significantly ($p < .05$). Self-rated health at T1 was significantly related to social support at T2 ($\beta = .10$, $p < .001$) and social support at T2 was significantly related to procedural justice at T3 ($\beta = .07$, $p < .001$). The indirect effect was significant (effect .009, SE=.002, $p < .05$, 95%CI .005, .013). Depressive symptoms at T1 was significantly related to social support at T2 ($\beta = .05$, $p < .001$) and social support at T2 was significantly related to procedural justice at T3 ($\beta = .07$, $p < .001$). The indirect effect was significant (effect .004, SE=.001, $p < .05$, 95%CI .002, .007). Sickness absence at T1 was significantly related to social support at T2 ($\beta = .06$, $p < .001$) and social support at T2 was significantly related to procedural justice at T3 ($\beta = .08$, $p < .001$). The indirect effect was also significant (effect .005, SE=.001, $p < .05$, 95%CI .003, .008). Together, these results provide support for Hypothesis 4 a, b, and c.

Discussion

In this study, we sought to provide a clearer understanding of the longitudinal relationship between organizational justice and health. We investigated the bi-directional relationships between procedural justice perceptions and health indicators in a cross-lagged design with three waves of data. Based on the allostatic load model, we argued that mental preoccupation with work mediates the relationship between justice perceptions and different health outcomes. Based on the affective perception and affective reaction assumption, we suggested that health outcomes relate to justice perceptions over time through the impact of social support at work.

Our first contribution relates to the systematic investigation of lagged effects between procedural justice and different indicators of health. Regarding the lagged direct effects from organizational justice to indicators of health, we found significant lagged effects to depressive symptoms and sickness absence but non-significant lagged effects for self-rated health. For interpreting these results, however, it should be taken into consideration that the model for testing the lagged effects included not only autoregressive relationships but also the two proposed mediators. It is possible that justice perceptions influenced health prior to the study for many workers, and that they had reached a state of adaptation such that continued low justice was not related to a continued decrease in health. Indeed, at all time points, justice perceptions and self-rated health were significantly correlated ($r_{T1-T1} = .20$, $r_{T2-T2} = .16$, $r_{T3-T3} = .18$). The results may therefore suggest that (low) justice does not predict any increases (decreases) in self-rated health beyond any initial impact and/or beyond effects that may have occurred prior to the start of the study. This finding may also indicate that individuals use various aspects of their health when making a summative assessment of their self-rated health status. Additionally, the strong autoregressive relationships for self-rated health may have also limited the possibility of predicting additional variance. It would be ideal to follow individuals from the beginning of their working life and test whether individuals with low perceptions of justice reach a state of adaptation or drop out of the labor market over time due to sickness absence or other health problems. In sum, the results show that procedural justice is related to depressive symptoms and sickness absence over time.

Regarding the lagged effects from health to justice, we based our predictions on the affective perception and reaction hypothesis put forward by Lang and colleagues (2011). Consistent with this line of thinking, we found significant longitudinal relationships for all three indicators of

health to procedural justice. Thus, the results suggest that over time, feeling unhealthy, having depressive symptoms, and being sickness absent more often has a significant effect on perceiving less procedural justice at work. Results support the effects found by Lang et al. (2011). However, Ybema and van den Bos (2010) found no lagged effects from depressive symptoms and sickness absence to procedural justice. Although Ybema and van den Bos (2010) used a cross-lagged design with three points of data, they did not have a valid measure of procedural justice but instead measured a concept closer to ‘concern for employees by the organization’ which may explain the divergent results. Elovainio et al. (2015) found lagged effects between justice perceptions and mental health but no effects in the other direction. However, Elovainio et al. (2015) only had two time points, had a time lag of four years and took an average of all justice facets which may hinder comparability with the present study. The reversed effects in the present study were consistently present. Therefore, this study supports notions that health status affects procedural justice perceptions over time.

Our second contribution relates to the process underlying the relationship between organizational justice and health. Apart from some exceptions, there are few empirical studies testing the underlying processes of the justice–health relationship. Contradictory to our expectations, mental preoccupation with work did not mediate the relationship between organizational justice and later health outcomes. There are several potential reasons for these findings. First, the autoregressive effects of mental preoccupation with work were very strong, making it difficult to predict additional variance. Indeed, mental preoccupation with work has both a state and a trait component, and it may be that either the time lag of two years or the measurement was not ideal to capture the state component. For instance, prior research has supported the mediating role of mental preoccupation with work for overall justice over a shorter period than the

present study (Eib et al., 2015). It is plausible that injustice has an immediate effect on mental preoccupation with work, which then has a delayed impact on health. In further analyses adapting Model 5, we found significant indirect effects between procedural justice T1/T2 to depressive symptoms T2/T3 through mental preoccupation with work T1/T2 (effect .014, SE=.001, $p < .001$, 95%CI .009, .020) but non-significant indirect effects for self-rated health (effect .001, SE=.002, $p = ns$, 95%CI -.004, .005), and sickness absence (effect .002, SE=.003, $p = ns$, 95%CI -.003, .007). Although one cannot tease apart the temporal order among concurrent levels of procedural justice and mental preoccupation with work, these analyses indicate mental preoccupation with work may be indeed a mediator for predicting relationships between work stressors and mental health-related outcomes over time. This underlines the importance of studying mental preoccupation in further studies, ideally with other time intervals to test when effects occur and how long they prevail. Furthermore, it needs to be tested whether mental preoccupation is a mediator for relationships from workplace stressors to mental health problems as suggested by the further analyses and past research (Eib et al., 2015), or whether effects on overall health and sick leave can be detected with other time lags. Another point relates to the justice facet. Structural components of justice, like procedural justice, may undermine career progression or job insecurity, but also relate to the individuals' sense of standing in the organization. Therefore, one can speculate that the structural components of justice elicit more problem-solving rumination (Querstret & Cropley, 2012), e.g. how to move past the injustice and progress in one's job and make up for the unfair environment or supervisor. Instead, interactional justice, and here particularly interpersonal injustice which is seen as the 'hot' facet of justice (Barsky & Kaplan, 2007), may trigger more negative affective rumination, e.g. blaming oneself or others or trying to figure out whether the transgression was intentional or not.

Our third contribution is that the present study fills the gap of better understanding the process by which health relates to justice perceptions over time. We suggested that social support is an important mediator, and results revealed small but significant indirect effects across all three health indicators, such that employees who report lower self-rated health, depressive symptoms and higher sickness absence were more likely to perceive their work environment as less supportive over time, which, in turn, was associated with lower perceived procedural justice. To our knowledge, this is the first study testing the underlying process of the effects from health to organizational justice. This result is consistent with both the affective reaction and perception assumptions, such that lower social support is received/perceived from co-workers and organizational representatives as reactions to the ill-health of an employee. Further research is needed to distinguish between these two explanations and to study the extent to which they operate simultaneously. The evidence from this study suggests that over-time relationships between social support and organizational justice may differ from what is widely assumed: in the justice and work environment literature, organizational justice and social support are often seen as either positive resources that have independent effects on outcomes or interact with each other to predict outcomes (Ndjaboué et al., 2012; Rousseau, Salek, Aubé, & Morin, 2009). Our study suggests that the occupational health literature may need to revisit the relationship between social support and organizational justice, since indeed, one effect may precede and thus influence the other over time.

For further research, there is also a need to examine potential moderators of the lagged and mediated effects. One such possible moderator could be job change. Procedural justice most often is considered to stem from the organization as the organization sets policies and procedures. If employees have changed their jobs, their justice perceptions should also change according to theory (Lind, 2001). However, further analyses of our data, using a multiple group analysis, have

shown that this explanation can be ruled out as job change (with 0 meaning that an employee did not change his/her employer and 1 meaning that an employee changed his/her employer at least once over the study period) did not moderate the direct relationships reported in this study. There may also be important moderator variables such as personality for the relationship from health to justice; for instance, employees high on agreeableness and extraversion may trigger more positive reactions from colleagues and supervisors even if they have serious health problems than individuals who are more introverted or less agreeable. It might also be useful to study justice and health relations in multiple countries as relations may depend on the level of stable welfare support.

Limitations

Before concluding, we want to highlight some of the limitations of this study. First, a time lag of two years is relatively long although much longer time lags have been studied in the justice literature (Fortin, Cojuharenco, Patient, & German, 2014). In attempting to calculate optimal time lags, the stability of the concepts is crucial (Dormann & Griffin, 2015). Fairness heuristics theory (Lind, 2001) suggests that justice perceptions are relatively stable once formed. Based on prior research, one may also argue that health is relatively stable over time. These considerations may lend itself to study justice and health relationships over a longer period than, for instance, justice and work-related concepts. As justice and health are dynamic concepts and mixed findings exist, it is currently unclear when and how long it takes for the effects to appear and disappear (Roe, 2008). Future research could build on the different stress reaction and stress adaptation models that have been suggested (Frese & Zapf, 1988) to model the impact of organizational justice and health (and vice versa) depending on different time lags. While the literature would profit from investigating different time lags for better understanding the justice–health and health–justice

relationship, it may be challenging to implement short time lags in nationally representative survey studies.

A second limitation is that we concentrated our efforts on procedural justice perceptions, ignoring other facets of organizational justice. However, procedural justice is a highly important dimension and relates to the structural aspects of organizational decision-making. Relationships between outcomes and other facets of justice, like interactional justice, may be less strong over time as it relates to specific supervisors, who might change over the course of the study period. In future research, it may be particularly valuable to study overall justice as it may provide a better match of the generality to an overall perception of self-rated health (Ambrose & Schminke, 2009).

A further limitation is that sickness absence was measured as self-report and not in an objective manner. However, data treatment was confidential which should help undermine biases and results for sickness absence were similar to the other outcomes. Also, several European studies report a relatively good agreement between self-reported and recorded days of sickness absence (Fredriksson, Toomingas, Torgén, Thorbjörnsson, & Kilbom, 1998) and a study among Canadian public employees found a correlation of 0.89 between self-reported and employer-recorded sickness absence, suggesting that self-reports of sickness absence can be fairly accurate (Caverley, Cunningham, & MacGregor, 2007). Future research could also study objective sickness absence in a cross-lagged manner.

There are notions that cross-lagged designs include control for previous levels of variables, thereby innately controlling for the influence of background variables (Zapf et al., 1996). Nevertheless, we extended Model 5 by the covariates age, gender, and education. Consistent with one of the approaches to include covariates (Little et al., 2007), we controlled for the effects of the covariates on the first measurement occasion. Specifically, age, gender, and education at T1 were

set to predict justice perceptions, mental preoccupation with work, social support, and the respective health indicator at T1. The estimates for the paths were very similar (not displayed) and conclusions were the same.

Another limitation concerns our sample. Participants in this study did not stem from one organization but from many which limits insights from specific events and procedures within one company. There are, however, also advantages, like the limited range restriction in our sample as participants stem from multiple organizations, from various regions in the country, and that it started off as a representative sample (Frese & Zapf, 1988). Our sample represents a wide range of occupations which is a clear advantage in terms of generalizability of the results. This also means that the present results are not subject to singular shocks to the system, such as a change of the CEO in one company. In sum, our sample of Swedish workers adds to the landscape of research on justice and health. Furthermore, the hypotheses were tested with the rigorous statistical approach of a cross-lagged design (Little et al., 2007), which allows to study the direction of relationships taking autoregressive effects into consideration.

Practical Implications

In terms of practical implications, this study suggests that organizations should be aware of the relevance and importance of the fairness of the decision-making procedures at the workplace. Justice has an impact on health over time, as far as depressive symptoms and sickness absence are regarded. Individuals with depressive symptoms or those who withdraw and take sickness leave are costly for organizations. Many organizations today are concerned with increasing the health, mental and physical, level of their staff. This study suggests that fair treatment through transparent decision-making and organizational procedures is helpful to alleviate the direct and indirect costs related to health problems and sickness absence. The study results also indicate that procedural

justice and mental preoccupation about work are related rather simultaneously, suggesting that fair treatment may reduce negative rumination about work outside of work. Despite the relationship with depressive symptoms, negative rumination about work is likely to have negative effects on work attitudes and behaviors. Therefore, it is beneficial for organizations to emphasize transparent decision-making and voice.

This research also provides clear indication that employees with past or present health problems, depressive symptoms, and higher amount of sickness absence over time perceive their organization as less fair when it comes to procedural justice. Organizations may need to give extra attention to these individuals, be it by monitoring their fairness perceptions, the way they are included in the workplace, or how their integration, their voice, and their insight into things that happen in the organization are guaranteed. Here, perhaps organizations need better routines for individuals with health problems or higher sickness absence rates. One important factor to pay attention to is the social side of work. Specifically, social support played an important role for the change in health but also for the change in justice perceptions. Therefore, our results emphasize that both supervisors and co-workers are relevant for creating a fair and healthy workplace. In sum, this study supports that fair treatment at work does have the “potential for improving the effectiveness of work organizations while simultaneously improving the lives of employees” (Cropanzano & Ambrose, 2015, p. 13).

Conclusions

Many studies on organizational justice and health and well-being outcomes have been published and some have even postulated justice as a new psychosocial predictor of health (Elovainio, Kivimäki, & Vahtera, 2002). Occupational health psychology has been criticized for cross-sectional examinations between variables, and for a lack of careful theoretical explanation

of mechanisms for potential associations (Kompier & Taris, 2011). This study uses a full panel design with three waves of data, based on large-scale survey project. As previous studies have reported inconsistent findings regarding justice and health relationships, our study design contributes to the occupational health psychology literature by allowing more rigorous testing of ‘normal causation’, and ‘reversed causation’ longitudinal associations between justice perceptions and health. Results revealed general support for lagged effects between procedural justice perceptions to health although not for all health indicators (self-rated health). Contrary, the different health indicators we studied consistently had a longitudinal relationship to procedural justice perceptions. In addition to these direct effects, this study examines indirect effects for the justice–health and health–justice relationships. One previously suggested mediator, mental preoccupation with work, did not mediate the longitudinal relationship between procedural justice and different health outcomes. While this result underlines the importance of replication studies, we offer explanations based on justice facets, and immediate versus delayed mechanisms. This study highlights the limited knowledge of mechanisms for justice–health associations. Given the results showing justice is an independent predictor of health next to the famous demand-control-support model (Ndjaboué et al., 2012), this lack of knowledge on processes is particularly noteworthy. Different scholars situated in the work stress literature have suggested mechanisms behind potential ‘reversed’ effects from health status to work stressor. This study adds to this discussion by testing one specific mechanism, social support. Results support that social support at work acts as a mediator for the longitudinal relationship between health–justice. A next step would be to further test whether this is due to a perception effect or whether health status also triggers real changes of the work environment. Moreover, this result provides an interesting avenue for justice scholars, as the intricate relationship between justice and social support has not received

much attention so far. In sum, employers are well advised to consider fairness perceptions of employees. Similarly, employees' health status is particularly important to pay attention to by employers because of substantial effects on perceptions of the work environment.

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Table 1

Descriptive statistics and correlations among the research variables

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12
1 Justice perceptions T1	2.73	0.89	(.90)											
2 Justice perceptions T2	2.71	0.89	.55***	(.90)										
3 Justice perceptions T3	2.84	0.96	.49***	.56***	(.91)									
4 Self-rated health T1	1.98	0.77	.20***	.14***	.18***	–								
5 Self-rated health T2	1.96	0.78	.14***	.16***	.18***	.59***	–							
6 Self-rated health T3	2.01	0.80	.14***	.15***	.18***	.56***	.63***	–						
7 Depressive symptoms T1	1.88	0.82	.26***	.20***	.20***	.46***	.33***	.34***	(.90)					
8 Depressive symptoms T2	1.75	0.77	.19***	.23***	.20***	.33***	.43***	.35***	.58***	(.90)				
9 Depressive symptoms T3	1.86	0.81	.20***	.21***	.26***	.33***	.35***	.45***	.57***	.61***	(.90)			
10 Sickness absence T1	1.83	0.84	.06**	.08***	.08***	.18***	.23***	.19***	.13***	.14***	.11***	–		
11 Sickness absence T2	1.81	0.87	.11***	.08***	.12***	.26***	.18***	.20***	.18***	.12***	.14***	.41***	–	
12 Sickness absence T3	1.84	0.94	.09***	.09***	.10***	.19***	.19***	.28***	.13***	.15***	.18***	.40***	.39**	–
13 Mental preoccupation T1	2.261	0.81	.14***	.12***	.10***	.24***	.19***	.17***	.39***	.29***	.29***	-.00	.02	.01
14 Mental preoccupation T2	2.27	0.83	.12***	.20***	.13***	.18***	.24***	.21***	.30***	.39***	.33***	.00	-.01	.02
15 Mental preoccupation T3	2.25	0.82	.09***	.14***	.14***	.21***	.22***	.26***	.30***	.33***	.42***	.01	.01	.02
16 Social Support T1	1.90	0.60	.33***	.26***	.24***	.19***	.13***	.15***	.30***	.21***	.21***	.05**	.07***	.03
17 Social Support T2	1.85	0.58	.26***	.38***	.28***	.19***	.19***	.19***	.23***	.27***	.24***	.08***	.06***	.08***
18 Social Support T3	1.80	0.58	.24***	.27***	.35***	.17***	.19***	.22***	.19***	.20***	.27***	.07***	.08***	.09***

Note: *N*=3268. Reliabilities on diagonal where applicable. * *p* < .05, ** *p* < .01, *** *p* < .001.

Descriptive statistics and correlations among the research variables

Variable	13	14	15	16	17	18
13 Mental preoccupation T1	–					
14 Mental preoccupation T2	.61***	–				
15 Mental preoccupation T3	.58***	.66**	–			
16 Social Support T1	.21***	.14***	.15***	–		
17 Social Support T2	.16***	.22***	.16***	.47***	–	
18 Social Support T3	.11***	.14***	.21***	.40***	.50***	–

Note: $N=3268$. Reliabilities on diagonal where applicable. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 2

Fit table for justice perceptions and self-rated health

	χ^2	<i>df</i>	CFI	RMSEA	SRMR	$\Delta\chi^2$	Δdf
Model 1: Stability effects	1939.31	534	.973	.029	.033		-
Model 2: M1+ PJ→SRH	1939.46	533	.973	.029	.033	M2 vs M1: 0.03 ^b	1
Model 3: M2+ PJ→MP, MP→SRH	1938.93	531	.973	.029	.033	M3 vs M2: 0.53 ^b	2
Model 4: M3+ SRH→PJ	1921.21	530	.974	.028	.030	M4 vs M3: 19.21 ^a	1
Model 5: M4+ SRH→SS, SS→PJ	1842.27	528	.975	.028	.023	M5 vs M4: 78.94 ^a	2

Note. $N=3236$; *df* = degrees of freedom; CFI = comparative fit index; RMSEA = root-mean-square error of approximation;

SRMR = standardized root-mean-square residual. PJ = procedural justice; SRH = self-rated health; MP = mental preoccupation with work; SS=social support.

^a $p < .05$

^b $p = ns$

Table 3

Fit table for justice perceptions and depressive symptoms

	χ^2	<i>df</i>	CFI	RMSEA	SRMR	$\Delta\chi^2$	Δdf
Model 1: Stability effects	4661.27	1143	.964	.031	.039	-	-
Model 2: M1+ PJ→D	4645.28	1142	.964	.031	.035	M2 vs M1: 15.99 ^a	1
Model 3: M2+ PJ→OVC, OVC→D	4613.72	1140	.965	.031	.034	M3 vs M2: 31.56 ^a	2
Model 4: M3+ D→PJ	4596.33	1139	.965	.031	.031	M4 vs M3: 17.39 ^a	1
Model 5: M4+ D→SS, SS→PJ	4549.67	1137	.965	.030	.027	M5 vs M4: 46.66 ^a	2

Note. $N=3236$; *df* = degrees of freedom; CFI = comparative fit index; RMSEA = root-mean-square error of approximation;

SRMR = standardized root-mean-square residual. PJ = procedural justice; D = depressive symptoms; MP = mental preoccupation with work; SS=social support.

^a $p < .05$

^b $p = ns$

Table 4

Fit table for justice perceptions and sickness absence

	χ^2	<i>df</i>	CFI	RMSEA	SRMR	$\Delta\chi^2$	Δdf
Model 1: Stability effects	1894.05	534	.973	.028	.033	-	-
Model 2: M1+ PJ→SA	1871.15	533	.974	.028	.031	M2 vs M1: 26.17 ^a	1
Model 3: M2+ PJ→OVC, OVC→SA	1869.49	531	.974	.028	.031	M3 vs M2: 1.39 ^b	2
Model 4: M3+ SA→PJ	1853.30	530	.974	.028	.030	M4 vs M3: 16.83 ^a	1
Model 5: M4+ SA→SS, SS→PJ	1800.05	528	.975	.027	.024	M5 vs M4: 55.58 ^a	2

Note. $N=3236$; *df* = degrees of freedom; CFI = comparative fit index; RMSEA = root-mean-square error of approximation;

SRMR = standardized root-mean-square residual. PJ = procedural justice; SA = sickness absence; MP = mental preoccupation with work; SS=social support.

^a $p < .05$

^b $p = ns$

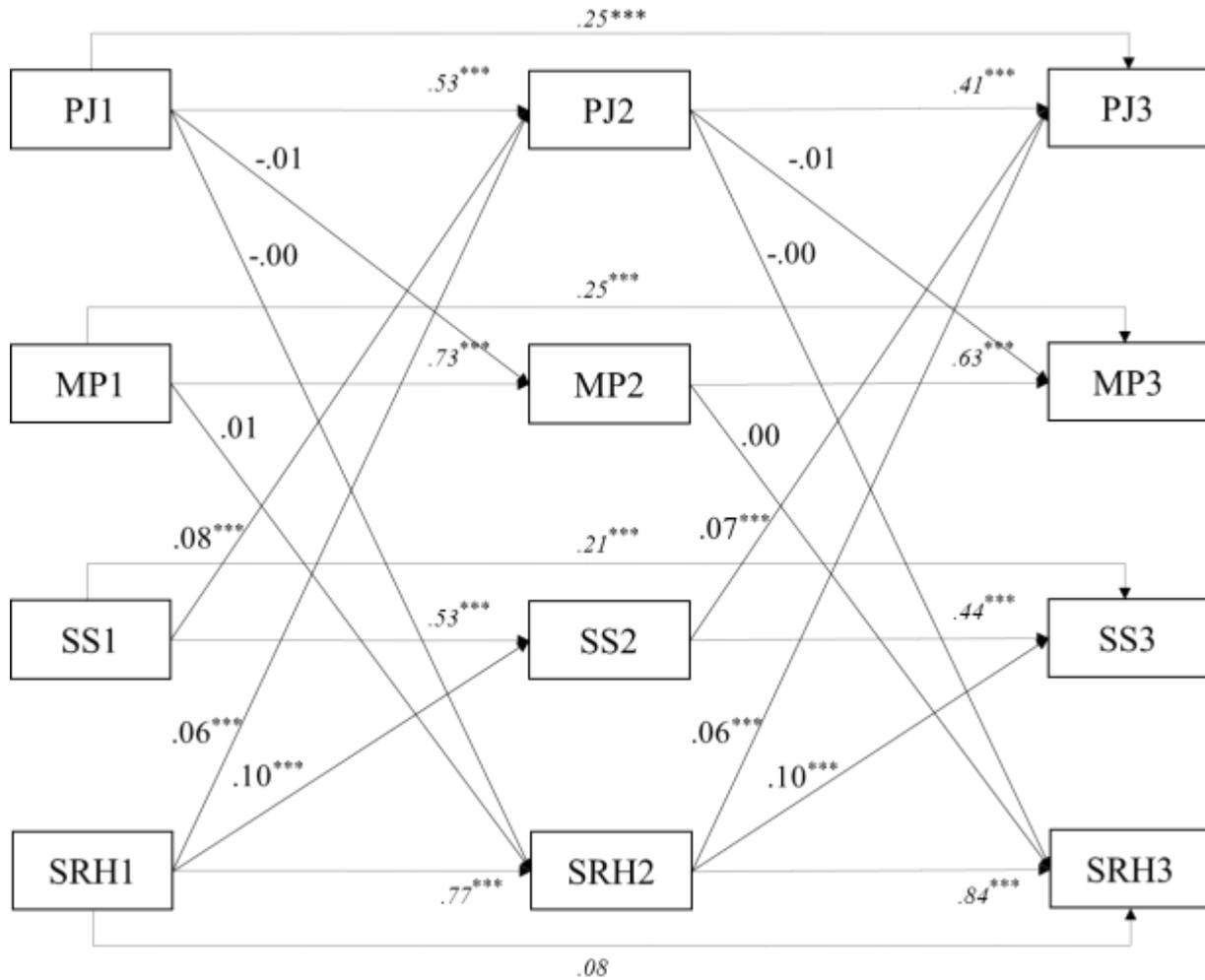


Figure 1. Justice and self-rated health. Standardized estimates displayed (Model 5). PJ = procedural justice; SRH = self-rated health; MP = mental preoccupation with work; SS=social support

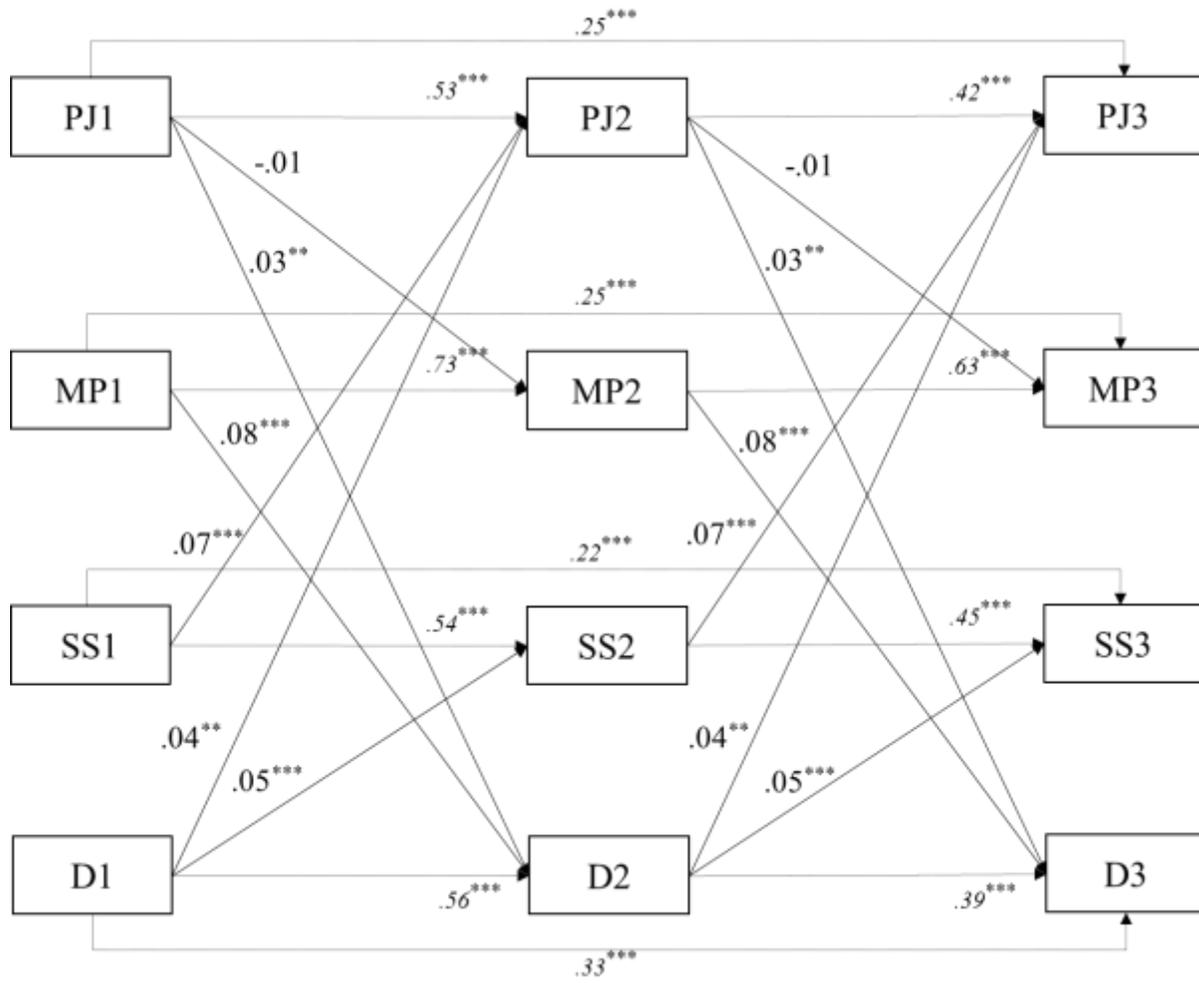


Figure 2. Justice and depressive symptoms. Standardized estimates displayed (Model 5). PJ = procedural justice; D = depressive symptoms; MP = mental preoccupation with work; SS=social support.

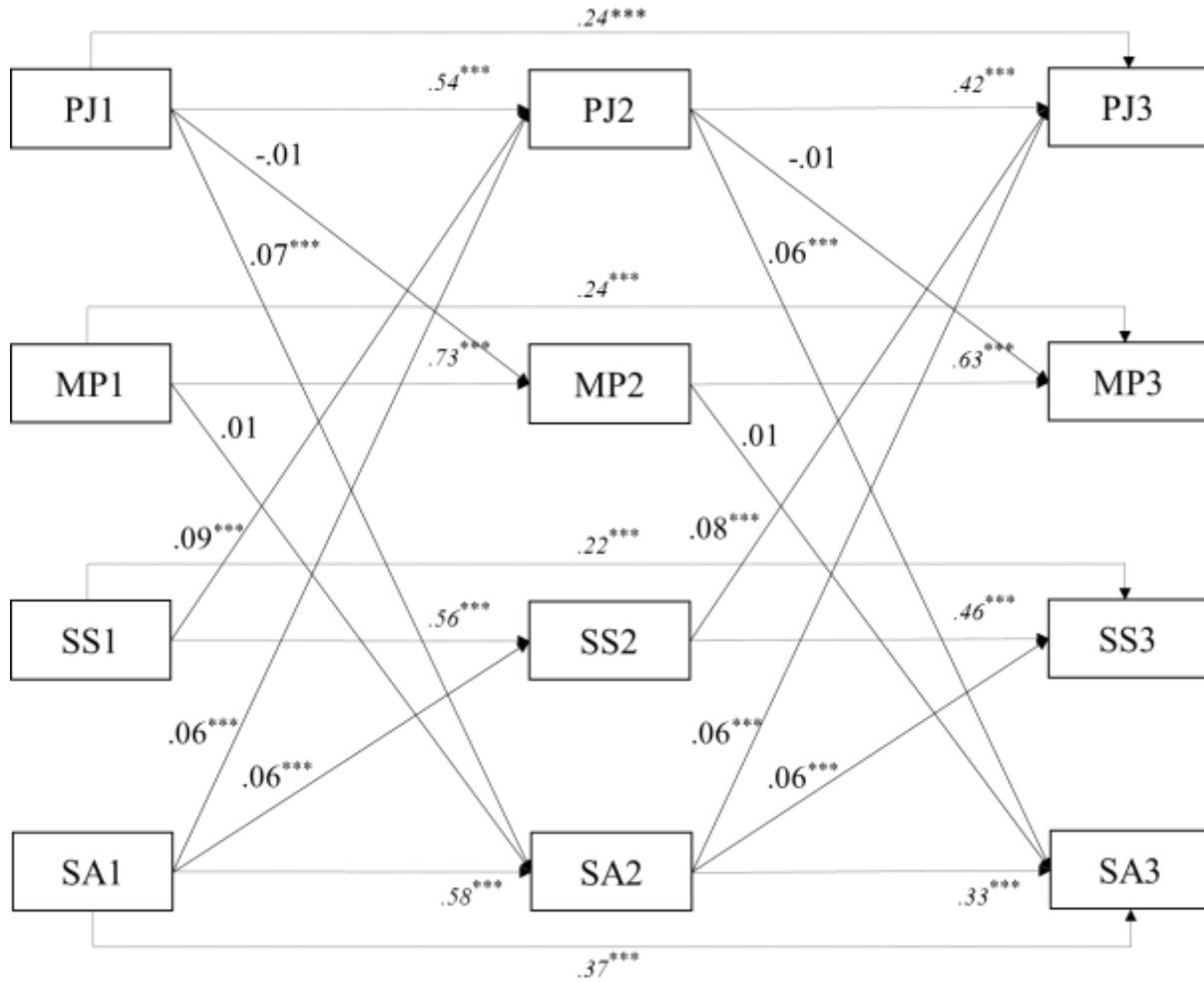


Figure 3. Justice and sickness absence. Standardized estimates displayed (Model 5). PJ = procedural justice; SA = sickness absence; MP = mental preoccupation with work; SS= social support.