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HOW DO JOB INSECURITY AND ORGANIZATIONAL JUSTICE RELATE TO
DEPRESSIVE SYMPTOMS AND SLEEP DIFFICULTIES: A MULTILEVEL STUDY ON
IMMEDIATE AND PROLONGED EFFECTS IN SWEDISH WORKERS

RUNNING HEAD

Job Insecurity, Organizational Justice, Depression and Sleep

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Abstract

Drawing on stress and justice literature, we argue that perceptions of job insecurity induce feelings of low procedural justice, which has immediate and prolonged negative effects on health (depressive symptoms, sleep difficulties). Moreover, we explore whether the strength of the job insecurity–justice relationship differs between individuals as a function of their average level of job insecurity over time. Finally, we explore whether the procedural justice–health relationship differs between individuals as a function of variability in justice perceptions over time. We analyzed Swedish panel data from permanent workers over four consecutive waves (with a two-year time lag between waves) using multilevel analysis, separating within- and between-person variance. Results showed that job insecurity associated negatively with procedural justice at the same time point for all waves. Prolonged effects were less stable. We found immediate (but not prolonged) indirect effects of job insecurity on health outcomes via procedural justice. Average levels in job insecurity over time moderated the within-person job insecurity–justice relationship. However, variability in procedural justice over time did not moderate the within-person justice–health relationship. In conclusion, disentangling within- and between-person variability of job insecurity and justice perceptions contributes to the understanding of health effects.

HOW DO JOB INSECURITY AND ORGANIZATIONAL JUSTICE RELATE TO
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With the continuous changing world of work towards more technological progress and global competition that requires organizations to cut costs, job insecurity is a concern of workers across different sectors and occupations. Job insecurity, defined as a subjectively perceived threat to the continuance of one's job (De Witte, 1999), has a well-documented negative impact on well-being and health (Cheng & Chan, 2008; De Witte, Pienaar, De Cuyper, 2016; Sverke, Hellgren, & Näswall, 2002). However, the exact mechanisms underlying the link between job insecurity and health are not well-known (Vander Elst, Näswall, Bernhard-Oettel, De Witte, & Sverke, 2016).

Stress-related explanations suggest that perceptions of job insecurity threaten important resources and evoke uncertainty, and therefore are appraised as stressful and strain provoking (Richter, Näswall, Bernhard-Oettel, & Sverke, 2014; Vander Elst, Näswall, Bernhard-Oettel, De Witte, & Sverke, 2016). In contrast, social-exchange-related explanations portray job insecurity as a psychological contract breach for permanent workers (Bernhard-Oettel, De Cuyper, Schreurs, & De Witte, 2011) or as an imbalance in effort and reward (feeling job insecure lessens rewards that employees get from their loyalty and investments; Piccoli & De Witte, 2016). Accordingly, feeling job insecure leads to lower justice perceptions and thus, impaired well-being. This mediation hypothesis has received empirical support in cross-sectional studies (Bernhard-Oettel et al., 2011, Piccoli & De Witte, 2016) when examining the role of distributive justice. We argue that feeling job insecure most likely also triggers an evaluation of the procedures used to distribute rewards (i.e., procedural justice). Moreover, we propose that the existing cross-sectional evidence needs to be complemented with longitudinal studies to test the strength of the suggested indirect effect of procedural justice

over time. In addition, longitudinal studies also help to uncover the extent to which job insecurity perceptions and procedural justice perceptions are stable or varying over time (Shoss, 2017). These variations in perceptions of job insecurity and procedural justice over time may add to the understanding of individuals' reactions. For example, if individuals perceive different levels of job insecurity over time (one employee might experience continuously high job insecurity, whereas another employee might experience only episodic job insecurity), this may affect their organizational justice evaluations and health reactions at each point in time, as well as over time. In a similar vein, procedural justice experiences may fluctuate over time (Matta, Scott, Colquitt, Koopman, & Passantino, 2017) and, as a consequence, may differentially impact employees' health. Apart from the need for longitudinal studies, several job insecurity scholars have criticized the mismatch between theory and empirical focus; theory posits within-person dynamic processes with respect to how job insecurity and justice perceptions unfold and exert an influence on health outcomes, whereas empirical studies often investigate between-person rank-order relationships that ignore the unfolding nature of these concepts over time (Vander Elst, Notelaers, & Skogstad, 2017; Voelkle, Brose, Schmidek, & Lindenberg, 2014).

In this paper, we aim to study how employees' job insecurity and procedural justice perceptions are interrelated and associated with health outcomes in terms of depressive symptoms and sleep difficulties at the same point in time, as well as over time. In doing so, we contribute to the job insecurity literature in at least three different ways. First, drawing on both stress and justice theories, we study the overlooked role of procedural justice perceptions as a mediator in the longitudinal job insecurity-health relationship. Second, due to the longitudinal nature of our data, we do not only study the immediate (i.e., at the same point in time) associations between job insecurity, procedural justice, depressive symptoms and sleep difficulties, but also contribute to the debate on the longevity of these effects (i.e.,

prolonged effects by assessing a two-year time lag between independent and dependent variables) over the course of multiple waves of data. Third, this study disentangles within- and between-person processes. More specifically, we suggest a within-person mechanism building on mediation: at times of heightened perceived job insecurity, employees review and adjust their procedural justice perceptions, which, in part, explains the within-person job insecurity-health association. However, these within-person processes may vary between individuals. Hence, we explore whether a) the level of job insecurity experienced over time, and b) the variation in justice perceptions over time moderate the strength of the within-person processes.

A Mediation Framework at the Within-Person Level

Job Insecurity, Depression, and Sleep

Commonly conceptualized as a subjective phenomenon (Probst, Jiang, & Benson, 2018), job insecurity perceptions impose a threat to important manifest and latent benefits of work such as income, status, and identity (Vander Elst, et al., 2015). Feeling job insecure is considered a work stressor with negative health consequences (De Witte et al., 2016); an association which has often been explained with reference to Transactional Stress Theory (Lazarus & Folkman, 1984). According to this theory, individuals engage in a series of appraisal processes of stimuli. Whenever they perceive a stimulus as a threat this may lead to feelings of stress, and in turn, potentially harm their well-being and health (Lazarus & Folkman, 1984). Specifically, in a first step, individuals engage in a primary appraisal process to evaluate whether an event is relevant to them or not. Hence, employees start to feel job insecure when they conclude that there is a relevant threat to the future of their job; a process that can be initiated by hearing rumors about lay-offs, organizational changes, or economic difficulties (Smet, Vander Elst, Griep, & De Witte, 2016). Next, during a secondary appraisal, individuals assess the type of resources they would need to adequately

deal with the stressor (Lazarus & Folkman, 1984). This secondary appraisal process often is a difficult one because job insecurity by definition implies uncertainty about the future of employment (De Witte, 2005). As a corollary, it is by definition unclear whether one should engage in job search behaviors or whether one should increase work effort and performance to protect one's current job (Shoss, 2017). In other words, job insecure employees often have to deal with uncertainty and lack of control (Richter et al., 2014), leading to negative affective reactions like anxiety, panic, hopelessness, or depression (Lazarus, 2006).

Job insecurity perceptions have been related to individual strain reactions such as mental (e.g. depressive symptoms, psychosomatic complaints, psychological distress) and physical (e.g. somatic symptoms, coronary heart disease, hypertension) health complaints (De Witte, Pinaar, & De Cuyper, 2016). In this study, we specifically focus on depressive symptoms and sleep difficulties because depressive symptoms are a typical indicator of a stress reaction in response to job insecurity (De Witte, Vander Elst, & De Cuyper, 2015) and sleep difficulties are a well-established behavioral indicator of stress (Greenberg, 2006). A multitude of studies has demonstrated a negative relationship between perceptions of job insecurity and mental health (De Witte et al., 2015) and, although far less frequently studied, perceptions of job insecurity have been linked to sleep disorders (Virtanen, Janlert, & Hammarstrom, 2011).

Corresponding to the Transactional Stress Theory in which cognitive appraisal processes are believed to be accompanied by immediate emotional reactions that impact health and well-being (Lazarus, 2006), there is profound evidence that the job insecurity-health relationship may develop immediately (Sverke et al., 2002). Similar to Vander Elst and colleagues (2016), we study the relationship between perceptions of job insecurity and its outcomes at the within-person level. That is, we argue that when an individual perceives more job insecurity than (s)he generally does (as evidenced by the average level of job

insecurity of that person across all data waves), this is positively associated with depressive symptoms and sleep difficulties at the same point in time. Accordingly, our first hypothesis is:

H1: At the within-person level, there is a direct positive effect of job insecurity perceptions on a) depressive symptoms and b) sleep difficulties at the same point in time.

Job Insecurity and Organizational Justice

The Social Exchange perspective suggests that permanent employees consider job security to be a central part of their implicit agreement with their employer (Guest, Isaksson, De Witte, 2010; Piccoli & De Witte, 2015; Rousseau, 1989). That is, permanent employees, who contribute effort and time to their employer, expect their efforts to be reciprocated by receiving rewards such as job security (Shoss, 2017). In line with this reasoning, perceptions of job *insecurity* violate this rule of reciprocity (Piccoli & De Witte, 2015). This violation of reciprocity will not only be perceived as unfair but will also likely trigger a downward adjustment of trust (Bernhard-Oettel et al., 2011). Hence, we argue that job insecurity perceptions will trigger perceptions of unfairness.

To date the dominant focus in the literature has been on the negative association between job insecurity and distributive justice perceptions (i.e., perceived fairness of resource allocations; Piccoli & Belotto, 2015, Piccoli & De Witte, 2015). However, justice perceptions also include fairness of decision-making processes (procedural justice), and the treatment and information employees receive from organizational representatives (interpersonal and informational justice) (Colquitt, 2001). Procedural justice, which is the focus in this paper, pertains to making and implementing decisions that are ethical, are constantly applied, transparent and suppress bias, according to fair processes to which all affected parties have

input (Leventhal, 1980). Like job insecurity, organizational justice perceptions are subjective evaluations, however, focusing on employer fairness.

We argue that employees who perceive job insecurity do not only experience a lack of distributive justice (Picolli & Belotto, 2015), but also start to question the fairness of the procedures that are used to determine how these distributions are made. We base this argumentation on Fairness Heuristics Theory (Lind, 2001), which states that employees often are in a fundamental social dilemma: employees contribute their resources (time, energy, cognitive and emotional skills) to their employer, yet they might get exploited by their employer. As a consequence, employees may start to feel less certain about their relationship with their employer. The more uncertain they feel, the more they may start to question whether they can trust their employer to treat them in a non-biased manner and continue to view them as a legitimate member of the social group (Copranzano, Byrne, Bobocel, & Rupp, 2001). Hence, employees need to make judgments about procedural justice, which encompass whether the employer can be trusted and whether outcomes (having a job or not) will be allocated according to ethical and fair rules.

This line of reasoning suggests that permanent workers, whenever they feel job insecure are highly uncertain about the continuous relationship with their employer, and as a consequence are likely to start scrutinizing their employer's procedural fairness. Due to the nature of their contract (i.e., permanent contract), perceiving job insecurity is a rather unexpected event that shakes the otherwise rather stable justice perceptions employees holds about their employer (Hausknecht, Sturman, & Roberson, 2011). As a consequence employees may fear that the resources they have invested may not pay off, and that their status as a legitimate member of the group is threatened, which in turn may signal that the hereto perceived procedural justice had been misjudged. This idea also fits with the notion that job insecure employees perceive little control over their situation because they feel

uncertain as to whether their organization may cut their jobs or not (De Witte, 2005). Hence, employees who experience more job insecurity (compared to their average over-time perception of job insecurity) may therefore become aware of the fact that their employers' actions are more unpredictable than previously assumed, which implies that they have to re-evaluate their perceptions about their employer's procedural justice.

This cognitive re-evaluation should happen rather immediately upon feeling job insecure. In agreement with this suggestion, previous studies found a cross-sectional positive relationship between job insecurity and low justice perceptions (Shoss, 2017). Therefore, we expect the effect of job insecurity on procedural justice to be immediate. In line with the above, we suggest a job insecurity-procedural justice link at the within-person level:

H2: At the within-person level, there is a direct negative effect of job insecurity perceptions on procedural justice perceptions at the same point in time.

Organizational Justice, Depressive Symptoms and Sleep Difficulties

Procedural justice is the most often studied justice dimension when predicting health outcomes (Robbins et al., 2012) and can be understood as a psychosocial predictor of health (Elovainio et al., 2002). On a theoretical level, this relationship has been explained with reference to the Transactional Stress Theory (Lazarus & Folkman, 1984). Tepper (2001), for example, argued that employees appraise a situation in which they perceive low procedural justice as a threat, which in turn evokes stress and thus is disadvantageous for an individual's health. That is, when employees perceive low procedural justice, they may experience feelings of anger, sadness, and depression (Skarlicki & Folger, 1997), all of which have a negative effect on their health (Robinson, Ford, & Tetrick, 2011). Moreover, perceptions of low procedural justice may also trigger negative rumination, which may lead to problems to wind down, relax, and sleep (Eib, von Thiele Schwarz, & Blom, 2015). There is abundant empirical evidence for the immediate and longitudinal relationship between low procedural

justice and the presence of depressive symptoms (Eib, Bernhard-Oettel, Magnusson Hanson, & Leineweber, 2018). In a comprehensive review, Robbins and colleagues (2012) found that low procedural justice was positively associated with strain reactions such as burnout, depressive symptoms, medical certified depression, negative mental states and moods, negative health behavior, and sickness absence. Although few studies have focused on sleep difficulties, a recent study found immediate associations between low organizational justice perceptions and prevalence of sleep-related disorders such as difficulties to fall asleep, sleep continuation, or early awakening (Manville, El Akremi, Niezborala, & Mignonac, 2016). In line with the above, we posit that there is a job procedural justice-health relationship at the within-person level. Hence, we formulate:

H3: At the within-person level, there is a direct negative effect of procedural justice on a) depressive symptoms and b) sleep difficulties at the same point in time

Combing the evidence we presented above for the direct effects of 1) job insecurity perceptions on depressive symptoms and sleep difficulties, and 2) job insecurity perceptions on procedural justice, and 3) procedural justice perceptions on depressive symptoms and sleep difficulties, we hypothesize an indirect positive effect of job insecurity perceptions on depressive symptoms and sleep difficulties via low procedural justice perceptions.

H4: At the within-person level, there is an indirect positive effect of job insecurity perceptions on a) depressive symptoms and b) sleep difficulties via procedural justice at the same point in time.

Prolonged Effects on Depressive Symptoms and Sleep Difficulties

In their seminal work on causal stressor-strain relationships, Frese and Zapf (1988) pointed to the fact that strain reactions may have prolonged effects on health and well-being. These prolonged effects may emerge when stressors are repeated over time (i.e., repeated exposure to job insecurity and low procedural justice) and, thus, accumulate in such a way

that the stress reaction continues to present itself even if the stressor is removed or has declined in magnitude (Zapf, Dormann, & Frese, 1996). Furthermore, strain reactions (i.e. depressive symptoms or sleep disturbances) may need time to decline, particularly if they are sub-clinical and remain undiagnosed and untreated.

Job insecurity perceptions have been documented to have equally strong negative health effects as unemployment (Griep et al., 2016). Akin to unemployment, job insecurity perceptions may leave a ‘mental health scar’ (Virtanen, Hammarström, & Janlert, 2016, page 2), which suggest that adverse health effects do not disappear immediately upon finding new employment. Instead, recovery may take a long time or, in some cases, even remain incomplete. Indeed, a recent review found that perceptions of job insecurity are associated with adverse health outcomes over time, providing evidence of the longitudinal impact of job insecurity (De Witte et al., 2016).

Moreover, studies on organizational justice have highlighted that individuals may have difficulty to overcome their reactions to unjust events and that some individuals ruminate about unfairness for several years (Barclay & Saldanha, 2016). A series of studies has provided evidence for the longitudinal health impact of procedural justice (Ndjaboué, Brisson, & Vézina, 2012). For example, scholars found longitudinal associations between low procedural justice and sleeping problems, mental health problems and minor psychiatric disorders two years later (Elovainio et al., 2009), and insomnia onset and persistence one year later (Hayashi, Odagiri, Takamiya, Ohya, & Inoue, 2017). In sum, we propose both direct and indirect prolonged effects of perceptions of job insecurity and procedural justice on depressive symptoms and sleep difficulties. In our study, “prolonged” effect refers to a two-year time lag.

H5: At the within-person level, there is a direct positive effect of job insecurity perceptions on a) depressive symptoms and b) sleep difficulties two years later.

H6: At the within-person level, there is a direct negative effect of procedural justice on a) depressive symptoms and b) sleep difficulties two years later.

H7: At the within-person level, there is an indirect positive effect of job insecurity perceptions on a) depressive symptoms and b) sleep difficulties via procedural justice two years later.

A Moderation Framework at the Between-Person Level

The Role of Average Levels of Job Insecurity Perceptions as Moderator

Prior studies have consistently found evidence for the negative effect of job insecurity on various health outcomes. Whether these effects remain the same over time when employees perceive continuous job insecurity is a question that has received limited attention. Previous research has referred to this situation as “chronic job insecurity” (Ferrie, Shipley, Stansfeld, & Marmot, 2002, p 450), and scholars have demonstrated that job insecurity feelings are, for example, more prevalent in declining industries, in organizations with changing technology or management structures or among blue collar workers (Keim, Landis, Pearce, & Earnest, 2014; Otto, Hoffmann-Biencourt, & Mohr, 2011). Employees who perceive more job insecurity over time are more likely to experience prolonged feelings of uncertainty, which could enhance and/or prolong, the stressor-strain reaction (Zapf et al., 1996). Moreover, continuous job insecurity perceptions may further erode employees’ perceptions that employers act fairly, ethically and predictably so that procedural justice perceptions can be expected to further decline over time. In line with this reasoning, an American and a Finnish study found that chronic, compared to episodic, perceptions of job insecurity are negatively associated with mental well-being and self-rated health (Burgard, Brand & House, 2009, Ferrie et al., 2002).

However, studies comparing effects of temporary and permanent employment contracts have repeatedly shown that permanent, but not temporary, employees react more strongly to job insecurity perceptions (Bernhard-Oettel, Sverke, & De Witte, 2005; De Cuyper & De Witte, 2006). This finding has been explained with reference to differences in job *security* expectations: temporary workers expect job *insecurity* and accept it as part of their temporary contract, whereas permanent workers expect job security and, as a consequence, react more negatively when these expectations are not met (De Cuyper et al., 2008). Furthermore, researchers have started to investigate whether employees can learn to cope with job insecurity; a Swedish cross-sectional study found that emotion-focused coping may help to level off adverse health effects of feeling job insecure (Richter et al., 2013). Moreover, employees may have come to accept that their jobs may feel more insecure in today's labor market (Guest et al., 2010). Finally, employees who remain employed despite feeling job insecure, may over time come to realize that the negative consequences of job insecurity are less impactful than initially feared. Indeed, a longitudinal Finnish study has reported that job insecurity perceptions, which initially evoked negative health reactions, were no longer associated with negative health outcomes when job insecurity became chronic (Kinnunen, Mauno, & Nätti, 1999). Theoretically, this finding may be explained with reference to the third appraisal process after a stress-strain reaction (Lazarus & Folkman, 1984). The third appraisal is conceptualized as the cognitive process during which employees evaluate whether the threat was anticipated accurately, and whether their reactions were appropriate. Employees who only sporadically perceive job insecurity, and otherwise feel rather secure, have no pre-existing experiences regarding how the situation may develop over time. For these employees, perceiving more job insecurity at a certain time point comes as a surprise and evokes uncertainty and discomfort (De Witte, 2005), and likely also triggers re-evaluations of their employers' fairness with respect to procedural justice (Shoss, 2017). In

contrast, employees who continuously experience the future of their jobs as more insecure may no longer display the same strong negative reactions. In other words, the within-person association between job insecurity and procedural justice at each time point may differ between individuals; it may depend on the average level of their job insecurity perceptions over time. Because these assumptions have been rarely tested before, and because contradictory propositions have been made on the effect of chronic, more continuous versus rare, episodic job insecurity, we formulate a research question rather than a hypothesis:

RQ1: Does the average level of perceived job insecurity over time moderate the within-person association between perceptions of job insecurity and procedural justice?

The Role of Variations in Procedural Justice as Moderator

While job insecurity is a source of uncertainty, justice perceptions are portrayed as a source of certainty and predictability (Jones & Skarlicki, 2013). If a workplace is just, employees can trust their employer that they are treated in accordance with fair principles, which serves as a guarantee that the attainment of desired outcomes will happen in the future. While this assumption has received wide support in the literature, the question remains as to how employees deal with a workplace that is sometimes fair and sometimes unfair, a situation we label as high justice variability. If the employer is perceived as inconsistent regarding procedural fairness, then justice perceptions cannot serve as a heuristic to guide attitudes and behavior because it is unclear whether employees can trust their employer (Lind, 2001). This reasoning, based on justice literature, could lead to the formulation of two competing propositions. On the one hand, employees may not react as strongly to an unfair event because they have come to expect varying levels of procedural justice and, hence, do not perceive a single unfair event as a threatening stressor (Zapf et al., 1996). As a result, the level of procedural justice may not impact employees' health to the same extent (i.e., less severe depressive symptoms and sleep difficulties). On the other hand, the unstable state

associated with perceiving fluctuations in procedural justice might be perceived as more stressful due to its lack of predictability and certainty. This, in turn, affects health and well-being more strongly (Vander Elst, Richter, Sverke, & De Witte, 2014). A recent experimental study (Matta et al., 2017) found that participants experienced the highest levels of stress when confronted with varying levels of fairness (i.e., high justice variability), therefore providing initial support for the latter proposition over the former proposition. We therefore include procedural justice variability as a potential moderator of the within-person justice–health relationship. However, because empirical evidence is very limited and because both justice variability effects (i.e., stronger and weaker effects) are theoretically plausible, we formulate the following research question:

RQ2: Does variability in procedural justice perceptions over time moderate the within-person association between a) depressive symptoms and b) sleep difficulties?

Altogether, the suggested associations are depicted in Figure 1.

METHOD

Procedure and Sample

The study population consisted of participants in the Swedish Longitudinal Occupational Survey of Health (SLOSH) study, a nationally representative longitudinal cohort survey that has been approved by the Regional Research Ethics Board in Stockholm. SLOSH started in 2006 with a follow-up of participants in the Swedish Work Environment Survey (SWES) 2003 (N = 9,214). Since 2006, SLOSH data have been collected bi-annually, adding new waves of SWES over time (for more information about the SLOSH cohort, please see Magnusson Hanson et al., 2018). Because SLOSH is based on the SWES, all labor market sectors and occupations are represented, the SLOSH cohort is therefore regarded as approximately representative of the Swedish working population.

The present study is based on the survey data of respondents in permanent employment who completed all four waves of data collection from 2008 to 2014 (T1 = 2008, T2 = 2010, T3 = 2012, and T4 = 2014), yielding an analytic sample of 2,473 respondents. In comparison to respondents who did not complete all four waves and respondents who were excluded because they worked less than 30% or in temporary employment in any of the waves, our sample had a higher proportion of women, older persons, and people with a university education. To analyze the immediate associations at the within-person level, we used all observations and studied associations between the focal variables at each of the four time points. To analyze the prolonged effects with a two-year time lag at the within-person level, we related observations of job insecurity and procedural injustice at T1-T3 to depressive symptoms and sleep difficulties at T2-T4. This was done by lagging the data, so that job insecurity and justice perceptions at T1 are related to depressive symptoms and sleeping difficulties at T2, job insecurity and procedural justice at T2 are related to depressive symptoms and sleep difficulties at T3, and job insecurity and procedural justice at T3 are related to depressive symptoms and sleep difficulties at T4.

Measures

Job insecurity was measured with three items (Hellgren, Sverke, & Isaksson, 1999). An example item was: “I am afraid I will lose my job”. Respondents rated each item on a 5-point Likert scale ranging from (1) “strongly disagree” to (5) “strongly agree”. Reliabilities were satisfactory at all four measurement points: $\alpha_{T1} = .94$, $\alpha_{T2} = .95$, $\alpha_{T3} = .95$, and $\alpha_{T4} = .94$.

Procedural justice was measured with seven items (Moorman, 1991). An example item was: “Decisions are taken on the basis of correct information”. Respondents rated each item on a 5-point Likert scale ranging from (1) “strongly disagree” to (5) “strongly agree”. Reliabilities were satisfactory at all four measurement points: $\alpha_{T1} = .89$, $\alpha_{T2} = .90$, $\alpha_{T3} = .90$, and $\alpha_{T4} = .91$.

Depressive symptoms was measured with the six item Symptom Checklist-core Depression Scale (Magnusson Hanson et al., 2014). An example item was: “How much have you been troubled by lethargy or low energy?”. Respondents rated each item on a 5-point Likert scale ranging from (1) “not at all” to (5) “very much”. Reliabilities were satisfactory at all four measurement points: $\alpha_{T1} = .91$, $\alpha_{T2} = .90$, $\alpha_{T3} = .89$, and $\alpha_{T4} = .91$.

Sleep difficulties was measured with four items from the Karolinska Sleep questionnaire (Kecklund & Åkerstedt, 1992) measuring disturbed sleep. An example item was: “In the last three months, how often have you been troubled by disturbed/restless sleep?”. Respondents rated each item on a 5-point Likert scale ranging from (1) “never” to (6) “always/5 times a week or more”. Reliabilities were satisfactory at all four measurement points: $\alpha_{T1} = .85$, $\alpha_{T2} = .85$, $\alpha_{T3} = .84$, and $\alpha_{T4} = .84$.

Demographic variables such as age, gender, and education are well-known correlates of depressive symptoms and sleep difficulties, whereas *job changes* may influence evaluations of job insecurity and procedural justice. Consequently, we controlled for these variables. *Age* at baseline was measured in years. *Gender* was coded as 0 for male and 1 for female. *Education* was categorized as 0 for education below bachelor level and 1 for a university education of at least three years. Finally, *job change* was coded as 0 for no and 1 for having at least one job change in the last two years prior to answering the survey.

Analytic Strategy

Because our data had a nested structure (measurement points nested within individuals), we estimated intra-class correlation coefficients (ICC) for job insecurity, procedural justice, depressive symptoms and sleep difficulties to assess the need for a multilevel model (Hox, 2010). Results indicated that a large proportion of the variance in these variables (ICCs are .44, .54, .68, and .59, respectively) could be attributed to between-person differences. Therefore, we followed recent recommendations (Preacher, Zyphur, &

Zhang, 2010) and estimated multilevel moderated mediation models with random slopes (also referred to as a 1-1-1 model with random slopes) for our immediate and prolonged hypothesized relationships. This approach is advantageous because it takes between-person variable relations into account when testing the proposed mediation at the within-person level (for more details, see Preacher et al., 2010). We conducted all analyses in Mplus version 7.4 (Muthén & Muthén, 2015). For the analyses at the within-person level, we used a person-mean centering approach such that a person's over-time average of the predictor (job insecurity) is subtracted from the value of this predictor at each wave. Consequently, the new time-varying predictor represents variation around each person's own over-time average (Hoffman & Stawski, 2009). The same procedure was employed for the mediator (procedural justice). Cross-level moderation analyses reveal the influence of between-person differences as moderators for within-person processes.

In order to test our hypotheses of direct immediate effects at the *within-person level*, we regressed sleep difficulties and depressive symptoms (H1a and H1b) and procedural justice (H2) on job insecurity, and regressed sleep difficulties and depressive symptoms on procedural justice (H3a and H3b). We report estimates of fixed (average effect at the within-person level) and random (average variation of that effect) effects. The random effect was included in the model to analyze the extent to which the hypothesized within-person processes varied between individuals, and thus, may be moderated by between-person differences. Next, we estimated the indirect immediate effect from job insecurity to sleep difficulties and depressive symptoms via procedural justice (H4a and H4b) using the product-of-coefficients approach. We repeated the same set of analyses for the test of the prolonged effects (H5-H7). To answer the research question on *moderation at the between-person level*, we included the cross-level moderation by regressing each person's within-person relationship between job insecurity and procedural justice on their personal mean of job

insecurity (RQ1). Finally, we included the cross-level moderation by regressing each person's within-person relationship between procedural justice and sleep difficulties and depressive symptoms on their standard deviation of procedural justice (RQ2a and RQ2b). To better interpret the cross-level moderation effects, we added graphic illustrations of simple slopes.

RESULTS

Measurement Invariance and Multilevel Confirmatory Factor Analysis (CFA)

First, we tested whether job insecurity, procedural justice, sleep difficulties, and depressive symptoms had the expected factor structure at the within- and between-person level. To that end, we performed a series of multilevel CFAs with robust maximum likelihood estimation. We used Dyer, Hanges, and Hall's (2005) conventional standards to assess model fit: Root Mean Square Error of Approximation ($.05 < RMSEA \leq .08$: reasonable fit; $0 \leq RMSEA \leq .05$: close fit), the Comparative Fit Index ($.90 \leq CFI < .95$: good fit; $.95 \leq CFI \leq 1.00$: excellent fit), and the Tucker-Lewis Index ($.90 \leq TLI < .95$: good fit; $.95 \leq TLI \leq 1.00$: excellent fit). We compared competing models using the Satorra-Bentler-scaled Chi square difference test (Satorra & Bentler, 2010). We started by estimating a model in which job insecurity, procedural justice, sleep difficulties, and depressive symptoms each load onto a separate latent factor at the within- and between-person level. This theoretical model fit the data well (see Table 1, Model D). Next, we estimated three alternative models: alternative model A in which job insecurity, procedural justice, sleep difficulties, and depressive symptoms load onto one single latent factor at the within- and between-person level; alternative model B in which job insecurity and procedural justice load onto one latent 'work' factor whereas sleep difficulties and depressive symptoms load onto latent "health" factor at both levels of analysis; and alternative model C in which job insecurity and procedural justice are modelled as two separate latent factors, whereas sleep difficulties and depressive

symptoms load onto one single latent “health” factor at both levels of analysis. When comparing these alternative models to the theoretical model (model D), we found that alternative model A ($\Delta\chi^2(6) = 43,866.63, p < .001$), alternative model B ($\Delta\chi^2(12) = 26,999.58, p < .001$), and alternative model C ($\Delta\chi^2(12) = 35,681.41, p < .001$) fit significantly worse to the data. Hence, our 4-factor theoretical model [RMSEA = .03, CFI = .96, TLI = .96, SRMR_{within} = .02, SRMR_{between} = .03] guided hypotheses testing.

Next, we tested whether all four proposed constructs were measurement invariant over our four waves of data collection. To that end, configural, metric and scalar invariance models were compared. For model comparison, we employed Δ CFI rather than $\Delta\chi^2$ to evaluate invariance because Δ CFI fit is both independent of model complexity and sample size (Cheung & Rensvold, 2002). We found that the assumption of scalar invariance held for all four constructs (procedural justice: Δ CFI = -.000, $p \leq .001$; job insecurity: Δ CFI = -.001, $p \leq .001$; depressive symptoms Δ CFI = -.002, $p \leq .001$; sleep difficulties Δ CFI = -.002, $p \leq .001$).

Descriptive Results

As depicted in Table 2, correlations at the within-person level are more substantial when independent, mediator and outcome variables are measured at the same point in time (immediate associations), whereas they are largely non-significant over time (e.g., association between the independent variable at one point in time and the mediator variable at the next point in time). In general, we found that age, gender, education and job changes (at between-person level) and time (at within-person level) were significantly correlated with our focal variables. Specifically, we note that 1) older individuals experienced fewer depressive symptoms but more sleep difficulties, 2) women reported significantly more sleep difficulties and depressive symptoms than men, and 3) sleep difficulties, and in part depressive symptoms, increased over time. Moreover, we note that women, older individuals and those with higher educational degrees perceived less job insecurity, whereas changing jobs was

positively correlated with job insecurity perceptions. Finally, we note that older employees reported higher procedural justice perceptions, whereas respondents with higher educational degrees and job changes perceived lower procedural justice.

Hypotheses: Testing mediation at within-person level

Immediate effects. Starting with our *within-person associations* depicted in Table 3, results revealed a positive within-person association between job insecurity perceptions and depressive symptoms (fixed effect = .10, $p < .001$), which varied between individuals (random effect = .02, $p < .01$). In contrast, we did not find a significant within-person association between job insecurity perceptions and sleep difficulties (fixed effect = .02, $p = .67$), which also did not vary between individuals at the conventional significance level (random effect = .01, $p = .058$). These results imply that Hypothesis 1a is supported, whereas Hypothesis 1b was not supported. In support of Hypothesis 2, we found that job insecurity perceptions were negatively associated with procedural justice at the within-person level (fixed effect = -.17, $p < .001$), which varied between individuals (random effect = .02, $p < .01$). In line with Hypotheses 3a and 3b, we found support for the suggested negative within-person association between procedural justice and depressive symptoms (fixed effect = -.08, $p < .001$), as well as sleep difficulties (fixed effect = -.08, $p < .001$). The slopes varied significantly between individuals for both depressive symptoms (random effect = .02, $p < .01$) and sleep difficulties (random effect = .03, $p < .01$). Finally, we found a significant within-person indirect effect from job insecurity perceptions to depressive symptoms via procedural justice [*estimate* = .013, $p < .05$, 95%CI (.004; .021)], as well as a significant within-person indirect effect from job insecurity perceptions to sleep difficulties via procedural justice [*estimate* = .025, $p < .05$, 95%CI (.012; .038)]; supporting Hypotheses 4a and 4b.

Prolonged effects. As can be seen in Table 3, the association between job insecurity perceptions at one point in time and depressive symptoms (fixed effect = $-.03$, $p = .22$), and sleep difficulties (fixed effect = $-.01$, $p = .62$) at the next point in time (e.g., two years later) were not significant; thereby not supporting Hypotheses 5a and 5b. However, job insecurity had a random effect on sleep difficulties at the next time point, and the random effect of job insecurity on depressive symptoms at the next time point was marginally significant at the $p = .10$ level; this implies that there was some variation in the longitudinal job insecurity-depressive symptoms and sleep difficulties relationship. The prolonged direct effects from procedural justice on depressive symptoms (fixed effect = $.03$, $p = .08$) and sleep difficulties (fixed effect = $-.03$, $p = .06$) were only significant at the $p = .10$ level. We found no significant random effect for depressive symptoms (random effect = $.01$, $p = .43$). However, we found a significant random effect for sleep difficulties (random effect = $.05$, $p < .001$). In sum, these results do not support Hypothesis 6a and 6b. Turning to the hypothesized indirect prolonged effect, we found that the indirect effects of job insecurity perceptions at one point in time on depressive symptoms [*estimate* = $-.004$, $p = .52$, 95%CI ($-.016$; $.008$)] and sleep difficulties [*estimate* = $-.004$, $p = .68$, 95%CI ($-.020$; $.013$)] at the next time point via procedural justice were not significant; thereby not supporting Hypotheses 7a and 7b.

Research questions: Exploring moderation at between-person level

Moderating influence of average over-time job insecurity levels. Regarding the first research question, Table 3 shows that the personal mean of job insecurity perceptions across all time points significantly moderated the within-person association between job insecurity perceptions and procedural justice at each time point (*estimate* = $.10$, $p < .001$; for both immediate and prolonged effect models). As can be seen from Figure 2, procedural justice decreased when job insecurity perceptions increased. However, this effect was

particularly pronounced for individuals who reported low levels of job insecurity perceptions across all time points.

Moderating influence of over-time variability in procedural justice. Concerning our second research question, we did not find a significant cross-level moderation of procedural justice variability over time on the within-person association between perceptions of procedural justice and depressive symptoms ($estimate_{immediate} = -.04, p = .26, estimate_{prolonged} = .00, p = .91$), and the within-person association between job insecurity perceptions and sleep difficulties ($estimate_{immediate} = -.01, p = .82; estimate_{prolonged} = .02, p = .19$).

DISCUSSION

The aim of this study was to contribute to a better understanding of the mechanisms underlying the immediate and prolonged relationship between job insecurity and health (i.e., depressive symptoms and sleep difficulties) among permanent employees. We posit that procedural justice, or a lack thereof, mediates the link between job insecurity perceptions and depressive symptoms and sleep difficulties. The rigorous longitudinal approach in this study enabled us to disentangle within- and between-person effects, and allowed us to test cross-level moderation effects of average levels of job insecurity and procedural justice variability.

Using a large sample, with measurements taken bi-annually over the course of six years, our results reveal that higher levels of job insecurity perceptions had an immediate negative association with perceptions of procedural justice, which in turn had an immediate positive association with depressive symptoms and sleep difficulties. Moreover, we found that a lack of procedural justice mediated the immediate, but not the prolonged, relationship between perceptions of job insecurity and both depressive symptoms and sleep difficulties.

Furthermore, we found significant random effects for the within-person job insecurity-justice associations and for the relation between justice and depressive symptoms

and sleep difficulties, respectively. Thus, individuals differed significantly in the strength of these associations. Hence, we tested whether these differences in within-person processes were a function of between-person differences in average job insecurity levels over time and variations in justice perceptions. We found that the within-person relationship between job insecurity perceptions and procedural justice were moderated by the average over-time (i.e., between-person) levels of job insecurity perceptions. More specifically, job insecurity perceptions had a less negative impact on procedural justice for individuals who had reported relatively high over-time average levels of job insecurity. Altogether, the findings are in line with prior research on job insecurity and health (Cheng & Chan, 2008, Shoss, 2017), while simultaneously moving the frontline of knowledge forward in three major ways.

First, and perhaps a bit surprisingly, the direct associations between job insecurity perceptions and health outcomes were mixed: job insecurity perceptions were positively associated with depressive symptoms at the same point in time, whereas no such association was found for sleep difficulties. The results regarding depressive symptoms are in line with previous studies (Cheng & Chan, 2008, Sverke et al., 2002) and recent meta-analytical evidence (Llosa, Menéndez-Espina, Agulló-Tomás, & Rodríguez Suárez, 2018). This meta-analysis (Llosa et al., 2018) also reported significant associations between job insecurity perceptions and aspects of mental health such as anxiety, exhaustion, well-being and satisfaction. Although sleep difficulties are generally associated with a number of these mental health markers (e.g., anxiety or exhaustion), the fact that we did not find a positive association between job insecurity perceptions and sleep difficulties may imply that disturbed sleep is part of another type of strain that develops according to a different pathway than depressive symptoms. Our findings highlight the need of disentangling within- and between-person levels of analysis to better understand that depressive symptoms emerge rather immediately within the individual (i.e., immediate positive association with job insecurity

perceptions), but that this effect has disappeared after two years. This is equivalent to an immediate stress–strain relation (Frese & Zapf, 1988) that has leveled off two years later. For sleep difficulties, there is no immediate onset of symptoms whenever the individual perceives more job insecurity than (s)he generally does and there are also no signs of a postponed reactions (Zapf et al., 1996) two years later. Nonetheless, we did observe some variation in individuals' reactions with respect to sleep difficulties measured two years later, as there were significant random slopes in the prolonged outcome model. This finding implies that for some individuals, reactions to job insecurity may come to develop over time for sleep difficulties. Such within-person differences may relate to personality differences (Cheng & Chan, 2008), differences in work centrality (Jiang & Lavaysse, 2018), the severity of the threat of losing one's job, or even to extent to which important resources are deemed under threat (Vander Elst, et al., 2016).

Second, turning to organizational justice, this study provides support for the assumption that procedural justice perceptions are a relevant mechanism when trying to better understand how job insecurity perceptions relate to health outcomes. We based our rationale for the mediating role of procedural justice on Fairness Heuristic Theory (Lind, 2001) and Transactional Stress Theory (Lazarus & Folkman, 1984) when arguing that job insecurity perceptions negatively affect employees' perceptions of how fair and ethical organizational procedures are, which in turn may impact employee health. However, we also explored to what extent the strength of this justice-health relationship depends on how procedural justice perceptions vary over time between persons. By doing so, we offer novel insights with respect to the dual role of procedural justice: 1) mediating (as a correlate or rather immediate reaction – at the within-person level – to perceived job insecurity, see also Jiang & Lavaysse, 2018), and 2) moderating (when the variability of procedural justice across time is taken into account at the between-person level, see Matta et al., 2017). As one of the few studies

investigating the underlying processes of job insecurity and its outcomes (for others see for example Vander Elst et al., 2016) over time at the within-person level, we found support for the idea that procedural justice mediates the insecurity-health relationship. More specifically, we found that individuals who experienced more job insecurity than they generally did over time also reported lower procedural justice than they generally did over time, and this, in turn was positively associated with depressive symptoms and sleep difficulties. However, these indirect associations occurred simultaneously, that is, at the same point in time, but did not hold over the time span of two years. As a consequence, we cannot draw conclusions about the direction of the associations. Furthermore, we found no evidence for the moderating role of procedural justice variability over time; the variability of procedural justice did not affect the strength of the relationship of procedural justice to depressive symptoms and sleep difficulties at the within-person level. This finding contradicts the results by Matta and colleagues (2017). Additional tests showed that the average level of procedural justice over time also did not moderate the relationship between procedural justice and depressive symptoms and sleep difficulties. However, it is possible that we were unable to replicate the findings of Matta and colleagues (2017) because we used a different research design (i.e., Matta and colleagues used a daily event-sampling method, used different measures for justice and workplace uncertainty, and did not test the mediating role of justice perceptions at the within-person level). On the basis of our findings, we conclude that, regardless of how permanent employees experienced procedural justice over time, strain was induced at each point in time when procedural justice perceptions were lower than average and such incidences correlated positively with feelings of job insecurity.

Third, this study further explored whether individuals who experience different average levels of job insecurity also differ in their reaction to each occasion of feeling job insecure. Our results showed that associations between job insecurity and procedural justice at each

point in time are weaker in permanent workers who report higher over-time average levels of job insecurity. These results do not support the idea that more experiences of job insecurity over time (as compared to rare such experiences) have more detrimental effects (as reported by Burgard et al., 2009; Ferrie et al., 2002). Instead, our findings are in line with the suggestion that employees can learn to cope with job insecurity perceptions, so that health effects become less detrimental (Kinnunen et al., 1999). This is a novel finding that needs to be replicated in other samples, contexts, and circumstances to further bolster our understanding of these effects. For example, it is possible that this finding indicates a continuous change to the employee-employer exchange relationship to an exchange relationship in which insecurity becomes an accepted part of the employment (Guest et al., 2010). Theoretically, this finding may indicate that employees continue to re-evaluate the severity of the threat as suggested in the third appraisal process of the Transactional Stress Theory (Lazarus & Folkman, 1984). Alternatively, this finding may be explained by the idea that workers in declining industries blame global market conditions but not their employer when they feel job insecure and hence, are less prone to re-evaluate their employer's procedural justice.

Strength and Limitations

The main strengths of the current study pertain to the use of longitudinal data and its methodological approach to disentangling within- and between-person relationships. Nevertheless, there are some limitations that need to be addressed. One set of limitations regards the sample we used. First, we note that the levels of perceived job insecurity were rather low. Although this is typical for a Swedish population, it may have suppressed the true nature of our effect sizes. Second, our sample is relatively healthy (low depressive symptoms and sleep difficulties), meaning that variance in the outcome may have been limited compared to a sample that includes unhealthier individuals. Third, we have only included

employees who had a permanent contract at all points in time. Although permanent employees commonly have security expectations, this approach may have limited the effect sizes we found. As result of these limitations, our findings were subjected to very conservative tests. Nonetheless, several of our hypothesized effects were in line with previous findings and our theoretical expectations.

We would also like to note some limitations regarding measurements. In a country with low levels of quantitative job insecurity like Sweden, we propose that future research could rely on an alternative measure of qualitative aspects of job insecurity, such as a change of job tasks, responsibilities or salary (Hellgren, Sverke, & Isaksson, 1999). Furthermore, we constrained our study to one aspect of organizational justice, namely procedural justice. However, our results, particularly regarding potential cross-level moderation effects, may have been different if other aspects of organizational justice (e.g., interpersonal justice) were included because this facet of justice is more likely to be related to the direct supervisor, and the quality of the supervisor-employee relationship.

A final limitation relates to the use of time intervals of 2-years between subsequent measurement moments. While 2-year intervals are rather long to detect subsequent effects, they guarantee sufficient time to produce changes in depressive symptoms and/or sleep difficulties. However, one should keep in mind this relatively long time period between different measurement moments when evaluating the nature of the stress-strain reaction. For example, while we can conclude that after two years, effects were no longer evident, strain reactions may still have persisted or may have developed and then levelled off again until a new measurement took place 2 years later. Furthermore, with a two-years time lag, we cannot entirely be sure if a person experienced continuous (chronic) or rather a repeated, episodic job insecurity. Still, higher average levels of job insecurity perceptions signal that individuals experience more threats to the future of their jobs over the studied period of time. Different,

preferably shorter, time lags may be useful for future studies, in order to capture the true continuity of such experiences yet better.

Practical implications

Because job insecurity may arise due to changes in the global economy, the success of competitors or other external events, and internal organizational changes and strategic decisions, we recommend organizations to be aware of the effects of various policies and actions they may implement to stay competitive. Although our sample only included permanent employees, our results showed that job insecurity perceptions were associated with a more negative evaluation of employers' procedural justice perceptions, which in turn associated with depressive symptoms and sleep difficulties. Therefore, organizations should attempt to actively deal with their employees' fear of losing their job. Specifically, we would advise organizations, even in uncertain times, to have clear rules, processes and procedures in place in order for their employees to retain a sense of predictability over their job. Predictability should help employees to deal with insecurity, which is conducive to better health and well-being (see also Vander Elst et al., 2014).

Second, our results also highlight that some employees react more strongly to job insecurity perceptions than others. We suggest that there might be a sort of learning process at play, such that permanent employees who have perceived job insecurity in the past but have stayed employed, react less strong to job insecurity perceptions in the future. The flipside of this finding is that at a specific point in time, organizations may need to target their communication specifically to employees who have experienced job insecurity for the first time or who rarely experience job insecurity. Organizations should thus pay specific attention to the vulnerable group of permanent employees who usually are, or have thus far been, relatively secure of keeping their jobs.

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Finally, because our results suggest that job insecurity and low procedural justice perceptions have an immediate impact on employees' depressive symptoms and sleep difficulties, we believe that it is important for organizations to offer support as soon as possible to reduce (further) harm. In addition to organizations, policy makers can also learn from this study because permanent workers may be less fearful about feeling job insecure if they can be assured that there is appropriate help (e.g., coaching, possibilities for competence development, or re-training to get employed elsewhere) in place. This, together with organizational attempts to be clear and transparent about decisions and policies may help employees to stay focused on doing their job and remain trustful, as well as it adds to their health and well-being.

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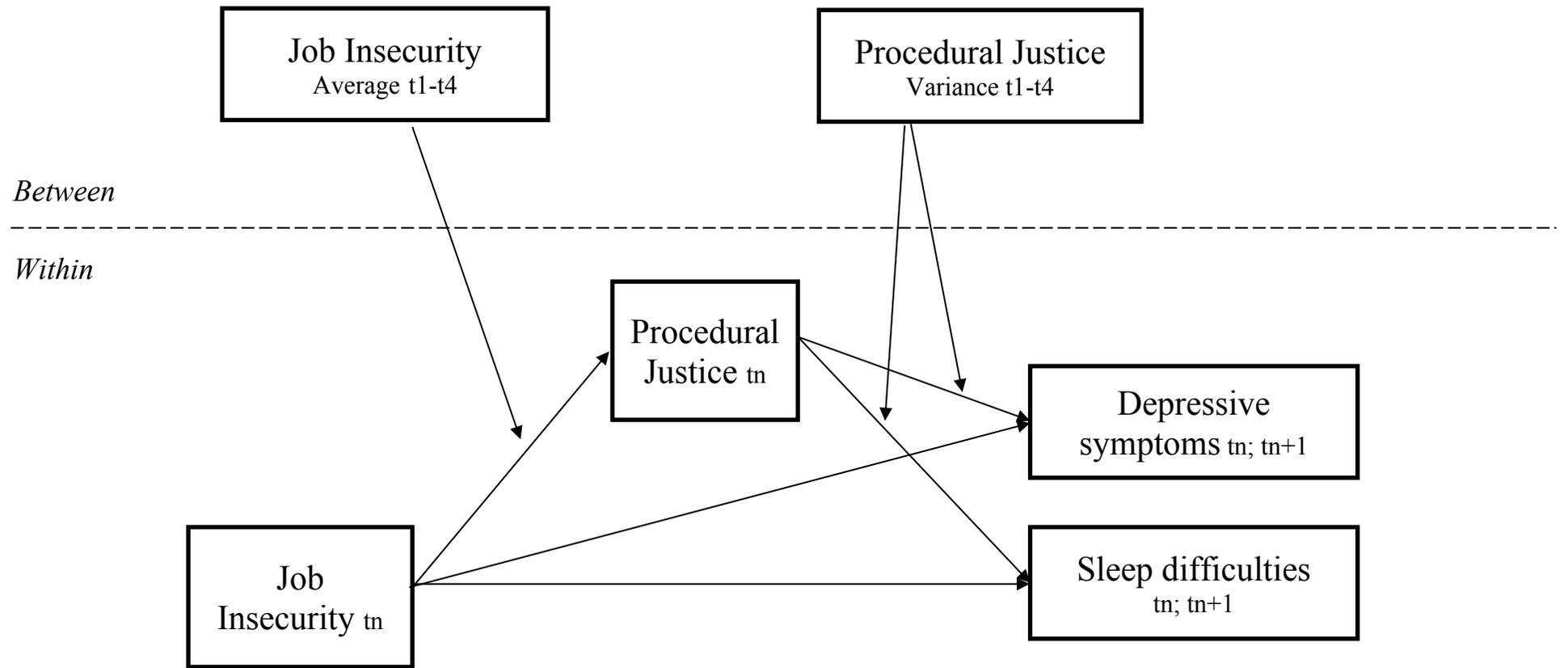


Figure 1. Theoretical model for immediate effects (t_n) and prolonged effects (t_{n+1})

Table 1. Multilevel Confirmatory Factor Analysis Model Comparisons.

Model	Chi square	df	BicA	CFI	RMSEA	SRMR between	SRMR within	Model comp	TRd	Δ df
(A) 1 factor on each level ins+pj+dep+sleep	38613.03	340	438093.41	0.42	0.113	0.294	0.191	1 vs 4	12598.08	12
(B) 2 factors on each level ins+pj, dep+sleep	29931.20	340	427430.56	0.55	0.099	0.161	0.139	2 vs 4	9020.35	12
(C) 3 factors on each level: ins, pj, dep+sleep	7798.25	334	398700.66	0.89	0.050	0.110	0.079	3 vs 4	5682.57	6
(D) 4 factors on each level: ins, pj, dep, sleep	2931.62	328	393055.77	0.96	0.030	0.033	0.024			

Note. ins = job insecurity; pj = procedural justice, dep = depressive symptoms, sleep = sleep difficulties

Table 2. Correlation matrix for immediate (and prolonged) model variables at within-person level (below diagonal), as well as correlation matrix, means and standard deviations at between-person level (above diagonal)

	1	2	3	4	5	6	7	8	9	Mean	SD
1 Time	1	-	-	-	-	-	-	-	-	-	-
2 Job insecurity	-.11 ^a (-.09 ^a)	1	-.33 ^a	.30 ^a (.32 ^a)	.21 ^a	-.10 ^a (-.09 ^a)	-.06 ^b (-.05 ^c)	-.13 ^a (-.11 ^a)	.08 ^a (.09 ^a)	1.36 (1.33)	.76 (.74)
3 Procedural justice	-.07 ^a	-.10 ^a	1	-.32 ^a (-.35 ^a)	-.24 ^a (-.23 ^a)	-.03	.11 ^a (.12 ^a)	-.05 ^c (-.06 ^b)	-.02(-.04 ^c)	3.23 (3.21)	.90 (.91)
4 Depressive symptoms	-.02(.05 ^a)	.09 ^a (-.02)	-.12 ^a (.03 ^c)	1	.60 ^a (.61 ^a)	.14 ^a	-.10 ^a (-.09 ^a)	.03 (-.04 ^c)	.02	1.81 (1.83)	.79 (.80)
5 Sleep difficulties	.05 ^a (.07 ^a)	.04 ^a (-.01)	-.09 ^a (-.03 ^c)	.29 ^a (.30 ^a)	1	.13 ^a	.11 ^a	.01	-.03	2.63	1.04
6 Gender	-	-	-	-	-	1	.01	.16 ^a	-.01	.60	-
7 Age	-	-	-	-	-	-	1	-.06 ^b	-.20 ^a	47.98	7.87 (7.88)
8 Education	-	-	-	-	-	-	-	1	.09 ^a	.44	-
9 Job changes	-	-	-	-	-	-	-	-	1	.36	-

Note: Correlations for prolonged model variables are given in parentheses. If no value is displayed, it indicates that it is the same value as for the immediate model variables.

For immediate model variables: Nobservations = 9263 Nindividuals = 2432.

For prolonged model variables: Nobservations = 6997; Nindividuals = 2427.

^ap ≤ .001, ^bp ≤ .01, ^cp ≤ .05

Table 3. Model estimates for multilevel analyses on depressive symptoms and sleep difficulties

	Immediate effect model ¹		Prolonged effect model ²	
	Depressive symptoms	Sleep difficulties	Depressive symptoms	Sleep difficulties
Within-person level, direct fixed and random effects				
Job insecurity->Justice, <i>fixed effect</i>		-.17***		-.16***
Job insecurity->Justice, <i>random effect</i>		.02**		.03**
Justice, <i>fixed effect</i>	-.08***	-.08***	.03#	-.03#
Justice, <i>random effect</i>	.02**	.03**	.01	.05***
Job insecurity, <i>fixed effect</i>	.10***	.02	-.03	-.01
Job insecurity, <i>random effect</i>	.02**	.01#	.02#	.02*
Within-person level, indirect effect				
Job insecurity	.01*	.03***	-.00	-.00
Cross-level moderation				
I) Job insecurity average over time		.10***		.10***
II) Justice variance over time	-.04	.00	-.01	-.02

¹N_{observations} = 9263 N_{individuals} = 2432; ²N_{observations} = 6997; N_{individuals} = 2427

***p ≤ .001, **p ≤ .01, *p ≤ .05, # p ≤ .10 (significance level .10 is reported but not further interpreted)

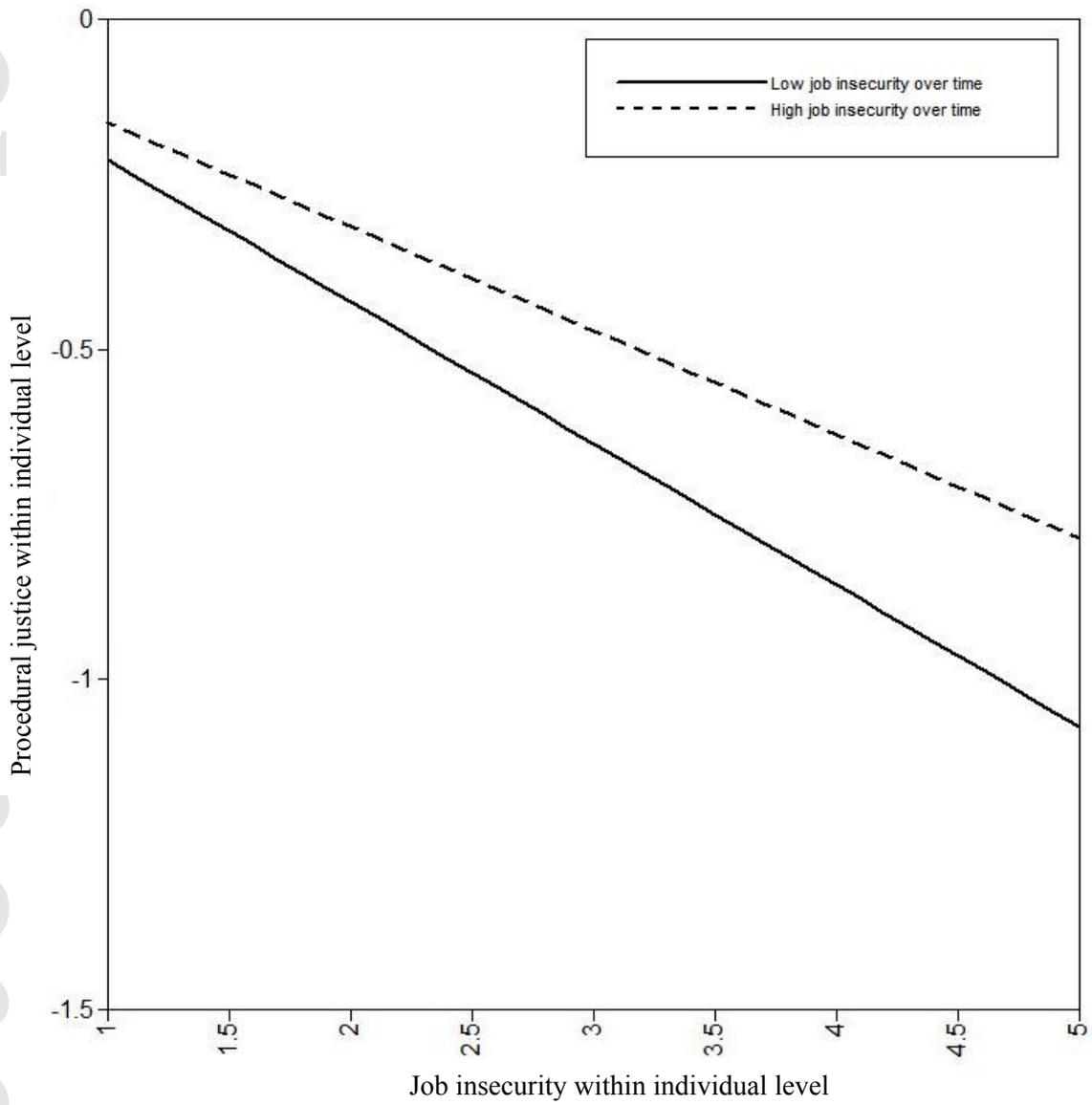


Figure 2. Moderation of job insecurity across time (between-person level) of the association between job insecurity and procedural justice at each time (within-person level)