

# **Understanding the effect of procedural justice on psychological distress**

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# **Understanding the effect of procedural justice on psychological distress**

## **Abstract**

Studies on the effect of procedural justice on psychological distress present conflicting results. Drawing on instrumental and relational perspectives of justice, we test the hypothesis that the perception of procedural justice influences the level of workers' psychological distress. Using a number of validated instruments to collect data from 659 workers in three call centers, we use OLS regressions and Hayes' PROCESS tool to show that the perception of procedural justice has a direct, unique, and independent effect on psychological distress. The perception of procedural justice has no instrumental role, the key mechanism being the relational role, suggesting that perceived injustice influences psychological distress because it threatens self-esteem. Distributive justice perceptions (recognition, promotions, job security) are not associated with psychological distress, calling into question Siegrist's model. Our findings suggest that perceived procedural justice provides workers better evidence of the extent to which they are valued and appreciated members of their organizations than do perceptions of distributive justice. The results highlight the greater need for workers to be valued and appreciated for who they are (consideration and esteem), rather than for what they do for their organization (distributive justice of rewards).

## **Keywords**

Psychological distress, Mental health; Psychological health, Organizational justice, Procedural justice, job design, consideration and esteem, relational perspective, instrumental perspective, mediation model

## Introduction

Mental health problems in the workplace, in particular psychological distress, are a worrisome phenomenon. Nearly 20% of workers in OECD countries suffer from depression and anxiety, classical symptoms associated with psychological distress (OECD, 2012). Psychological distress is not only a serious problem because of its prevalence, but also because it leads to harmful consequences for workers and organizations. Indeed, psychological distress is closely linked to short- and long-term absenteeism (Burton *et al.*, 2008; Hardy *et al.* 2003; OECD, 2012) as well as to the intent to resign and voluntary departures (de Croon *et al.*, 2004; Firth *et al.*, 2004). Moreover, it has been shown that psychological distress reduces worker performance (Lerner & Henke, 2008; Motowidlo, Packard & Manning, 1986; OECD, 2012).

Psychological distress refers to a painful psychological state characterized by anxiety and depression (irritability, sadness, hopelessness and self-depreciation) (Ilfeld, 1976; Massé, 2000; Ridner, 2004). Psychological distress is not the same as job burnout, a conceptually and empirically distinct, albeit related phenomenon (Bakker *et al.*, 2000; Glass & Mcknight, 1996; Leiter & Durup, 1994; Shiro & Ezrachi, 2003). Job burnout is defined by an extreme emotional fatigue (emotional exhaustion), a detachment and a lack of compassion for the recipient (cynicism / depersonalization), and a perceived reduced efficacy to help them (personal accomplishment) (Maslash & Jackson, 1981; Maslash, Schaufeli & Leiter, 2001). But as Bakker *et al.* (2000: 248) pointed out: “burned-out individuals [...] may still be happy and productive in other spheres of life”. Such is not the case with psychological distress, which infuses all spheres of life (Toker and Biron, 2012; Maslash, Schaufeli & Leiter, 2001).

In this study, we focus on predictors of psychological distress in the workplace within the context of procedural and distributive justice. These two concepts are part of a multidimensional

concept - organizational justice, the perceived justice in a work setting – which also includes interpersonal and informational justice (for an overview of organizational justice, see Cropanzano & Greenberg, 1997; Colquitt, *et al.*, 2005; Konovsky, 2000). Several studies have focused on the relationship between the perception of *procedural* justice and psychological distress (Elovainio *et al.*, 2013; Fischer, Abubakar & Arasa, 2014; Lawson, Noblet & Rodwell, 2009; Liljegren & Ekberg, 2009; Tenhiälä *et al.*, 2013; Wood, Braeken & Nieven, 2013), though with somewhat inconsistent results, possibly due to shortcomings related to internal validity: the results vary based on variables that were controlled for. For example, some studies did not take into account the effect of the perception of *distributive* justice (Elovainio *et al.*, 2013; Tenhiälä *et al.*, 2013) or aspects of job design (*i.e.* job demands, job control, role ambiguity, role conflict) (Liljegren & Ekberg, 2009; Wood, Braeken & Nieven, 2013). In addition, the indirect effect that procedural justice is likely to produce on psychological distress (through the perception of distributive justice) has not been studied. Nevertheless, studies have shown that the perception of distributive justice and aspects of job design variables are major predictors of psychological distress in the workplace (Beehr, 1981; Huang, Chen, *et al.*, 2012; Karasek, 1979; Schmidt *et al.*, 2012; Vegchel, de Jonge, Bosma & Chauferli, 2005). Moreover, it has been shown that the perception of procedural justice plays a dual role in shaping attitudes, acting both directly and indirectly through the perception of distributive justice (Lind & Tyler, 1988; Thibaut & Walker, 1975; for meta-analyses see: Cohen-Charash & Spector, 2001; Colquitt, Conlon *et al.*, 2001; Hauenstein *et al.*, 2001).

In short, the results are inconclusive regarding the role of the perception of procedural justice in psychological distress. Nevertheless, the perception of procedural justice constitutes a crucial dimension in the employer-employee relationship: it provides a framework allowing workers to interpret the realities of their workplace and react to them (Konovsky, 2000). It has been shown

that the perception of procedural justice significantly influences workers' attitudes and behaviour (for meta-analyses, see: Cohen-Charash & Spector, 2001; Colquitt *et al.*, 2001). Procedural justice thus appears to offer a promising avenue for research into the study of predictors of psychological distress in the workplace. In particular, we conclude that it is an appropriate framework through which to identify the mechanisms by which human resource management processes affect workers' levels of psychological distress.

The aim of our study is therefore to determine the direct and indirect effect of the perception of procedural justice (through the perception of distributive justice) while controlling for aspects of job design (job demands, job control, role ambiguity and role conflict). We start by defining the concept of psychological distress, highlighting its key dimensions. In order to understand why the perception of procedural justice might affect psychological distress, we will discuss the concept of perception of distributive justice. This will lead us to highlight the specific underlying mechanisms of procedural justice from two perspectives: instrumental and relational.

After formulating our research hypotheses, we proceed to its empirical verification by addressing research design, sampling, and measuring instruments. We collected data using an explanatory cross-sectional research design. We surveyed employees of unionized call centres in Quebec using online and mail surveys. We collected basic demographics, information on job design (job demands, job control, role ambiguity and role conflict), role ambiguity and conflict, the perceptions of distributive and procedural justice, as well as measures of psychological distress. Using OLS regressions and Hayes' PROCESS tool, we then test various competing hypotheses about the direct and indirect effect of procedural justice on psychological distress. We conclude with a presentation of the empirical results and a discussion.

## Background

Researchers have studied the predictors of psychological distress through two theoretical lenses: what is *required* from workers based on aspects of job design (*Role Theory*; Kahn, Wolfe, Quinn *et al.*, 1964; and the *Job Demand-Control Model*; Karasek, 1979) and what workers *receive* in return for their contribution (the *Model of Effort-Reward Imbalance at Work*; Siegrist, 1996; and the *organizational justice perspective*; Cropanzano & Greenberg, 1997; Colquitt, Greenberg, & Zapata-Phelan, 2005). Studies that are grounded in *Role Theory* have shown that psychological distress is related to role ambiguity, role conflict, and role overload (Beehr, 1981; Glazer & Beehr, 2005; Netemeyer, Johnston & Burton, 1990; Schmidt *et al.*, 2012). Other researchers have studied predictors of psychological distress using the *Job Demand-Control Model*, demonstrating that psychological distress has links to psychological job demands and job control (Barnett & Brennan, 1995; Dollard & Bakker, 2010; Huang, Chen, *et al.*, 2012).

Siegrist's *Model of Effort-Reward Imbalance* is based on a reciprocity of exchanges between employers and their workers, relying solely on the perception of *distributive justice*. Literature reviews (van Vegchel, de Jonge *et al.*, 2005; Tsutsumi & Kawakami, 2004) show the growing popularity of this perspective and corroborating empirical evidence for it. More recent studies have gone beyond the single concept of distributive justice, considering potential determinants of psychological distress within the more general context of *organizational justice* (Kivimäki *et al.*, 2003; Liljegren & Ekberg, 2009; Elovainio *et al.*, 2013; Fischer *et al.*, 2014). Given the observed impact of distributive justice (perceived fairness of reward levels) on psychological distress, a logical step considers the perceived justice of the procedures that generate those rewards (Colquitt, *et al.* 2005; Konovsky, 2000; Leventhal, 1980; Lind & Tyler, 1988; Thibaut & Walker, 1975) and their impact on psychological distress. No consensus conclusion has emerged from that literature.

Some see the perception of procedural justice as a predictor of psychological distress (Elovainio *et al.*, 2001; Elovainio *et al.*, 2002; Elovainio *et al.*, 2013; Francis & Barling, 2005; Kivimäki *et al.*, 2003; Liljegren & Ekberg, 2009; Rousseau *et al.*, 2009; Spell & Arnold, 2007a; 2007b; Tenhiälä *et al.*, 2013; Tepper 2001; Wood, Braeken & Nieven, 2013; Yberma & van den Bos, 2010; Ylipaavalniemi *et al.*, 2005), while others have found no significant predictive power for procedural justice (Fischer *et al.*, 2014; Lawson *et al.*, 2009; Noblet & Rodwell, 2009). The conflicting results seem to depend on whether the authors controlled for other predictors of psychological distress. Most of the studies showing significant results did not control for the perception of distributive justice (Elovainio *et al.*, 2001; Elovainio *et al.*, 2002; Elovainio *et al.*, 2013; Kivimäki *et al.*, 2003; Rousseau *et al.*, 2009; Spell & Arnold, 2007b; Tenhiälä *et al.*, 2013; Ylipaavalniemi *et al.*, 2005). Generally, perceptions of distributive justice strongly correlate with the perception of procedural justice (Cohen-Charash & Spector, 2001; Colquitt *et al.*, 2001; Hauenstein *et al.*, 2001). Some of the results observed in the literature may in fact be capturing spurious correlations expressing the effect of the perception of distributive justice, suggesting that the perception of procedural justice has no direct effect on psychological distress. Studies that did control for the effect of the perception of distributive justice failed to control for aspects of job design that have emerged as major predictors of psychological distress, such as job demands, job control, role ambiguity and role conflict (Liljegren & Ekberg, 2009; Tepper, 2001; Francis & Barling, 2005; Spell & Arnold, 2007a; Wood *et al.*, 2013; Yberma & van den Bos, 2010). Most studies are cross-sectional. The only longitudinal studies that we are aware left out either controls for distributive justice (Elovainio *et al.*, 2013; Ylipaavalniemi *et al.*, 2005) or controls for job design (Liljegren & Ekberg, 2009, Yberma & van den Bos, 2010)

In short, the literature provides no clear evidence for an independent effect of the perception of procedural justice upon the level of psychological distress. As Tepper (2001: 2012) has pointed out, we need to improve the rigour of research “by exploring justice–distress relationships while controlling for other variables that are likely to be related to employees’ psychological distress”.

## **Theoretical framework**

### **The concept of psychological distress**

In order to understand how procedural justice may affect psychological distress, it is essential to clarify the concept of psychological distress. The literature consensus defines psychological distress as a painful psychological state characterized primarily by anxiety and depression (i.e. irritability, sadness, hopelessness and self-depreciation) (OECD, 2012). Psychological distress manifests itself as 1) increased sensitivity and a strong reaction to environmental stimuli (irritability); 2) concerns and fears about events that could possibly happen in the future (anxiety); 3) a painful sensation and depressed mood (sadness); and 4) a lack of energy, a sense of despair, and feelings of powerlessness and helplessness about the future (hopelessness) (Ilfeld, 1976; Massé, 2000; Ridner, 2004). More recently, self-depreciation has been acknowledged as a major component in psychological distress. Self-depreciation refers to doubts about one's own competence in various areas (technical, relational) and to the feeling of having no value in the eyes of others (Massé, 2000; Ridner, 2004).

Organizational justice relates to the worker’s perceptions about what is fair and unfair in their workplace (for a review, see Cropanzano & Greenberg, 1997; Colquitt, *et al.*, 2005; Konovsky, 2000). This concept has four dimensions: distributive, procedural, interpersonal, and informational justice. Distributive justice refers to perceptions of justice with respect to outcomes received (for example, fairness of rewards). Procedural justice relates to the perceived fairness of the rules and

procedures used to determine such outcomes (Colquitt *et al.*, 2005; Konovsky, 2000; Leventhal, 1980; Lind & Tyler, 1988; Thibaut & Walker, 1975). Interpersonal justice concerns the quality of interactions between the authorities and workers during the process (Bies, 1987; Bies & Moag, 1986; Greenberg, 1993; Tyler & Bies, 1990). Finally, informational justice refers to the quality of the justifications for decisions (Bies, 1987; Bies & Moag, 1986; Bies, Shapiro, & Cummings, 1988; Colquitt *et al.*, 2005; Greenberg, 1993; Shaw, Wild, & Colquitt, 2003). This is a pivotal concept for understanding and explaining the attitudes and behavior of workers in the workplace, and thus of high utility in human resource management (Cohen-Charash & Spector, 2001; Colquitt, Conlon, Wesson, Porter & Ng, 2001). In this study, we focus on its procedural justice and distributive justice components.

### **The perception of distributive justice and psychological distress**

According to Siegrist's Model of Effort-Reward Imbalance (1996), psychological distress is the long-term consequence of a perceived imbalance or unfairness with regard to rewards. According to this model, workers expect their efforts to be rewarded at their fair value. Indeed, workers provide their efforts to their employers (contributions) and expect to receive rewards that are both economic (e.g. salary, job security, promotions) and social (e.g. respect, esteem) in nature. When they believe that they are giving more to their organization than it is offering them in return (*i.e.* a lack of reciprocity), they feel devalued and are more likely to suffer from psychological distress. Any unfairness or imbalance of rewards (*i.e.* distributive injustice) may lead to a state of psychological distress by awakening a sense of "self-depreciation" in the worker. Gardner, Van Dyne & Pierce (2004) have shown that pay level, proxying for perceived distributive justice, communicates to workers the extent to which their employers esteem and value them. Building on Siegrist's model, Taris, Kalimo, & Schaufeli (2002) have shown that perceived equity in rewards

affects psychological health. In the same vein, several studies have shown that the perception of distributive justice (i.e. perceived equity of rewards) has an effect on psychological distress (Francis & Barling, 2005; Spell & Arnold, 2007a; Tepper, 2001).

### **Perceptions of procedural justice and psychological distress**

Workers form their perceptions of procedural justice by assessing the characteristics of the decision-making process, for example: 1) the opportunities given to them to provide information upon which decisions will be made (process control) and opportunities to participate actively in decision-making (decision control) (Thibaut & Walker, 1975); 2) uniform application of procedures and rules (consistency); 3) an absence of bias and personal self-interest (bias suppression); 4) reliability of the information used (accuracy); 5) an opportunity to review decisions and correct errors (correctability); 6) representation of workers' interests and points of view (representativeness); and 7) ethics (ethicality) (Leventhal, 1980).

According to the instrumental perspective of justice (Thibaut & Walker, 1975), workers are fundamentally concerned about their outcomes. In order to maximize long-term outcomes, workers rely upon procedural justice. Indeed, workers tend to believe that if distribution procedures are fair, the level of outcomes is necessarily fair. Procedural justice plays an instrumental role and is of crucial importance, because it assures distributive justice, not only in the present, but also in the future (Lind & Tyler, 1988, Thibaut & Walker, 1975). Various studies have shown that the perception of procedural justice largely influences one's perception of distributive justice (Greenberg, 1987; Robbins, Summers, Miller & Hendrix, 2000; Colquitt *et al.*, 2001, Cohen-Charash & Spector, 2001; Hauenstein *et al.*, 2001). In brief, workers assess procedural justice in order to make judgments on distributive justice for the economic rewards they have received and will receive in the future.

When procedures are considered unfair, no protective mechanism can counter arbitrary decisions. There is no guarantee of distributive justice over the long term. In this light, given the importance of outcomes for workers, they become worried about their future outcomes (Thibaut & Walker, 1975). Returning to the nature of the concept of psychological distress, procedural unfairness may logically contribute to feelings of increased anxiety about future economic rewards. It is also hypothesized that workers are likely to feel a sense of powerlessness toward the system in place. They may have the impression that the situation will continue, condemning them to be unfairly rewarded. In this sense, the perception of procedural justice may be linked to psychological distress, because it may increase feelings of hopelessness over economic rewards to be received in the future.

In brief, procedural unfairness prompts workers to believe that the economic rewards they are receiving are unfair. In Siegrist's Model, the perception of distributive injustice engenders feelings of devaluation, which in turn increase the risk that the worker will suffer from psychological distress over time (for a meta-analysis, see Taris *et al.*, 2002). Procedural unfairness may also lead to psychological distress, because it entails anxiety and hopelessness with regard to the fairness of future economic rewards.

### **Research hypotheses**

We therefore formulate the following hypothesis concerning the instrumental (indirect) effect of procedural justice:

- H1.** The perception of distributive justice plays a mediating role in the relationship between the perception of procedural justice and psychological distress, while controlling for job design variables (job demands, job control, job ambiguity, job conflict)

The relational perspective of justice (also called the group-value model) is based on the principle that workers want to be valuable members of their group over the long term (Colquitt *et*

*al.*, 2005; Cropanzano & Greenberg, 1997, Lind & Tyler, 1988). Workers are concerned with procedural justice because it reflects directly on the consideration and respect they receive from their organization (Colquitt *et al.*, 2005; Cropanzano & Greenberg, 1997; Lind & Tyler, 1988). Thus, workers may perceive unfair rules and procedures as a lack of consideration: proof of how little the organization values them. In experimental and field studies, Smith *et al.* (1998) have shown that procedural justice shapes individuals' feelings of respect by decision-makers, and this has an impact on their self-esteem. Experiments performed by Koper *et al.* (1993) have shown that fair procedures improve self-esteem. In an experimental study and a field study, De Cremer *et al.* (2005) found that workers' perception of procedural justice concerning the rewards allocation process did indeed act on their sense of self-esteem. Cohen-Charash & Spector's (2001) meta-analysis study confirms these findings. Therefore, given the nature of psychological distress, perceived procedural justice would logically lessen a worker's level of psychological distress by influencing its "self-depreciation" aspect. In addition, considering the fundamental principles governing the relational perspective of justice (Colquitt *et al.*, 2005; Cropanzano & Greenberg, 1997; Lind & Tyler, 1988), the perception of procedural injustice is likely to engender psychological distress, because it may create anxiety and hopelessness over the worker's status within his or her group, even over the long term, *i.e.*, the consideration and respect they will receive in the future.

In sum, the perception of procedural justice may lessen psychological distress due to their effect on self-depreciation, anxiety and hopelessness. Some studies have shown that the perception of procedural justice affects psychological distress, even when controlling for the instrumental effect of procedural justice (Francis & Barling, 2005; Spell & Arnold 2007a, 2007b; Tepper,

2001). We therefore formulate the following hypothesis concerning the relational (*direct*) effect of procedural justice:

**H2:** The perception of procedural justice has a negative influence on psychological distress, while controlling for perception of distributive justice and job design variables (job demands, job control, job ambiguity, job conflict)

The concepts of perception of procedural justice and of distributive justice are associated with various attitudes and behaviours (Cohen-Charash & Spector, 2001; Colquitt *et al.*, 2001; Cropanzano & Greenberg, 1997; Konovsky, 2000; Sweeney & McFarlin, 1993). One's perception of procedural justice has a particular influence on attitudes toward the authorities who develop and implement rules and procedures, while one's perception of distributive justice contributes more significantly to shaping attitudes about the reward in itself, expressed for instance as pay satisfaction (Cohen-Charash & Spector, 2001; Colquitt *et al.*, 2001; Cropanzano & Greenberg, 1997; Konovsky, 2000; Sweeney & McFarlin, 1993). According to a relational perspective of justice (Colquitt *et al.*, 2005; Cropanzano & Greenberg, 1997, Lind & Tyler, 1988), procedural justice reflects the consideration and esteem that an organization accords its workers. Consequently, the perception of procedural justice appears to provide better evidence for the extent to which an organization values and appreciates its workers than do perceptions of distributive justice (*i.e.* the relative level of a given inanimate object, such as money). In this vein, studies show that the perception of procedural justice is strongly related to the workers' perception that the organization values them and cares about their well-being (for meta-analyses, see: Cohen-Charash & Spector, 2001; Rhoades & Eisenberger, 2002). Given the nature of psychological distress (specifically, the aspect of self-depreciation), the perception of procedural justice may influence psychological distress to a greater extent than perceptions of distributive justice. We

therefore formulate the following hypothesis concerning the relative contributions of procedural and distributive justice in explaining psychological distress (*relative effect size*):

**H3:** The perception of procedural justice exerts a greater influence on psychological distress than does the perception of distributive justice, while controlling for job design variables (job demands, job control, job ambiguity, job conflict)

## **Methods**

### **Research design and sample**

To determine the unique and independent effect produced by the perception of procedural justice on the level of psychological distress, we conducted our study using an explanatory cross-sectional research design (Schwab, 2005). We solicited participation from all 2,680 employees of three unionized call centres in Quebec. A total of 659 employees completed the survey (a response rate of 24.6%). The majority of the sample is male (54%) and relatively young: the median worker is between 26 and 35 years old. Lastly, nearly half the participants (47%) had been employed by the call centre for three years or less.

### **Data collection**

Most of the data were collected by means of an online questionnaire (*SurveyMonkey*). The letter inviting workers to participate contained a unique access code, to ensure that each participant could complete the questionnaire only once. A quarter of the respondents had no email address on file, and received a self-administered mail questionnaire. In both cases, a reminder was sent out 15 days following the initial mailing, in order to maximize the response rate. The survey was conducted in the language of work in the three call centres, in French. Neither questionnaire forced answers. There were no significant difference in missingness by mode.

### **Measurement instruments**

Our instruments draw on proven instruments from the literature, adapted to the French language environment. Unless otherwise specified, measurement instruments have been developed using the back translation method and compared for meaning equivalence (Brislin, 1970; Cha, Kim, Erlen, 2007).

To determine the role of perceived procedural justice, we asked respondents several questions in order to capture job design variables: job demands, job control, role ambiguity and role conflict. According to Karasek's model (1979), psychological health problems arise from an accumulation of stress over time produced by failure to meet job demands, *i.e.* an excess of job demands over job control. *Job demands* is defined as the quantitative and qualitative workload. *Job control* refers to autonomy and the opportunity to use and develop knowledge and skills (Karasek, 1979). Job demands (6 items) and job control (9 items) were measured using the French-language validated version of Karasek (1979)'s instrument (Niedhammer *et al.*, 2006). We used a 5-point Likert scale, ranging from 1 = strongly disagree to 5 = strongly agree.

According to Role Theory (Kahn *et al.*, 1964), workers suffer from tension generated by a perceived inability to meet their organization's expectations, and most particularly due to the uncertainties linked to these expectations. *Role ambiguity* concerns workers' uncertainty with regard to expected outcomes and the behaviours considered appropriate for achieving them. *Role conflict* refers to the uncertainty engendered by the contradictory nature of expected results or behaviours that are deemed inappropriate. *Role overload* creates uncertainty as to one's ability to perform the work requested. Data on role ambiguity (4 items) and role conflict (6 items) were collected using the French-language validated version of Rizzo *et al.* (1970)'s instrument (Lachance *et al.*, 1997). The scale consisted of seven possible answers (from 1 = strongly disagree

to 7 = strongly agree). No separate item for role overload was created, as it measures the same concept as Karasek's *job demands*.

As for the perception of distributive justice, we measured perceived equity with respect to recognition, using the measurement of contingent rewards developed by Podsakoff *et al.* (1984) (4 items). Spector's instrument (1997) was used to collect data concerning equity in promotions (3 items). Lastly, job security was measured using the instrument proposed by Oldham *et al.* (1986) (3 items). For recognition, promotions, and job security, a seven-point scale was used (1 = completely wrong to 7 = completely true).

Data on the perception of procedural justice was collected by querying information on the performance appraisal process that gives rise to the rewards covered by the distributive justice measures (recognition, promotions, job security). We used Colquitt's instrument (2001) for the performance appraisal process (6 items, with a scale from 1 = hardly any to 5 = a great deal).

Finally, the dependent variable *psychological distress* was measured using the K6 (Kessler, *et al.*, 2002). We selected the French-language validated version used in *Statistics Canada* surveys (6 items, with a scale from 1 = never to 5 = all the time; Prévaille *et al.*, 1992).

### **Analysis**

In order to test our research hypotheses, we conducted OLS linear and hierarchal regressions. Confidence intervals are 95% bias-corrected and computed using the accelerated bootstrap method using Hayes' PROCESS SPSS tool (Hayes, 2013).<sup>1</sup> We used 5000 bootstrap samples, as suggested by Hayes (2013).

<sup>1</sup> This method is highly recommended because it reduces Type II errors and produces better estimates for the indirect effect than does the Sobel Test (Field, 2013; Hayes, 2013).

For **Model 1**, we regressed psychological distress on demographic variables (sex, age, seniority). **Model 2** adds the perception of procedural justice. The most complete specification estimates a multiple mediation model, regressing psychological distress on the perception of procedural justice and perceptions of distributive justice (recognition, promotions and job security), while controlling for demographic variables (sex, age, seniority) and job design variables (job demands, job control, job ambiguity, and role conflict). The indirect effect of perceived procedural justice on psychological distress estimated in that specification allows us to test H1 (**Model 3**), whereas the *direct effect* is a test of H2 (**Model 4**). The results in Model 4 are also relevant to estimate the *relative effect size* of perceived procedural and distributive justice (H3). Finally, the estimated total effect of the perception of procedural justice (direct and indirect) on psychological distress, controlling for demographic variables and aspects of job design is also reported (**Model 5**).

## Results

Descriptive statistics, bivariate correlations, and Cronbach's alphas are shown in Table 1. The results of the multiple mediation test are shown in **Figure 1**, and detailed results reported in Table 2.

(Figure 1 about here)

(Table 1 about here)

(Table 2 about here)

The demographic model (**Model 1**) has little explanatory power – the joint test of the demographic variables is not significant. In **Model 2**, we introduce the perception of procedural justice, without controlling for the perception of distributive justice and job design. The perception of procedural justice is significantly correlated with psychological distress ( $B = -0.487, p < 0.001$ ).

Results for **Model 3** show that the three mediation effects (*indirect effect a x b*) are small and not statistically significant. Indeed, the effect produced by the perception of procedural justice on psychological distress is unlikely to be explained by its relationships with recognition ( $B=.014$ ,  $p > .05$ ), promotions ( $B=-.007$ ,  $p > .05$ ), or job security ( $B=-.015$ ,  $p > .05$ ). We reject **Hypothesis 1**, which anticipates that distributive justice plays a mediating role in the relationship between procedural justice and psychological distress.

In **Model 4**, the estimated regression coefficient for the perception of procedural justice is negative and significant ( $B = -0.160$ ,  $p < 0.01$ ), in line with **Hypothesis 2**, which anticipates a negative relationship between the perception of procedural justice and psychological distress, while controlling for the perception of distributive justice (*direct effect*). These results reveal a direct, unique, and independent effect produced by the perception of procedural justice on psychological distress. Furthermore, none of the coefficients for perceptions of distributive justice are statistically significant, whether for recognition ( $B=-.016$ ,  $p > .05$ ), promotions ( $B=-.09$ ,  $p > .05$ ), or job security ( $B=-.041$ ,  $p > .05$ ). The 95% confidence intervals of the coefficient for the perception of procedural justice does not overlap with those of the effect of recognition and promotions, and only weakly overlaps that of job security. Therefore, we cannot reject **Hypothesis 3**, which stipulates that the perception of procedural justice exerts a greater influence on psychological distress than does perceived distributive justice. When controlling for both the effects of demographic variables and of job design variables (**Model 5**), the estimated coefficient on the perception of procedural justice (representing the *total effect*) is substantially reduced, but remains both negative and significant ( $B = -0.168$ ,  $p < 0.001$ ). Job design variables have significant explanatory power.

## Discussion of results

With our study, we set out to determine the role the perception of procedural justice plays in psychological distress. In order to do this, three research hypotheses were tested: an instrumental indirect role (H1); a relational direct role (H2); and the relative effect size of the perception of procedural justice (H3).

We reject the first hypothesis, which stipulates that the perception of procedural justice acts indirectly on psychological distress through its effect on the perceptions of distributive justice (recognition, promotions and job security). Our results indicate that the perception of procedural justice is not instrumental in the phenomenon of psychological distress. This can partly be explained by the role played by perceived distributive justice. Indeed, our results show that when perceptions of procedural and distributive justice are introduced simultaneously in the regression equation (**Model 4**), the coefficients for the perceptions of distributive justice (recognition, promotions and job security) are not statistically significant at conventional levels. In other words, the perceptions of distributive justice produce no independent effect on psychological distress. Therefore, building on the instrumental perspective (Thibaut & Walker, 1975), our results suggest the possibility that the perception of procedural injustice contributes to increased perceived distributive injustice (see Figure 1) as well as anxiety and feelings of hopelessness concerning future rewards. However, these feelings, which are specifically linked to rewards, do not generate psychological distress. It would seem that workers do not feel tension caused both by unfair rewards and the fear of being under-rewarded in the future with no hope of remedy.

In line with Hypothesis 2, our results show that perceived procedural justice lessens psychological distress, when controlling for perceptions of distributive justice. This means that the perception of procedural justice has a direct relational effect on psychological distress, and

suggests that perceived injustice on a procedural level contributes to increased levels of psychological distress through a process of devaluation. According to the relational model of justice (Colquitt *et al.*, 2005; Cropanzano & Greenberg, 1997, Lind & Tyler, 1988), when workers believe that allocation procedures are unjust, they are led to believe that they are not valuable enough to the organization to deserve proper treatment, namely, as integral and respected members. In short, the perception of procedural justice influences psychological distress because it threatens self-esteem. In accordance with the relational perspective of justice, it is also possible that the perception of procedural justice acts on psychological distress through fear that injustice is perpetuated in the future. Thereby, the perception of procedural justice may engender anxiety and hopelessness with regard to consideration and esteem over the long term.

We cannot reject Hypothesis 3, suggesting that the perception of procedural justice exerts a greater influence over psychological distress than do perceptions of distributive justice. This finding is in line with the relational perspective of justice (Colquitt *et al.*, 2005; Cropanzano & Greenberg, 1997, Lind & Tyler, 1988) and suggests that, for workers, perceived procedural justice is a better indicator of their value for the organization than is perceived distributive justice.

Our results call into question Siegrist's model, which postulates that the perception of distributive justice (a lack of reciprocity) is a predictor of health because it sends a signal indicating the extent to which workers are valued and appreciated members of their organization. Indeed, our results show that distributive justice perceptions in and of themselves are not associated with psychological distress. It is rather the perception of procedural justice which plays a role. To take an example, the knowledge that one's supervisor shows favoritism in determining performance ratings is more likely to engender psychological distress than is a lack of recognition when fully deserved. This suggests that workers have a greater need to be valued and appreciated for "who

they are” (perceived consideration and esteem) than for “what they do” (perceived distributive justice of rewards). This is in contrast to the fundamental principle of Siegrist’s model, which implies that workers expect to receive consideration and esteem “in return” for their contributions to their organization. In other words, this reciprocity of exchanges requires that social rewards must be earned and obtained in proportion to the effort. Our findings suggest instead that workers believe they have the fundamental right to respectful treatment.

When variables representing job design are introduced into the regression equation, the regression coefficient for the perception of procedural justice decreases significantly (Model 2:  $B = -0.487$ ,  $SE = 0.043$ ; Model 4:  $B = -0.160$ ,  $SE = 0.050$ ;  $t = -4.959^2$ ). These results indicate that job design variables are correlated, both with the perception of procedural justice and with psychological distress. It is therefore essential to control for these variables, in order to determine the unique and independent effect the perception of procedural justice has on psychological distress. Our study is the first to take into account the simultaneous effects of all four aspects of job design that have been identified as predictors of psychological distress: job demands, job control, role ambiguity, and role conflict.

In addition, these findings indicate that organizational expectations as well as the resources available to workers and the constraints they face in carrying out their tasks vary along with their perception of procedural justice. When the organization assesses the extent to which workers have achieved expected results (*i.e.* performance appraisal), workers in turn pass judgment on the fairness of the assessment procedures used to measure the results they have achieved (*i.e.* procedural justice). In order to be perceived as fair, the process must cover only the results for which the workers are personally responsible, *i.e.* it must take into account only the elements under

$$^2 (b_1 - b_2) / (\text{var}_{b_1} + \text{var}_{b_2})^{1/2}$$

the workers' control (Folger & Konovsky, 1989; Thurston & McNall 2010). Workers, in evaluating the procedural justice of the performance assessment, also take into account whether or not they had been given the opportunity to correctly perform their tasks and achieve their goals. They evaluate achievability of performance goals (*i.e.* job demands); clarity of expectations (*i.e.* role ambiguity, role conflict); and ability to make decisions (*i.e.* autonomy) (Folger & Konovsky, 1989; Thurston & McNall 2010). For example, a worker might consider her performance appraisal to be unfair if she were unable to achieve personal performance goals due to a lack of necessary resources. This suggests that aspects of job design might affect psychological distress via several mechanisms: tension engendered by failure to meet job demands, and reduced feelings of self-efficacy (Karasek, 1979), in addition to the perception of procedural justice.

It is also possible that the perception of procedural justice and aspects of job design are correlated because both reveal the extent to which the organization values its workers. For example, job workload may show workers just how much the organization respects their capacities and is concerned for their welfare. In this regard, it has been shown that perceived job autonomy exerts an influence over workers' self-perceived value as members of their organization (Naus, van Iterson & Roe, 2007). The meta-analysis done by Rhoades & Eisenberger (2002) has revealed a strong relationship between perceived organizational support and job design (*i.e.* autonomy, role ambiguity and role conflict). Therefore, respectful treatment – which demonstrates workers' value – may be the central element allowing for better integration of both aspects of the employment relationship in explaining psychological distress: contributions by workers (demand, resources, constraints), and rewards.

## Conclusion

The objective of this study was to investigate the role of the perception of procedural justice as a determinant of psychological distress. Ours is the first study to focus on the influence of procedural justice, while taking other important proven predictors of psychological distress into account. We have considered aspects of job design from Role Theory (Kahn *et al.*, 1964) and the Job Demand-Control Model (Karasek, 1979), as well as the perception of distributive justice from the model of Effort-Reward Imbalance at Work (Siegrist, 1996). Our study provides strong evidence for the unique and independent effect of the perception of procedural justice, eliminating main rival explanations, and increasing the internal validity of our results. Our study thus provides an answer to the questions posed by the conflicting results of previous studies, and contributes to the advancement of knowledge in the field of occupational health psychology by showing that the perception of procedural justice predicts psychological distress: *how* decisions are made and perceived by the workers affects their psychological health, regardless of the decisions themselves.

Moreover, our study contributes to the advancement of knowledge by bringing to light the underlying mechanism by which procedural justice affects psychological distress. Our results show that, with regard to the phenomenon of psychological distress, procedural justice does not play an instrumental role (*i.e.* through perceived distributive justice), but rather a direct relational role. Indeed, in line with the relational perspective (Colquitt *et al.*, 2005; Cropanzano & Greenberg, 1997, Lind & Tyler, 1988), procedural justice shows workers the extent to which they are esteemed and valued by their organization. Workers consequently perceive procedural injustice as an attack on their self-esteem, a component of psychological distress. In short, our findings suggest that the perception of procedural justice provides better evidence for the extent to which workers are valued and appreciated members of their organization than perceptions of distributive justice (for

example, economic and social rewards). This in turn highlights the greater need for workers to be valued and appreciated for “who they are”, rather than for “what they do” for their organization.

Our results question Siegrist's model, which postulates that the perception of distributive justice (reciprocity of exchanges) is the predominant predictor in workers' health, under the assumption that it communicates the organizations' appreciation towards workers. The importance of the relational role of justice shown by our results suggests instead that workers believe they are entitled to respectful treatment (consideration and esteem) whatever their contributions to the organization may be.

### **Future research directions**

Our findings show that procedural justice plays a relational role in psychological distress. This suggests that unfair procedures contribute to depreciate workers by attacking their self-esteem. To further our knowledge in this regard, we must investigate the devaluation process in greater depth, by testing 1) the effect of *current* feelings of respect and consideration driving self-depreciation and 2) the effect of anticipation, *i.e.* anxiety and hopelessness with regard to consideration and esteem to be received in the *future*. Do these two aspects of the devaluation process exert an interaction effect on psychological distress? Does the feeling of worthlessness generate psychological distress when procedural injustice is perceived as temporary and short-lived?

It also seems important to review the roles played by perpetrators of procedural injustices. Does management, which determines rules and procedures, play a greater role in the process of worker devaluation and psychological distress than do its representatives (supervisors), those who apply these rules and procedures?

In addition, according to Role Theory (Kahn *et al.*, 1964) and Karasek's model (1979), psychological distress is rooted in the tension caused by a perceived incapacity to meet organizational expectations coupled with an awareness of repeated failures. Our results reveal multiple correlations among procedural justice, aspects of job design and psychological distress. This suggests that aspects of job design may affect psychological distress, not only through fear of not meeting organizational expectations, but also through perceived disrespectful treatment. Our findings highlight the need for further research into the effects of job design from a relational perspective. Further studies should address the mediating role of the meaning of job design for workers (in terms of respect, esteem and consideration) in relationships between job design and psychological distress. In the same vein, we need to look into the wider role that procedural justice is likely to play in the phenomenon of workplace psychological distress. Research must focus on the effect produced by procedural justice on the process of allocating tasks, responsibilities, and resources. Indeed, these decision-making processes may engender perceptions of injustice (ex. favoritism regarding job demands, job control), in turn giving rise to a sense of denigration as well as anxiety and hopelessness about the future, thus leading to psychological distress. This new explanation should be tested empirically.

### **Limitations**

We used a cross-sectional research design, which has some limitations with regard to causal relationships. In order to provide higher internal validity and to eliminate spurious correlations, we have controlled for acknowledged rival explanations (Schwab, 2005). Moreover, the theoretical argument underlying our hypothesis is supported by the results of experimental and longitudinal studies, both for the instrumental perspective of justice (Greenberg, 1987; Robbins *et al.*, 2000) and its relational perspective (De Cremer *et al.*, 2005; Koper, *et al.*, 1993; Smith *et al.*, 1998). Due

to the nature of the dependent variable, psychological distress, ethical considerations preclude an experimental design.

We had originally intended to implement a longitudinal design, but our second wave response and linkage rate was far too low (8%), possibly due to a combination of the sensitivity of the topic and management pressure. This is likely to be an issue for future studies in the domain of work-related mental health as well.

A second limitation stems from the fact that the constructs investigated are cognitive and attitudinal in nature, which required us to collect data from a single source: workers. Therefore, our data may include a common method bias that could inflate correlations between measures. In order to minimize this bias without compromising our respondents' anonymity (given the sensitive nature of the topic), we have psychologically separated measurement of the perception of procedural justice (the predictor); of perceptions of distributive justice (mediators); and of psychological distress (the outcome), as recommended by Podsakoff *et al.* (2003). In addition, we have used different measurement scales (5-point and 7-point Likert scale, 5-point and 7-point semantic scale, and 5-point reversed frequency scale) (Podsakoff *et al.*, 2003). In addition, other studies have shown that when data on the perceptions of work stressors and mental health are collected at the same time, the common method variance bias is not significant, and a temporal separation in the data collection is not superior (Sachez & Viswesvaran, 2002).

Thirdly, a low response rate may bias the estimated coefficients, if non-response is correlated with the phenomenon being studied (Fowler, 1993), *i.e.* psychological distress. In order to assess this potential bias, we compared the characteristics of respondents who answered the questionnaire immediately after receiving the initial invitation to participate with those who completed the questionnaire after the follow-up operation (Fowler, 1993). The results of statistical analyses (chi-

squared and t-test) showed no significant difference between early-respondents and late-respondents both for demographic variables defining the sampling frame, and for the dependent variable psychological distress. These results suggest that bias due to non-response may at best be limited, and that our sample was representative, strengthening the internal validity of the results.

Finally, our study has some limitations in terms of external validity. Indeed, it was conducted with unionized employees working in call centres. It is possible that certain characteristics of these workplaces may have contributed to a reduction or intensification of the relationships between variables in our model. Replicating this study in more diverse organizational settings and with workers in various occupations would address that concern, but is obviously beyond the scope of the current study.

### **Practical contribution**

In practical terms, this study highlights the importance of developing and implementing human resource management processes that meet the standards of justice, such as consistency, bias suppression, accuracy and process control. Thus, when making decisions regarding the granting of rewards to workers, certain measures should be taken to reduce the risk that workers will suffer from psychological distress. This may include allowing workers to personally provide information about their contributions (accuracy, process control); using relevant assessment criteria (bias suppression, representativeness); and promoting evaluator objectivity through training and awareness sessions (bias suppression).

### **References**

- Adams, S. J. (1963). Toward an understanding of inequity. *Journal of Abnormal and Social Psychology*, 67(5), 422-436. doi: 10.1037/h0040968.
- Ahola, K., Honkonen, T., Isometsä, E., Kalimo, R., Nykyri, E., Aromaa, A., & Lönnqvist, J. (2005). *Journal of Affective Disorders*, 88, 55–62. doi:10.1016/j.jad.2005.06.004.

- Barnett, R.C. & R.T. Brennan. (1995). The relationship between job experiences and psychological distress: a structural equation approach. *Journal of Organizational Behavior*, 16, 259-276. doi: 10.1002/job.4030160307.
- Beehr, T.A. (1981). Work-role stress and attitudes toward co-workers. *Group and Organization Studies*, 6(2), 201-210. doi: 10.1177/105960118100600206.
- Bies, R. J. (1987). The predicament of injustice: The management of moral outrage. In L.L. Cummings & B. M. Staw (Eds.), *Research in organizational behavior*, 9, (pp. 289–319). Greenwich, CT: JAI Press
- Bies, R.J., & Moag, J.S. (1986). Interactional justice: Communication criteria of fairness. *Research on Negotiation in Organizations*, 1, 43–55.
- Bies, R.J., Shapiro, D.L., & Cummings, L.L. (1988). Causal accounts and managing organizational conflict: Is it enough to say it's not my fault? *Communication Research*, 15, 381–399.
- Brislin, R.W. (1970). Back-translation for cross-cultural research, *Journal of Cross-Cultural Psychology*, 1(3) 185-216.
- Burton, W.N., Schultz, A.B., Chen, C-Y & Edington, D.W. (2008). The association of worker productivity and mental health: a review of the literature. *International Journal of Workplace Health Management*, 1(2), 78-94. doi: 10.1108/17538350810893883.
- Cha, E.-S., Kim, K.H., & Erlen, J.A. (2007). Translation of scales in cross-cultural research: Issues and techniques. *Journal of Advanced Nursing*, 58(4), 386–395. doi:10.1111/j.1365-2648.2007.04242.x
- Cohen-Charash, Y., & Spector, P.E. (2001). The role of justice in organization: A meta-analysis. *Organizational Behavior and Human Decision Processes*, 86(2), 278-321. doi: 10.1006/obhd.2001.2958.
- Colquitt, J.A. (2001). On the dimensionality of organizational justice: A construct validation of a measure. *Journal of Applied Psychology*, 86(3) 386-400. doi: org/10.1037/0021-9010.86.3.386.
- Colquitt, J.A., D.E. Conlon, M.W., C.O.L.H. Porter & K. Y. Ng. (2001). Justice at the millennium: A meta-analytic review of 25 years of organizational justice research. *Journal of applied psychology*, 86(3) 425-445. doi: org/10.1037/0021-9010.86.3.425.

- Colquitt, J.A., J. Greenberg, & C.P. Zapata-Phelan. (2005). What is organizational justice? A Historical Overview, In J. Greenberg and J.A. Colquitt (Eds.), *Handbook of organizational justice*, (pp.3-56), New York, NY: Lawrence Erlbaum Associates.
- Cropanzano, R. & Greenberg, J. (1997). Progress in organizational justice: Tunneling through the maze. *International Review of Industrial and Organizational Psychology*, 12, 317-372.
- De Cramer, D., van Knippenberg, B., van Knippenberg, D., Mullenders, D & Stinglhamber, F. (2005). Rewarding leadership and fair procedures as determinants of self-esteem. *Journal of Applied Psychology*, 90(1), 3-12. doi: 10.1037/0021-9010.90.1.3.
- de Croon, E.M., Sluiter, J.K., Blonk, R.W.B., Broersen, J.P.J. & Frings-Dresen, M.H.W. (2004). Stressful work, psychological job strain, and turnover, 12-year prospective cohort study of truck drivers. *Journal of Applied Psychology*, 89(3) 442-454. doi: 10.1037/0021-9010.89.3.442.
- Dollard, M.F. & Bakker, A.B. (2010). Psychosocial safety climate as a precursor to conducive work environments, psychological health problems, and employee engagement. *Journal of Occupational and Organizational Psychology*, 83, 579-599. doi:10.1348/096317909X470690.
- Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986). Perceived organizational support. *Journal of Applied Psychology*, 71(3), 500-507.
- Elovainio, M., Kivimaki, M. & Helkama, K. (2001). Organizational justice evaluations, job control, and occupational strain. *Journal of Applied Psychology*, 86(3), 418-424. doi: 10.1037/0021-9010.86.3.418.
- Elovainio, M., Kivimaki, M., Eccles, M. & Sinervo, T. (2002). Team climate and procedural justice as predictors of occupational strain. *Journal of Applied Social Psychology*, 32(2), 359-374. doi: 10.1111/j.1559-1816.2002.tb00220.x.
- Firth, L., Mellor, D.J., Moore, K.A. & Loquet, C. (2004). How can managers reduce employee intention to quit? *Journal of Managerial Psychology*, 19(2), 170-187. doi:10.1108/02683940410526127.
- Folger, R. & Konovsky, M. A. (1989). Effects of procedural and distributive justice on reactions to pay raise decisions. *Academy of Management Journal*, 32(1), 115-130. doi:10.2307/256422
- Francis, L. & Barling, J. (2005). Organizational injustice and psychological strain. *Canadian Journal of Behavior Science*, 37, 250-261. doi:org/10.1037/h0087260.

- Gardner, D.G., VanDyne, L., & Pierce, J.L. (2004). The effects of pay level on organization-based self-esteem and performance: a field study. *Journal of Occupational and Organizational Psychology*, 77, 307-322. doi:10.1348/0963179041752646.
- Glazer, S. & Beehr, T.A. (2005). Consistency of implications of three role stressors across four countries. *Journal of Organizational Behavior*, 26, 467-487. doi:10.1002/job.326.
- Greenberg, J. (1993). The social side of fairness: Interpersonal and informational classes of organizational justice. In R. Cropanzano (Ed.), *Justice in the workplace: Approaching fairness in human resource management* (pp. 79–103). Hillsdale, NJ: Erlbaum.
- Greenberg, J. (1987). Reactions to procedural injustice in payment distributions. Do the means justify the ends? *Journal of Applied Psychology*, 72(1). 55-61.
- Hardy, G.E., Woods, D., & Wall, T.D. (2003). The impact of psychological distress on absence from work. *Journal of Applied Psychology*, 88(2), 306-314. doi:10.1037/0021-9010.88.2.306.
- Hauenstein, N.M.A., McGonigle, T. & Flinder, S.W. (2001). A meta-analysis of the relationship between procedural justice and distributive justice: implication for justice research. *Employee Responsibilities and Rights Journal*, 13(1), 39-56. doi:10.1023/A:1014482124497.
- Huang, Y.-H., Chen, C.-H., Du P.-L. & Huang, I.-C. (2012). The causal relationships between job characteristics, burnout, and psychological health: a two-wave panel study. *International Journal of Human Resource Management*, 23(10), 2108-2125. doi:10.1080/09585192.2011.610934
- Ifeld, F.W. (1986). Further validation of a psychiatric symptom index in a normal population. *Psychological Reports*, 39, 1215-1228. doi: org/10.2466/pr0.1976.39.3f.1215.
- Kahn, R.L., Wolfe, D.M., Quinn, R.P., Snoek, J.D. & Rosenthal, R.A. (1964). *Organizational Stress*. New York, NY: Wiley.
- Karasek, R.A. (1979). Job demands, job decision latitude, and mental strain: implication for job redesign. *Administrative Science Quarterly*, 24, 285-308.
- Kessler, R.C., Andrews, G., Colpe, L.J., Hiripi, E., Mroczek, D.K., Normand, S.-L.T., Walters, E.E. & Zaslavsky, A.M. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine*, 32, 959-976. doi:10.1017/S0033291702006074.

- Kivimäki, M., Elovainio, M., Vahtera, J. & Ferrie, J.E. (2003). Organisational justice and health of employees: prospective cohort study. *Occupational and Environmental Medicine*, 60, 27-34. doi:10.1136/oem.60.1.27
- Konovsky, M.A. (2000). Understanding procedural justice and its impact on business organizations. *Journal of Management*, 26(3), 489-511. doi:10.1177/014920630002600306.
- Koper, G. Van Knippenberg, D., Bouhuijs, F., Vermunt, R., & Wilke, H. (1993). Procedural fairness and self-esteem. *European Journal of Social Psychology*, 23, 313-325.
- Lachance, L., Tétreau, B. & Pépin, D. (1997). Validation canadienne-française de la mesure de conflit et d'ambiguïté de rôle de Rizzo *et al.* (1970). *Revue canadienne des sciences du comportement*, 29(4), 283-287. doi:org/10.1037/0008-400X.29.4.283.
- Lawson, K.J., Noblet, A.J., & Rodwell, J.J. (2009). Promoting employee wellbeing: the relevance of work characteristics and organizational justice. *Health Promotion International*, 24(3), 223-233. doi:10.1093/heapro/dap025.
- Lerner, D., & Henke, R.M. (2008). What does research tell us about depression, job performance, and work productivity? *Journal of occupational and Environmental Medicine*, 50(4), 401-410. doi:10.1097/JOM.0b013e31816bae50.
- Leventhal, G.S. (1980). What should be done with equity theory? New approaches to the study of fairness in social relationships. In, K.J. Gergen, M.S. Greenberg & R.H. Willis (Eds.), *Social exchange: Advances in theory and research*, (pp. 27-55), New York, NY: Plenum Press.
- Liljegren, M. & Ekberg, K. (2009). The association between perceived distributive, procedural and interactional organizational justice, self-rated health and burnout, *Work*, 33, 43-51 doi 10.3233/WOR-2009-0842.
- Lind, A.E. & Tyler, T.R. (1988). *The social psychology of procedural justice*. New York, NY: Plenum Press.
- Marchand, A. & Durand, P. (2011). Psychological distress, depression, and burnout: Similar contribution of the job demand-control and job demand-control-support models? *Journal of Occupational and Environmental Medicine*, 53(2), 185-189.

- Massé, R. (2000). Qualitative and quantitative analyses of psychological distress: methodological complementarity and ontological incommensurability. *Qualitative Health Research*, 10, 411-423. doi:10.1177/104973200129118426.
- Motowidlo, S.J., Packard, J.S. & Manning, M.R. (1986). Occupational stress: its causes and consequences for job performance, *Journal of Applied Psychology*, 71(4), 618-629.
- Naus, F., van Iterson, A., & Roe, R.A. (2007). Value incongruence, job autonomy, and organization-based self-esteem: A self-based perspective on organizational cynicism, *European Journal of Work and Organizational Psychology*, 16(2), 195-219, doi: 10.1080/13594320601143271.
- Netemeyer, R.G., Johnston, M.W., & Burton, S. (1990). Analysis of role conflict and role ambiguity in a structural equations framework. *Journal of Applied Psychology*, 75, 148–157.
- Niedhammer, I, Chastang, J.-F., Gendrey, L., David, S. & Degioanni, S. (2006). Propriétés psychométriques de la version française des échelles de la demande psychologique, de la latitude décisionnelle et du soutien social du «Job Content Questionnaire» de Karasek », *Santé publique*, 18(3), 413-427.
- Noblet, A.J., & Rodwell, J.J. (2009). Integrating job stress and social exchange theories to predict employee strain in reformed public sector contexts. *Journal of Public Administration Research and theory*, 19, 555-578. doi:10.1093/jopart/mun019
- OECD. (2012). Sick on the job? Myths and realities about mental health and work. OCDE edition, doi:[10.1787/9789264124523-en](https://doi.org/10.1787/9789264124523-en)
- Oldham, G.R., Kulik, C.T., Stepina, L.P. & Ambrose, M.L. (1986). Relations between situational factors and the comparative referents used by employees. *Academy of Management Journal*, 29(3), 599-608. DOI: 10.2307/256226.
- Ployhart, R.E. & Vandenberg, R.J. (2010). Longitudinal research: the theory, design, and analysis of change. *Journal of Management*, 36(1), 94-120, doi:10.1177/0149206309352110.
- Podsakoff, P.M. MacKenzie, S.B., Lee, J.-Y, & Podsakoff, N.P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879-903. doi:10.1037/0021-9010.88.5.879.
- Podsakoff, P.M., Todor, W.D., Grover, R.A. & Huber, V.L. (1984). Situational moderators of leader reward and punishment behaviors: fact or fiction? *Organizational Behavior and Human Performance*, 34, 21-63. doi:10.1016/0030-5073(84)90036-9.

- Préville, M., Boyer, R., Potvin, L., *et al.* (1992). La détresse psychologique : détermination de la fiabilité et de la validité de la mesure utilisée dans l'enquête Santé Québec. Québec PQ: Rapport de recherche soumis à Santé Québec.
- Rhoades, L., & Eisenberger, R. (2002). Perceived Organizational Support: A Review of the Literature. *Journal of Applied Psychology*, 87(4), 698-714. doi:10.1037//0021-9010.87.4.69.
- Ridner, S.H. (2004). Psychological distress: concept analysis. *Journal of Advanced Nursing*, 45, 536-545. doi:10.1046/j.1365-2648.2003.02938.x
- Rizzo, J.R., House, R.J., & Lirtzman, S.I. (1970). Role conflict and ambiguity in complex organizations. *Administrative Science Quarterly*, 15, 150-163.
- Robbins, T.L., Summers, T.P., Miller, J.L. & Hendrix, W.H. (2000). Using the group-value model to explain the role of non-instrumental justice in distinguishing the effects of distributive and procedural justice. *Journal of Occupational and Organizational Psychology*, 73, 511-518. doi:10.1348/096317900167191.
- Rousseau, V., Salek, S., Aubé, C., & Morin, E.M. (2009). Distributive justice, procedural justice, and psychological distress: the moderating effect of coworker support and work autonomy, *Journal of Occupational Health Psychology*, 14(3), 305-317. doi:10.1037/a0015747.
- Sachez, J.I. & Viswesvaran, C. (2002). The effects of temporal separation on the relations between self-reported work stressors and strains, *Organizational Research Methods*, 5(2), 173-183. doi:10.1177/1094428102005002003.
- Shaw, J.C., Wild, E., & Colquitt, J.A. (2003). To justify of excuse? : A meta-analytic review of the effects of explanations. *Journal of Applied Psychology*, 88(3), 444-458. doi: 10.1037/0021-9010.88.3.444.
- Schmidt, S., Roesler, U., Kusserow, T., & Rau, R. (2014). Uncertainty in the workplace: examining role ambiguity and role conflict, and their link to depression – a meta-analysis. *European Journal of Work and Organizational Psychology*, 23(1), 91-106. doi:10.1080/1359432X.2012.711523.
- Schwab, D.P. (2005). *Research methods for organizational studies*. Second edition, Mahwah, NJ, Lawrence Erlbaum Associates Publishers.
- Siegrist, J. (1996). Adverse health effects of high-effort/low-reward conditions. *Journal of Occupational Health Psychology*, 1(1), 27-41. doi:10.1037/1076-8998.1.1.27.

- Smith, H.J., Tyler, T.R., Huo, Y.J., Ortiz, D.J. & Lind E.A. (1998). The self-relevant implication of the group-value model: group membership, self-worth, and treatment quality. *Journal of Experimental Social Psychology*, 34, 470-493.
- Spector, P.E. (1997). *Job satisfaction*. Thousand Oaks, CA : Sage.
- Spell, C.S. & Arnold, T. (2007a). A multi-level analysis of organizational justice climate, structure, and employee mental health. *Journal of Management*, 33, 724-751. doi:10.1177/0149206307305560
- Spell, C.S. & Arnold, T. (2007b). An appraisal perspective of justice, structure, and job control as antecedents of psychological distress. *Journal of Organizational Behavior*, 28, 729-751. doi:10.1002/job.441
- Stephen, T. & Joubert, N. (2001). The Economic Burden of Mental Health Problems in Canada. *Chronic Diseases in Canada*, Health Canada, 22, 1, 19-25.
- Sutton, R.I. & Staw, B.M. (1995), What theory is not. *Administrative Science Quarterly*, 40(3), 371-384.
- Taris, T.W., Kalimo, R., & Wilmar B. Schaufeli. (2002). Inequity at work: its measurement and association with worker health. *Work and Stress*, 16(4) 287-301. doi:10.1080/0267837021000054500.
- Tenhiälä, A., Linna, A., von Bonsdorff, M., Pentti, J., Vahtera, J., Kivimäki, M. & Elovainio, M. (2013). Organizational justice, sickness absence and employee age. *Journal of Managerial Psychology*, 28(7/8), 805-825.
- Tepper, B.J. (2001). Health consequences of organizational injustice: tests of main and interactive effects. *Organizational Behavior and Human Decision Processes*, 86(2), 197-215. doi:10.1037/0021-9010.86.4789.
- Thibaut, J. & L.Walker. (1975). *Procedural justice: A psychological analysis*. Hillsdale (New Jersey): Lawrence Erlbaum Associates Publishers.
- Toker, S., & Biron, M. (2012). Job burnout and depression: unraveling their temporal relationship and considering the role of physical activity. *Journal of Applied Psychology*, 97(3) 699-710. doi: 10.1037/a0026914.
- Tsutsumi, A. & Kawakamin N. (2004). A review of empirical studies on the model of effort-reward imbalance at work: reducing occupational stress by implementing a new theory. *Social Science and Medicine*, 59, 2335-2359. doi:10.1016/j.socscimed.2004.03.030.

- Tyler, T.R., & Bies, R.J. (1990). Beyond formal procedures: The interpersonal context of procedural justice. In J. S. Carroll (Ed.), *Applied social psychology and organizational settings* (pp. 77–98). Hillsdale, NJ: Lawrence Erlbaum Associates.
- van Vegchel, N., de Jonge, J., Bosma, H., & Schaufeli, W. (2005). Reviewing the effort-reward imbalance model: drawing up the balance of 45 empirical studies. *Social Science and Medicine*, 60, 1117-1131. doi:10.1016/j.socsci
- Ybema, J.F & van den Bos, K. (2010). Effects of organizational justice on depressive symptoms and sickness absence: a longitudinal perspective. *Social Science and Medicine*, 70, 1609-1617. doi:10.1016/j.socsdmed.2010.01.027
- Ylipaavalniemi, J. Kivimäki, M. Elovainio, M., Virtanen, M, Keltikangas-Jarvinen, & Vahtera, J. (2005). Psychosocial work characteristics and incidence of newly diagnosed depression: a prospective cohort study of three different models”. *Social Science and Medicine*, 61, 111-122. doi:10.1016/j.socscimed.2004.11.038.