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Procedural justice as a moderator of the relationship between organizational change intensity and commitment to organizational change

Organizational
change
intensity

501

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Abstract

Purpose – The purpose of this paper is to investigate how and why different forms of organizational change have different levels of organizational intensity, which in turn differentiate its impact on commitment to organizational change (COC). Its purpose is to also identify how procedural justice can reduce change-related stress and buffer the strain inducing effects of job demands.

Design/methodology/approach – The authors tested the hypotheses using data collected from two sources in Korea. First, the authors conducted a survey in several organizations to identify employees' attitudes and stress during organizational change. Second, the author surveyed MBA students to evaluate the degree of organizational change intensity (severity) across the types of change.

Findings – There is a hierarchy of the severity of organizational change and the most severe forms of change are the ones that impact employees' job security and organizational identity. The influence of job demands (represented as organizational change intensity-severity) on COC can depend on the nature of COC. Procedural justice not only facilitates employees to accept values and goals pertaining to organizational change but also adapt themselves to pressures of external change. Buffering effects of job resources (represented as job resources) had significant impacts only on normative commitment to organizational change (NCOC).

Research limitations/implications – This study contributes to the job demands-resources model by considering organizational change intensity as job demands and procedural justice as job resources and showing the relationships among them. Future studies can further extend the model by identifying other variables related to job demands and resources during organizational change and extending the nomological networks of NCOC and continuance commitment to organizational change.

Practical implications – The results of this study provide important insights for human resource managers who plan and implement organizational changes. Procedural justice and organizational change intensity-severity should be considered to increase commitment to change.

Originality/value – This study is one of the few studies to identify the different types of organizational change and quantify them to measure organizational change intensity-severity. A new finding is that the buffering role of job resources (procedural justice in this study) can be marginal when the influence of job demands on employees' attitudes is strong.

Keywords Procedural justice, Commitment to organizational change, Organizational change frequency, Organizational change intensity, Organizational change severity

Paper type Research paper



Introduction

Organizations have undergone unprecedented changes. Although organizational change may lead to benefits to firms (Lewin and Minton, 1986), there is significant evidence that organizational change leads to employee stress (Simpson, 1998). Organizational change occurs in various forms such as new technology implementation, relocation, and mergers and acquisitions (M&A). Although these forms are typically aggregated under the umbrella term “organizational change,” they may have divergent properties with respect to change intensity. For example, a layoff program would likely have a higher impact on employees’ well-being than new technology adoption. More frequent organizational changes can increase the level of uncertainty due to the needs for work process adjustments than less frequent ones (Carter *et al.*, 2013). That is, change intensity includes both quantitative (i.e. the number of organizational changes experienced by employees) and qualitative (i.e. the extent to which the change impacts employees’ jobs) aspects, which may increase job demands during organizational change in different degrees (Glick *et al.*, 1995; Carter *et al.*, 2013).

Addressing the stress from organizational change and its impacts on employees’ well-being, prior studies have identified a variety of stressors pertaining to organizational change such as uncertainty (Bordia *et al.*, 2004) and increased workloads (Simpson, 1998), which induce undesired outcomes such as reduced work engagement, job satisfaction, employee commitment and trust, and increased cynicism (Fedor *et al.*, 2006; Armenakis *et al.*, 2007; Proost *et al.*, 2015; Petrou *et al.*, forthcoming). Despite their contributions, prior studies have not specifically identify how and why different forms of organizational change have different levels of organizational change intensity, which in turn may differentiate its impacts on employees’ attitudes and outcomes. That is, the current understanding is limited with regard to how evaluations of organizational change are related to change characteristics.

We can consider attitudes toward organizational change as a result of evaluations of change characteristics. One of the critical constructs that can represent the evaluations of organizational change is the degree of their commitment to organizational change (hereinafter COC). COC refers to “a mindset that binds an individual to a course of action deemed necessary for the successful implementation of a change initiative” (Herscovitch and Meyer, 2002, p. 475). Herscovitch and Meyer (2002) found that COC has three forms: affective commitment to organizational change (hereinafter ACOC), referring to a desire to provide support for the change based on a belief in its inherent benefits; normative commitment to organizational change (hereinafter NCOC), referring to a sense of obligation to provide support for the change; and continuance commitment to organizational change (hereinafter CCOC), referring to a recognition that there are costs associated with the failure to provide support for the change.

Some prior studies on COC (particularly ACOC) focus on identification of its antecedents such as justice (Andrews *et al.*, 2008; Bernerth *et al.*, 2007) and outcomes such as behavioral support (Meyer *et al.*, 2007). However, considering the limited number of studies on change properties and their relationships with employees’ attitudes and work outcomes, it is not surprising that the literature on COC has largely overlooked the relationship of change intensity to COC (Rafferty and Griffin, 2006). Although organizational change studies typically focus on employees’ attitudinal changes and work outcomes during organizational change, research has investigated employees’ attitudes and work outcomes in specific change contexts such as M&A (Armstrong-Stassen *et al.*, 2001; Clark *et al.*, 2010) and downsizing (Hopkins and Weathington, 2006). However, the nature of organizational change was implicitly nested in these studies. Furthermore, though a few studies argued that organizational change properties may be related to COC, there has not been consensus on how organizational change properties relate to COC. For instance, Herold *et al.* (2007) and

Fedor *et al.* (2006) reported insignificant relationships between personal job impact and change commitment (an aggregate measure of three COC components). However, Rafferty and Griffin (2006) identified the impacts of frequent change and transformational change on job satisfaction and turnover intentions, and found both to be significantly related to the three components of COC. These results suggest that the influence of organizational change properties on COC may not have been entirely captured, and they might have different relationships with the three components of COC.

While addressing the above limitations, this study conceptualizes change intensity in terms of both frequency and severity and focuses on its influence on COC. Based on the job demands-resources (hereinafter JDR) model, this study aims to explain why and how change intensity has different relationships with COC components and how procedural justice can reduce the change-related stress and play a buffering role for the strain inducing effects of stressors. We believe that this study can contribute to research on the JDR model by identifying job demands and resources associated with organizational change. It can also contribute to research on COC as well as the JDR model by showing the different relationships of job demands and resources on COC. For practitioners, understanding how organizational change intensity can influence the three types of COC can reveal valuable insights for change practices, and assist human resource (HR) managers in deciding how to reduce employees' stress during organizational change.

Literature review and theoretical framework

In the field of psychology and management, JDR researchers have agreed that job characteristics affect employee well-being (Bakker and Demerouti, 2007). They have focused on the combination of job resources and job demands, analyzing their influence on work-related well-being and its derivative attitudes and behaviors (Demerouti *et al.*, 2001). Thus, we believe that the JDR model is a useful theoretical framework in that employees' evaluations of change also depend on how the change is influenced by work characteristics (van Emmerik *et al.*, 2009).

JDR model

The JDR model explains how job characteristics can have a significant impact on employees' well-being and attitudes such as job strain, burnout, cynicism, absenteeism, and work engagement (Halbesleben and Buckley, 2004). The JDR model assumes that every job has its own specific characteristics and they can be classified into two areas: job demands and job resources (Demerouti *et al.*, 2001). Job demands mean those physical, social, or organizational aspects of the job that require effort, and thus are related to psychological costs. Job resources refer to those physical, social, or organizational characteristics of the job that assist in accomplishing work goals, reduce the demands of the job, or stimulate personal growth and development (Demerouti *et al.*, 2001). Job resources can be located across different levels such as organizations, social relations, and tasks (Bakker *et al.*, 2003). Participation in decision making, autonomy, and performance feedback exemplify job resources.

The JDR model explicates that employees' well-being results from two independent processes (Bakker and Demerouti, 2007): first, in the health impairment process, poorly designed jobs and chronic job demands exhaust employees' mental and physical resources, which can drain mental energy and evoke stress processes (van Emmerik *et al.*, 2009). Second, in the motivational process, job resources exert their encouraging potential and increase work engagement, thus fostering organizational commitment. In addition to these relatively independent processes, the JDR model explains that the interaction between job demands and job resources is critical for the development of job strain. More specifically, job resources may buffer the impact of job demands on job strain (Bakker and Demerouti, 2007).

Several researchers have applied the JDR model to employees' stress particularly in organizational change contexts. These researchers commonly admitted that organizational change leads to increased job demands such as work load and emotional demands (van Emmerik *et al.*, 2009), new routines, skills, and behaviors (Armenakis and Bedeian, 1999), which can negatively influence employees' well-being (Petrou *et al.*, forthcoming). In addition, because job resources that employees can exploit during organizational change can help protect themselves from change, when employees have more resources, they are more willing to adapt their behaviors to the change and cope with the distress (Proost *et al.*, 2015; Schumacher *et al.*, 2016). Particularly, in the context of organizational changes, employees can perceive that they have resources to protect themselves, when firms seek to hear their opinions and provide relevant information, which are common organizational practices to enhance procedural justice (Lind and Tyler, 1988; Boyd *et al.*, 2011; Carter *et al.*, 2013). These scholars consistently identified that job demands were negatively related while job resources were positively related to evaluations of organizational change (van Emmerik *et al.*, 2009), work engagement (Petrou *et al.*, forthcoming), affective commitment to the organization, and exhaustion (Schumacher *et al.*, 2016). Some of these studies also identified the buffering effects of job resources on the relationship between job demands and outcomes (van Emmerik *et al.*, 2009; Proost *et al.*, 2015).

These studies generally support the mechanisms of the JDR model, and corroborate that organizational change can increase job demands and cause stress for employees (Rafferty and Griffin, 2006; Fedor *et al.*, 2006; Armenakis *et al.*, 2007), which can influence employees' evaluation of and adaptation to organizational change. These findings are also in line with Lazarus and Folkman's (1984) cognitive phenomenological (or transactional) model of stress and Jex and Beehr's (1991) stressor-strain perspective that commonly explain that if certain events are seen as threats to psychological well-being, employees appraise the events and cope with the stressors by showing negative attitudinal and emotional reactions to the events.

Organizational change as a stressor

Organizational change increases employees' stress (Lazarus and Folkman, 1984; Dahl, 2011) as organizational change entails more demand(s) such as learning new routines, and skills (Armenakis and Bedeian, 1999). Here, stress is defined as a disturbance of the equilibrium of the cognitive-emotional-environmental system by external factors (Lazarus and Folkman, 1984). The external factors are called stressors because they can lead to a state of well-being, depending on employees' beliefs about the negative relationship between effort to cope with a new demand and the success probability of meeting the demand (Lepine *et al.*, 2005). Different types of organizational change have heterogeneous natures and have diverse impacts on employees' well-being (Dahl, 2011). If organizational change produces stressors, as discussed earlier, it may create higher levels of stress when organizations implement more intense change programs than when they try to conduct less intense ones. A reason is that as change intensity is higher, it can create more changes in the fundamental structure and routines of the organization (Hannan *et al.*, 2007), which can increase job demands. On the contrary, when change intensity is lower, the cost of adjusting and the effort to implement such adjustments are also lower (Hannan *et al.*, 2007). Thus, employees may require fewer job resources to adjust themselves to change.

Organizational change intensity is multi-faceted mainly in terms of time and severity. First, with regard to time, employees tend to be concerned about the timing of organizational changes and react negatively to a high frequency of changes (Glick *et al.*, 1995; Carter *et al.*, 2013). While highlighting organizational change as a stressor, Glick *et al.* (1995) argued that as organizational change events occur more frequently, employees are more likely to perceive the organization as unpredictable and uncertain, which, in turn, leads

to fatigue regarding the change. More specifically, with regard to job demands, Rafferty and Griffin (2006) stated that organizational change frequency could relate to how often change events are implemented in the work team, which requires employees to adapt their work routines. Similarly, Carter *et al.* (2013) identified that as high change frequency could disrupt their shared work responsibilities, LMX reflecting a high quality relationship with a follower's boss played a more important role in mitigating the increased uncertainty.

Second, with regard to severity, Lazarus and Folkman (1984) highlighted the influence of the novelty of a change event (referring to the degree to which employees have not experienced it before) as a property that can threaten employees' well-being. As employees experience novel events during organizational change, they are required to think and act in new ways, accept new values, and thus may feel threatened and more stressed (Rafferty and Griffin, 2006). In a similar vein, several studies on organizational change considered the impact of organizational change severity on employees and their jobs (Herscovitch and Meyer, 2002). For instance, Bartunek and Moch (1987) and Clark *et al.* (2010) categorized organizational change severity based on changes in organizational identity that employees perceive. According to the authors, organizational change ranges from first-order changes (incremental changes to shared norms) to second-order changes (significant changes in shared schemas) to third-order changes (replacement of existing schemas). Romanelli and Tushman (1994) proposed that organizational changes range from incremental adjustment to radical changes, and radical transformation changes require higher levels of involvement of organizational leaders. Rafferty and Griffin (2006) defined transformational change as an employee's perception of the degree to which organizational change requires modifications to the organization's core systems, and found that transformational change affected their intentions to leave the organization. Dahl (2011) argued that broader and more extensive changes can present fundamental or core organizational changes, and empirically identified that both influenced employees' stress. Based on the above explanations, this study focuses on the two aspects of organizational change intensity, namely organizational change frequency and organizational change severity, and identifies their relationships with the three types of COC.

Hypotheses

The current study builds upon the JDR model (Bakker *et al.*, 2003; Demerouti *et al.*, 2001). The JDR model distinguishes between two main types of job characteristics, job demands, and job resources, which can deteriorate employees' psychological well-being and thus influence their attitudes about the job and the organization. Based on the model, this study views organizational change environments, conceived as job demands and resources, as a determinant of attitudes toward changes. That is, if employees experience increased job demands and a lack of resources to adapt to the organizational change, they are more likely to negatively respond to the change and disengage themselves from organizational change commitment. This argument is also supported by Fox *et al.* (2001) argument that if they understand certain events as threats to psychological well-being, employees appraise the events that occur in their organizations and consider the events as stressors that trigger negative emotional reactions to them.

We consider organizational change intensity as a surrogate for job demands, and clarify it as a property having two aspects: frequency and severity (Romanelli and Tushman, 1994; Rafferty and Griffin, 2006). That is, we assume that as organizational changes occur more frequently and/or severely, job demands related to organizational change tend to increase. We consider procedural justice as a job resource during organizational change (Fernet *et al.*, 2012; Proost *et al.*, 2015) because a high level of procedural justice indicates that employees have more chances to voice their opinions (Tyler and Lind, 1992). As the model also explains that job resources can buffer the negative effects of job demands on outcome

variables, this study includes buffering effects of job resources on the relationship between organizational change intensity and the three types of COC. Figure 1 depicts the research model examined in this study.

Job demands: organizational change frequency and severity

Jobs with high demands deplete employee's mental and physical resources and lead to negative outcomes through the depletion of energy (Bakker *et al.*, 2003). Organizational change entails learning new skills, routines, and cultures, which can increase employees' job demands (Armenakis and Bedeian, 1999). Thus, employees tend to consider certain aspects of the organizational change as stressors (i.e. threats to psychological well-being) and tend to instigate negative emotions, behaviors, and attitudes toward organizational change such as denial, and resignation (Perlman and Takacs, 1990), reduced employee commitment and trust and increased cynicism (Rafferty and Griffin, 2006; Fedor *et al.*, 2006; Armenakis *et al.*, 2007), resistance to change (Bovey and Hede, 2001), and organizational change initiative failure (Vakola and Nikolaou, 2005). The above arguments commonly support the idea that as employees perceive organizational change as a stressor due to increased job demands, they tend to negatively evaluate organizational change.

The two important properties of organizational change intensity that we focus on are organizational change frequency and severity, as discussed earlier. Regarding organizational change frequency, when employees frequently experience organizational change, they need to amend their old work routines to sustain their workflows more efficiently (Ashford, 1988). Furthermore, as organizational change occurs more frequently, the change can also disrupt such amendments, resulting in increased employee apprehension about work procedures (Ashford, 1988). Such change contexts place greater demands on employees in the form of new constraints and effort expenditures (Carter *et al.*, 2013). Regarding organizational change severity, as employees experience organizational change more severely, they need to think and act in new ways, accept new values, and thus may feel threatened and more stressed (Rafferty and Griffin, 2006). The above arguments generally support the idea that as organizational change occurs more frequently and/or severely, job demands can increase, which can, in turn, disengage themselves from COC. We expand these prior studies by proposing that the three types (ACOC, NCOC, and CCOC) of COC may have different relationships with organizational change intensity due to the nature of commitment (Meyer *et al.*, 2007).

First, ACOC is an employee's desire to support a change (Herscovitch and Meyer, 2002). Affectively committed employees are seen as having a sense of belonging and identification, which increases their involvement in organizational change. It also provides them with a

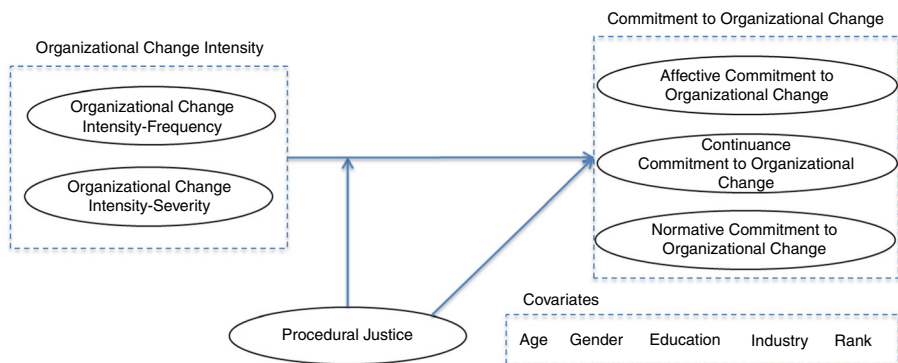


Figure 1.
Research model

willingness to pursue the goals of the organizational change, and enhances their desire to remain with the organization during change (cf., Meyer and Allen, 1991; Mowday *et al.*, 1982). Because employees can perceive increased job demands as organizational change intensity (e.g. frequency and severity) increases, the change contexts can negatively lead to negative emotional responses (e.g. a reduced emotional bond to an organization) (Rodell and Judge, 2009) and influence their attitudes and behaviors (Vandenberghe *et al.*, 2011). Thus, we can expect that as organizational change intensity increases, ACOC can decrease (Meyer and Allen, 1997):

H1. Organizational change intensity-frequency (a) and- severity (b) is negatively related to ACOC.

Second, NCOC is an employee's sense of obligation to support the change (Herscovitch and Meyer, 2002). It is also considered to be employees' acceptance of organizational goals and values (Mayer and Schoorman, 1992). Organizational change intensity may negatively influence NCOC, similar to ACOC, since employees are less likely to feel an obligation to reciprocate by complying with organizational goals due to increased job demands during organizational change (cf. Meyer *et al.*, 2002; Schumacher *et al.*, 2016). One of the reasons is that employees with high job demands are likely to confine their roles to the job-holder role and be reluctant to expand to an organizational-member role (Welbourne *et al.*, 1998). This argument is also corroborated by the argument that employees tend to feel an obligation to reciprocate favorable work environments through favorable attitudes, but also adjust their attitudes downward in response to unfavorable environments (Lavelle *et al.*, 2009). Thus, we expect that as organizational change intensity increases, job demands are higher, which reduces the perceived obligation to comply with the change (NCOC in this study):

H2. Organizational change intensity-frequency (a) and- severity (b) is negatively related to NCOC.

Third, CCOC is an employee's recognition that costs will occur if the employee does not support the organizational change (Herscovitch and Meyer, 2002). Continuance commitment focuses on the employees' perception of side-bets (extraneous interests with a consistent line of activity) and external pressure to support organizational change (Herscovitch and Meyer, 2002). Continuance commitment may, thus, create feelings of confinement with respect to an employee's choices (Jaros *et al.*, 1993; Powell and Meyer, 2004). As organizational change intensity increases, organizations are likely to invest more time and effort to implement the change. Thus, employees may perceive higher levels of the pressure to follow and support the change, which results in higher confinement and CCOC. Thus, employees may not voluntarily and sincerely support the organizational change. Instead, they passively follow along with the change. Hence, unlike ACOC and NCOC, CCOC is often considered an undesirable category of COC (Parish *et al.*, 2008). This rationale is in line with prior studies, which argue that continuance commitment to an organization is negatively correlated with organizations' exertion of change efforts (Meyer and Allen, 1991) and organizational citizenship behavior (Solinger *et al.*, 2008). Thus, we expect that organizational change intensity may be positively associated with CCOC:

H3. Organizational change intensity-frequency (a) and- severity (b) is positively related to CCOC.

Job resources: procedural justice

Organizational change tends to be demanding and stressful for employees (Vakola and Nikolaou, 2005). In this circumstance, employees tend to draw on job resources to protect themselves during stressful events (Hobfoll, 1989). Job resources are important for

employees in order to obtain, retain, and protect what they value during change (Hobfoll and Shirom, 2000; van Emmerik *et al.*, 2009). Particularly, as organizational change is a complex process in which the organization has to choose change agents, gather relevant information regarding employees' concerns, and create new rules and mechanisms to support the change (Carter *et al.*, 2013), we consider procedural justice during organizational change as a job resource that employees can perceive. When an employee perceives that his/her voice is not heard or that there is bias toward other employees' opinions during organizational change, representing procedural injustice, the employee may perceive a lack of job resources, contributing to negative attitudes toward organizational change. This argument is supported by prior studies that identified the relationship between job control and attitudinal outcomes. For instance, Bakker and Geurts (2004) based on the JDR model found that work environments offering job control for professional development during organizational change can increase the willingness to dedicate one's abilities to the task and yield favorable evaluations of organizational change. Boyd *et al.* (2011) identified that procedural justice as job resources had a positive effect on organizational commitment and a negative effect on psychological distress during organizational change.

Though some prior studies did not adopt the JDR model in explaining the relationship of procedural justice and decision control with organizational change outcomes, they generally indirectly support the argument that procedural justice can help reduce employees' negative evaluation of organizational change such as withdrawal (Langer and Rodin, 1976) and sabotage (Allen and Greenberger, 1980). These studies explicated that procedural justice encourages organization membership identification and strengthens the emotional bond with the organization (Tyler and Lind, 1992). That is, employees who perceive procedural justice are likely to behave in ways that benefit their organization to reciprocate the fair treatment offered by the organization (Organ, 1988). Furthermore, procedural justice is associated with employees' commitment to the organization because employers' fair procedures help employees achieve psychological gains (e.g. they are treated as respected members of the organization) and thus they have a stronger sense of affiliation to the organization (Lind and Tyler, 1988). Based on the above arguments, we expect that procedural justice as a job resource may positively influence ACOC and NCOC, but negatively affect CCOC:

H4. Procedural justice is positively related to ACOC.

H5. Procedural justice is positively related to NCOC.

H6. Procedural justice is negatively related to CCOC.

The buffering role of job resources

The JDR model explicates that the interaction between job demands and resources is critical for the development of job strain and attitudes (Bakker and Demerouti, 2007). More specifically, the JDR model suggests that job resources may buffer the impact of job demands on behavioral and attitudinal outcomes (Bakker *et al.*, 2003). The tenet of the model is that employees who have more job resources are better able to cope with organizational change than those who have less. As a result, the latter group of employees tend to be more susceptible to the effects of job demands and will have negative evaluations of change (Shin *et al.*, 2012). These arguments are supported by prior studies that found the buffering effects of job resources on the relationship between job demands and employees' behaviors and attitudes during organizational change. For instance, Proost *et al.* (2015) found that organizational justice buffered the positive effect of job demands on turnover intentions and the negative effect of job demands on job satisfaction. van Emmerik *et al.* (2009) identified job control to buffer the negative relationship between emotional demands

and favorable evaluations of organizational change. Based on the above, we expect that procedural justice may reduce the level of stress from organizational change intensity and, therefore, propose that procedural justice will moderate the aforementioned relationships of organizational change intensity with ACOC, NCOC, and CCOC:

- H7. Procedural justice will moderate the relationship of organizational change intensity-frequency (a) and- severity (b) with ACOC such that the strength of the negative relationship of organizational change intensity to ACOC will be lower when procedural justice is high.
- H8. Procedural justice will moderate the relationship of organizational change intensity-frequency (a) and- severity (b) with NCOC such that the strength of the negative relationship of organizational change intensity to NCOC will be lower when procedural justice is high.
- H9. Procedural justice will moderate the relationship of organizational change intensity-frequency (a) and- severity (b) with CCOC such that the strength of the positive relationship of organizational change intensity to CCOC will be lower when procedural justice is high.

Method

Procedures

We tested the hypotheses using data collected from organizations in Korea. In order to reduce the threat of common method bias, we collected data from two sources. That is, because utilizing the same source in examining the interactive effects can affect the result (Siemsen *et al.*, 2010), we tried to obtain the measures of independent, dependent, and moderating variables from different sources (MacKenzie and Podsakoff, 2012).

First, we conducted a survey with the assistance of a regional Chamber of Commerce and Industry in a Southeastern metropolitan city, because the chamber has a group of companies that can represent Korean companies across industries. The purpose of this survey was to identify employees' attitudes and stress during organizational change. The Chamber of Commerce and Industry sent an official participation request to member companies that have implemented organizational change programs within two years. The request outlined research objectives and procedures. A total of 41 companies agreed to participate in the research. These firms were from various industries (e.g. 5 percent government agencies, 34 percent manufacturing, 47 percent services). The average number of employees in these organizations was 318.1 with a standard deviation of 128.4. The Chamber of Commerce and Industry sent a web-based survey link to the firms. The link via e-mail was sent to employees by the respective HR management departments. To increase the response rate, we ensured that the answers were anonymous and only researchers (not firms) would directly collect and handle the responses. We asked respondents to answer the questions related to our research constructs based on an organizational change that they experienced (or were experiencing) most recently and that had influenced them most strongly.

Second, we conducted a survey with MBA-level students who were working in organizations and experienced organizational change. The purpose of the second survey was to evaluate the level of organizational change intensity across the types of change (see the measure section below for a detailed explanation about the measure of organizational change intensity). We collected data to measure organizational change intensity-severity from different respondents because common method bias can pose threats to the validity of the results for survey research that relies on self-report data, especially if

the data are provided by the same person at the same time (Campbell and Fiske, 1959). This problem can be reduced by using different respondents for reports of the (in)dependent and moderating variables (MacKenzie and Podsakoff, 2012).

Samples

In the first survey, a total of 303 usable responses were collected (the overall response rate was 9.35 percent). These respondents had experienced and/or were experiencing organizational changes within the past 12 months. The respondents' organizational tenure was, on average, 8.24 years with a standard deviation of 7.44. Of the respondents 55 percent were male. In terms of age, 42 percent were between 22 and 34 years old, 32 percent were between 35 and 44, and 22 percent were between 45 and 54. In terms of education, 10 percent had a high-school degree, 26 percent had a junior college degree, and 45 percent had a college degree. With regard to respondents' ranks, 38 percent were entry level, 17 percent were assistant manager level, 25 percent were manager level, and 14 percent were director level. In the second survey, a total of 46 usable responses were collected (the overall response rate was 74.19 percent). All the respondents had experienced organizational changes. The respondents' organizational tenure was, on average, 8.23 years ($SD = 4.36$). Of these 83 percent were male. In terms of age, 30 percent were between 22 and 34 years old, 61 percent were between 35 and 44, and 9 percent were between 45 and 54. In terms of education, 44 percent had a college degree, and the rest of them had above master-level degrees. With regard to respondents' ranks, 30 percent were entry level, 4 percent were assistant manager level, 22 percent were manager level, and rest of them were director level. We compared the two groups of samples that were collected in the first and the second survey to check the homogeneity of the samples. ANOVA indicated that the two samples were not statistically different based on age ($p = 0.77$), rank ($p = 0.77$), work experience in the current organization ($p = 0.92$), and work experience in the current job ($p = 0.60$). Thus, we concluded that the two samples were fairly comparable.

Measures

In the first survey, all items were assessed on Likert-type scales on which 1 represented "strongly disagree" and 5 represented "strongly agree." We asked respondents to select an organizational change that they experienced (or were experiencing) most recently and that influenced them most strongly and to answer the questions based on the change. The surveys were conducted in Korean. To prepare the survey in Korean, an individual who was fluent in Korean and English translated the questionnaire from English to Korean, and then another individual with proficiency in Korean and English was asked to back-translate the Korean version to English (Brislin, 1980). A third expert confirmed that there were no semantic differences between the two versions.

Procedural justice. We adopted Daly and Geyer's (1994) four-item measure of procedural justice, which asks the extent to which employees perceive procedural justice during organizational change ($\alpha = 0.94$).

Commitment to an organizational change. We used Herscovitch and Meyer's (2002) measure of affective, normative, and continuance commitment to organization change ($\alpha = 0.89, 0.75, \text{ and } 0.88$, respectively). The three components of organizational change commitment have six items each.

Control variables. Arvey *et al.* (1991) note the importance of assessing the amount of variance in job-related attitudes in addition to the variance derived from personal demographic and other situational variables. In addition, alternatives in the job market can vary across industry sectors, which in turn can influence COC. Thus, we controlled for demographic and other situational variables by including age, gender, education, marital status, rank, and industry.

Organizational change intensity. We focused on organizational change intensity in terms of both quantitative and qualitative aspects following Romanelli and Tushman (1994) and Rafferty and Griffin (2006). Organizational change frequency represents the quantitative aspect, referring to the number of organizational changes recently experienced by employees. We thus measured change frequency by asking the total number of organizational changes that the respondents had experienced within the last two years in the first survey (mean of organizational change frequency = 1.77, standard deviation = 0.94)

Organizational change severity represents a qualitative aspect of change intensity, referring to the extent to which organizational change impacts employees' jobs. We used the second survey to evaluate change severity by surveying MBA-level students from a university in South Korea. We ensured that the respondents have experienced organizational change within two years. We asked respondents to evaluate the severity of the seven types of organizational changes used in the first survey (i.e. M&A, layoffs, relocation, etc.). More specifically, we asked respondents to rank the organizational changes in order of most impact on employees (1 representing the highest impact and 7 representing the lowest impact). Then, the average value of each type of organizational change was calculated. The results show that layoffs, relocation, restructuring, technology-oriented changes (e.g. new product development, quality improvement), M&A, business process innovation, and HR policy changes (e.g. rewarding, training, hiring) have average rank values of 2.54 (standard deviation = 1.77), 5.82 (standard deviation 1.76), 2.55 (standard deviation = 1.76), 4.68 (standard deviation = 1.89), 3.64 (standard deviation = 1.87), 4.32 (standard deviation = 1.36), and 4.45 (standard deviation = 1.57), respectively. Based on these results, we recoded layoff, restructuring, M&A, business process innovation, HR policy changes, technology-oriented changes, and relocation, ranging from 7 to 1, respectively, to indicate the severity of organizational changes with higher values. We used these results to assess the qualitative aspect of change (severity) by the respondents in the first survey.

Discriminant validity and reliability

We conducted confirmatory factor analyses using MPLUS (Muthén and Muthén, 1998) and SPSS to examine the discriminant validity of the measures in the first survey. The hypothesized four-factor measurement model (consisting of procedural justice, ACOC, NCOC, and CCOC) fit the data well ($\chi^2 = 404.91$, degrees of freedom = 157, RMSEA = 0.07, CFI = 0.94, TLI = 0.92). All the items loaded on pre-designated constructs, and the loadings were significant, with $p < 0.01$ (without significant cross-loadings). Table AI includes the results of the factor analysis. The average variance explained (AVE) for each construct was greater than the recommended 0.50 level. To examine discriminant validity, we compared the correlations between constructs with the square root of the AVE of the individual constructs. As shown in Table I, the correlations between the variables were all below the square root of AVE. These results clearly indicated the discriminant validity among not only the three components of COC but also procedural justice. As stated earlier, all of the scales used to measure the constructs in our study had Cronbach's α s greater than 0.75, showing evidence of internal consistency (reliability) (Nunnally, 1978). Based on construct and discriminant validity, we created unit-weighted scales by summing the items for each measure.

Results

Analysis

We conducted a series of hierarchical regression analyses to test the hypotheses in order to identify R^2 changes when the interaction terms were entered (Hofmann *et al.*, 2003).

Table I.
Correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Age	-.41										
(2) Gender	0.04	-.05									
(3) Education	0.60	-0.24	0.13								
(4) Rank	-0.07	0.02	-0.12	-.05							
(5) Industry	-0.01	-0.03	-0.05	-0.10	0.08						
(6) Organizational change intensity-severity	-0.07	-0.02	0.12	-0.07	-0.03	-.03					
(7) Organization change intensity-frequency	0.06	-0.02	-0.08	0.17	0.00	-0.35	-0.03	0.99			
(8) Procedural justice	0.10	-0.03	-0.01	0.24	-0.08	-0.49	0.04	0.60	0.97		
(9) Affective commitment to organizational change	0.00	0.03	0.03	0.01	0.02	0.20	-0.01	-0.24	-0.34	0.98	
(10) Continuance commitment to organizational change	-0.05	0.09	-0.11	-0.06	0.01	0.04	0.01	0.17	0.15	0.28	0.95
(11) Normative commitment to organizational change	2.86	1.31	2.85	2.33	3.70	4.31	1.77	3.12	3.34	3.18	2.93
Mean	0.88	0.49	1.15	1.27	1.03	2.10	0.94	0.86	0.76	3.18	0.68
SD											

Notes: *n* = 303. Italic numbers on the diagonal represent square roots of average variance extracted (AVE). Correlations that are greater than 0.139 are significant at *p* ≤ 0.05 and those that are greater than 0.155 are significant at *p* ≤ 0.01

It should be noted that we mean-centered the constructs to reduce the threat of multi-collinearity (Aiken and West, 1991). In addition, we log-normalized the value of organizational change intensity-frequency which was measured as the total number of changes, and standardized the value of organizational change intensity-severity, since it was measured based on a seven-point rank-order scale which differed from the five-point Likert scales used for measuring the other constructs in our study. After calibrating these scales, the maximum value of variance inflation factor is 2.268, indicating that multi-collinearity did not distort the overall model fit. We regressed the three dependent variables only on control variables in the base model (Models 1, 6 and 11). We included the independent variables (Models 2, 4, 7, 9, 12, and 14) in the regressions to examine the direct effect of the variables. We then included the interaction terms to test the moderation effects (Models 3, 5, 8, 10, 13, and 15). Table II and Figure 2 and 3 show the results of the analysis.

Hypothesis testing

H1 suggested that organizational change intensity may be negatively related to ACOC. The results indicated that organizational change intensity-frequency was not related to ACOC (Model 4) while organizational change intensity-severity was negatively related to ACOC ($\beta = -0.303$, $p < 0.01$) (Model 2). Thus, *H1b* was accepted but *H1a* was not. *H2* proposed that organizational change intensity may be negatively related to NCOC. The results indicated that both organizational change intensity-frequency and severity were not related to NCOC (Models 7 and 9). *H2a* and *H2b* were not accepted. *H3* suggested that organizational change intensity may be positively related to CCOC. The results showed that while organizational change intensity-frequency was not related to CCOC (Models 14 and 15), organizational change intensity-severity was positively related to CCOC ($\beta = 0.190$, $p < 0.05$) (Model 12). Thus, *H3b* was accepted, but *H3a* was not.

H4 and *H5* suggested the positive relationship of procedural justice to ACOC and NCOC, but *H6* proposed its negative relationship to CCOC. As shown in Table II, procedural justice was positively related to ACOC consistently in Models 2 and 4. Hence, *H4* was accepted. Similarly, it was positively related to NCOC in Models 7 and 9. *H5* was accepted. Additionally, procedural justice was negatively related to CCOC in Models 12 and 14. Thus, *H6* was accepted. *H7a* and *H7b* suggested the moderating effects of procedural justice on the relationship between organizational change intensity (frequency and severity) and ACOC. As shown in Models 3 and 5, the interactions (OCI-F \times PJ and OCIS \times PJ) are not significant, not supporting *H7a* and *H7b*.

H8a and *H8b* proposed the moderating effect of procedural justice on the relationships between organizational change intensity (frequency and severity) and NCOC. As shown in Model 10 in Table II, procedural justice significantly moderates the relationship between organizational change intensity-frequency and NCOC (coefficient = 0.116, $p < 0.05$). As Figure 2(a) indicates, when procedural justice is high, organizational change intensity-frequency is positively related to NCOC (slope = 0.276), and negatively related to NCOC when procedural justice is low (slope = -0.188). This result shows that procedural justice may reduce the negative influence of organizational change intensity-frequency on NCOC, supporting *H8a*. As shown in Model 8 in Table II, procedural justice significantly moderated the relationship between organizational change intensity-severity and NCOC (coefficient = 0.119, $p < 0.05$). As Figure 2(b) indicates, when procedural justice is high, organizational change intensity-severity is positively related to NCOC (slope = 0.356), and negatively related to NCOC (slope = -0.120) when procedural justice is low. This result shows that procedural justice may reduce the negative influence of organizational change intensity-severity on NCOC, supporting *H8b*.

H9a and *H9b* suggested the moderating effects of procedural justice on the relationship between organizational change intensity (frequency and severity) and CCOC. As shown in

Dependent variable: ACOC

	Model 1	Model 2	Model 3	Model 4	Model 5
Age	-0.093	-0.040	-0.036	-0.080	-0.067
Gender	0.102	0.026	0.043	0.019	0.030
Education	-0.034	-0.013	-0.012	0.003	0.001
Marital status	0.125	0.051	0.082	0.070	0.109
Rank	0.202***	0.188**	0.104**	0.221***	0.127**
Industry	-0.056	-0.049	-0.038	-0.079	-0.061
Organizational change intensity-severity (OCI-S)		-0.303***	-0.227***		
Organizational change intensity-frequency (OCI-F)				0.073	0.056
Procedural justice (PJ)		0.441***	0.410***	0.576***	0.525***
OCI-S × PJ			-0.044		
OCI-F × PJ					-0.006
R ²	0.101	0.447	0.471	0.423	0.423

Dependent variable: NCOC

	Model 6	Model 7	Model 8	Model 9	Model 10
Age	0.010	0.016	0.020	0.021	0.021
Gender	0.136	0.098	0.119	0.112	0.141
Education	-0.052	-0.069	-0.029	-0.085	-0.038
Marital status	-0.045	-0.030	-0.054	-0.031	-0.033
Rank	-0.006	-0.049	-0.012	-0.059	-0.028
Industry	0.027	0.033	0.020	0.048	0.035
Organizational change intensity-severity (OCI-S)		0.100	0.059		
Organizational change intensity-frequency (OCI-F)				0.055	0.022
Procedural justice (PJ)		0.202**	0.134**	0.161**	0.111**
OCI-S × PJ			0.119**		
OCI-F × PJ					0.116**
R ²	0.029	0.063	0.085	0.063	0.086

Dependent variable: CCOC

	Model 11	Model 12	Model 13	Model 14	Model 15
Age	-0.074	-0.125	-0.103	-0.087	-0.069
Gender	0.027	0.033	0.051	0.043	0.068
Education	0.033	0.039	0.028	0.010	0.011
Marital status	0.091	0.079	0.117	0.093	0.153
Rank	0.002	0.071	0.044	0.035	0.021
Industry	0.019	0.009	0.007	0.037	0.032
Organizational change intensity-severity (OCI-S)		0.190**	0.145**		
Organizational change intensity-frequency (OCI-F)				0.041	0.025
Procedural justice (PJ)		-0.139**	-0.133**	-0.236***	-0.225***
OCI-S × PJ			0.025		
OCI-F × PJ					0.064
R ²	0.008	0.080	0.081	0.064	0.068

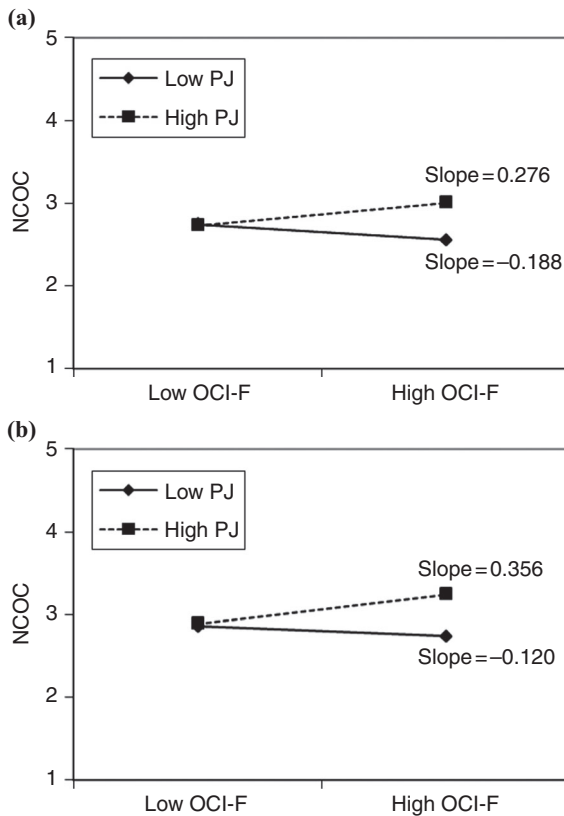
Table II.
Regression results

Notes: $n = 303$. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Models 13 and 15, the interactions (OCI-F × PJ and OCI-S × PJ) were not significant, not supporting *H9a* and *H9b*. Figure 3 shows a summary of the hypothesis testing results. It should be noted that as we conducted a series of hierarchical regression analyses, it was not possible to denote the regression coefficients in the figure. Thus, we depicted only the directions (positive or negative influences) of the relationships.

Discussion

This study aims to conceptualize organizational change intensity and to explain its impacts on the three types of COC based on the JDR model. This study isolated the impact of two forms of organizational change intensity (frequency and severity) as job demands on COC

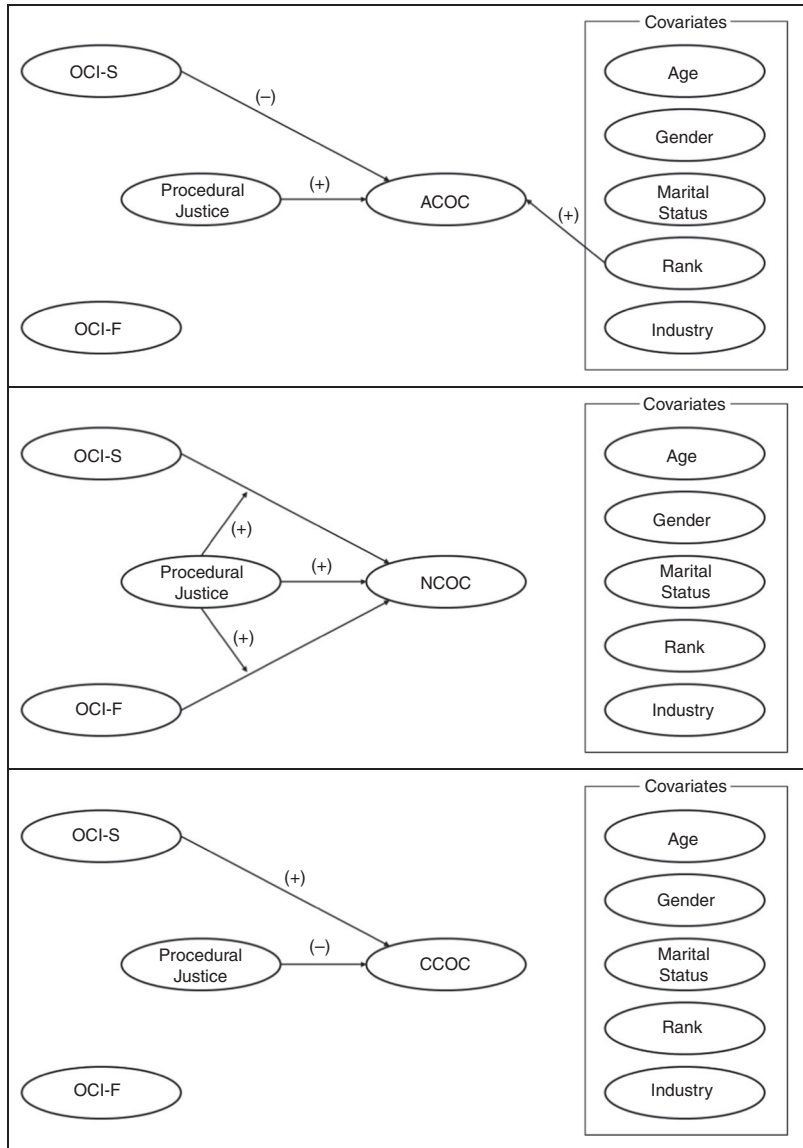


Notes: PJ, Procedural justice; OCI-S, Organizational change intensity-severity; OCI-F, Organizational change intensity-frequency

Figure 2.
Moderation effects

components (ACOC, NCOC, and CCOC). It also examined the pivotal role of procedural justice as job resources indirectly affecting COC and mitigating the effects of change intensity with respect to COC. Overall, our results showed interesting patterns in the influence of organizational change intensity on the three types of COC. Moreover, our findings show that the relationships between organizational change frequency and NCOC components are contingent on procedural justice. As such, this paper helps to advance our understanding of the consequences of job demands and job resources as well as COC.

A majority of prior studies considered organizational change intensity either as a control variable (e.g. Herscovitch and Meyer, 2002) or as a nested construct (i.e. all forms of change are considered to be one construct) (e.g. Armstrong-Stassen *et al.*, 2001; Clark *et al.*, 2010). However, we recognized two types of organizational change intensity (organizational change intensity-severity and- frequency) since they can increase job demands during organizational change in different degrees (Glick *et al.*, 1995; Carter *et al.*, 2013). Furthermore, this paper quantitatively evaluated change severity across various forms of change. We found that there may be a hierarchy of the severity of organizational change in the order of layoffs, restructuring, M&A, business process innovation, HR policy changes, technology-oriented changes, and relocation. This order



Notes: OCI-S, Organizational change intensity-severity; OCI-F, Organizational change intensity-frequency; ACOC, Affective commitment to organizational change; NCOC, Normative commitment to organizational change; CCOC, Continuance commitment to organizational change

Figure 3.
Summary of results

suggests that the most severe forms of change are the ones that impact employees' job security (e.g. Schumacher *et al.*, 2016) and organizational identity (Bartunek and Moch, 1987), which supports the conceptualization of job demands in the JDR model (Schumacher *et al.*, 2016; Bakker *et al.*, 2003).

This study can contribute to the COC literature by empirically showing and that organizational change intensity-severity has a differential impact on the type of COC (i.e. ACOC, NCOC, and CCOC) and that the influence of organizational change intensity on COC cannot be captured in its entirety. Similar to (but not identical to) the explanations of the JDR model, the results indicated that the influence of job demands (represented as change severity) on COC can depend on the nature of COC. For instance, this study found that as organizational change intensity-severity increases, ACOC tends to decrease, CCOC is likely to increase, while NCOC remains the same. This result is consistent with prior findings in that as organizational change intensity-severity increases, employees perceive higher job demands and experience increased stress. However, severity did not influence NCOC. We expect that since psychological stress by definition refers to “[...] a relationship with the environment that the person appraises as significant for his or her well-being and in which the demands tax or exceed available coping resources” (Lazarus and Folkman, 1986, p. 63), the impact of stress may be more closely related to attitudinal and cognitive issues, represented mainly by ACOC and CCOC, rather than the moral obligations represented by NCOC.

Organization change intensity-frequency appears to play less of a role in influencing COC components. Although organizational change intensity-frequency may be a stressor as it can increase employees’ job demands (Ashford, 1988; Carter *et al.*, 2013), our results suggest that it does not directly relate to COC components. Reasons may be that as organizational change occurs frequently, employees are accustomed to a certain level of stress and accordingly redefine their sensitivity to the stressor (Schumacher *et al.*, 2016). Thus, it may not directly influence their attitudes toward organizational change. In addition, employees may come to realize increased job demands only when they are at stake (represented as high severity), which in turn decrease ACOC. Combined with prior research findings that organizational change frequency is related only to employees’ uncertainty perceptions but not to job satisfaction (Rafferty and Griffin, 2006), OCB or job performance (Carter *et al.*, 2013), it can be understood that the impact of organizational change intensity-frequency might be confined to uncertainty perceptions, and does not directly affect employees’ attitudes toward organizational change. In this case, reducing change frequency as job demands does not offer benefits to employees (cf. Petrou *et al.*, forthcoming).

Prior studies (e.g. Fox *et al.*, 2001; Fedor *et al.*, 2006) indicated that procedural justice enhances the attitudinal, emotional, and behavioral responses from organizational changes. However, until now, procedural justice has been the focus of a limited number of studies on COC and the JDR model. This study showed that procedural justice as a job resource can mitigate the stress from organizational change, enhancing ACOC and NCOC but reducing CCOC. These results support prior studies that considered the stress-inducing role of job resources and highlighted the role of job control (Bakker and Demerouti, 2007). Further, this study extends the JDR model by showing that the presence of job resources not only facilitates employees to accept the values and goals pertaining to organizational change but also to adapt themselves to the external change pressure.

Further, the interactions between organizational change intensity and procedural justice, representing the buffering effects of job resources, had significant impacts only on NCOC. More specifically, when procedural justice was high, the NCOC level was likely to increase as organizational change intensity-frequency increased. However, when procedural justice was low, the NCOC level was likely to decrease as frequency increased. This result is in part in line with research that highlighted organizational justice as a potential buffer for the strain inducing effects of stressors (Vermunt and Steensma, 2003). This result sheds new light on the role of procedural justice by indicating that it can mitigate the negative influences of organizational change intensity only on NCOC, which was not influenced by both organizational change intensity-severity and- frequency. Considering that empirical evidence for the buffering role of job control is still inconclusive (Proost *et al.*, 2015),

the results suggested that when job demands have strong effects, the buffering role of job resources might be marginal. Based on the above discussions, Table III summarizes the influences of organizational change intensity on ACOC, NCOC, and CCOC.

Limitations and directions for future research

Despite the above contributions, this study has several limitations that should be kept in mind when interpreting the results. First, we had responses from two data sources to reduce the threat of common method bias. However, the relationships among the constructs except organizational change intensity may not be free from common method bias. Thus, we examined the bias with Harman’s one-factor test and a single unmeasured latent method (Podsakoff *et al.*, 2003). The results of the unrotated EFA revealed that the first factor explained 27.33 percent of the variance, and indicated that no general factor emerged from method bias. In addition, we tested a five-factor measurement model, which included four predefined research constructs (ACOC, CCOC, NCOC, and procedural justice) with a method construct linking all the items from the aforementioned research constructs (Menon *et al.*, 1996). The results of this CFA showed that this model did not fit the data at all. In addition, Conway and Lance (2010) and Spector (2006) stated that the impact of method bias may be a misperception. The authors emphasized construct validity supported by factor structure, nomological networks, and reliability, to rule out method effects. As discussed earlier, all of the constructs were measured using scales that have been used in prior studies. All of our measures demonstrated acceptable reliability, and the data fit the four-factor structure in a CFA suggesting discriminant validity. In addition, our pattern of correlations suggests nomological validity. Thus, while common method bias is always a threat, we took steps to alleviate concerns regarding how this might influence the interpretations of our findings.

	Major findings	Key discussions
Affective commitment to organizational change (ACOC)	Organizational change intensity-severity negatively and procedural justice positively influence ACOC The interactions of procedural justice with the two types of organizational change intensity do not affect it	As organizational change severity increases, it can increase employees’ stress from the change, which in turn can reduce employees’ beliefs about the change benefits and support for the change However, frequent organizational changes would not disturb employees’ desire to support the change Procedural justice would enhance employees’ support for the change
Normative commitment to organizational change (NCOC)	Neither organizational change intensity-severity nor-frequency affects NCOC Procedural justice positively influences it The interactions of procedural justice with the two types of organizational change intensity positively affect NCOC	NCOC representing moral obligation would be less vulnerable to the stresses from organizational change Procedural justice would significantly mitigate the relationship between employees’ perceptions of organizational change intensity and NCOC, and increase their moral obligation to support the change
Continuance commitment to organizational change (CCOC)	Organizational change intensity-severity and procedural justice positively influence ACOC The interactions of procedural justice with the two types of organizational change intensity do not affect it	As organizational change severity increases, it would increase employees’ stress from the change, which can in turn increase employees’ perception of side-bets and/or external pressure to support the change However, frequent organizational changes would play an insignificant role in forming CCOC Procedural justice would reduce the cost perception associated with not supporting the change

Table III. Comparisons among ACOC, NCOC, and CCOC regarding their relationships with organizational change intensity

We conducted a cross-sectional study, implying that the causality in the observed relationships cannot be drawn. Future research with longitudinal data can offer a better understanding of the causality. However, the results found in this study were predicted from theoretical models that have been empirically confirmed (Bakker and Demerouti, 2007). It should be noted that collecting data longitudinally from various organizations experiencing organizational change would be challenging. In addition, the elapsed time since employees' experienced organizational change is a factor that influences their perception and evaluation of organizational change (Brauchli *et al.*, 2013). Thus, future studies need to consider the elapsed time since employees have experienced organizational change, and identify the similar relationships in a longitudinal research design.

This paper assumed that organizational change intensity as job demands can create stressful situations. Consistent with prior studies (e.g. Rafferty and Griffin, 2006; Shin *et al.*, 2012), we considered organizational change intensity as a stressor. However, we did not measure stress directly. As the results showed, organizational change intensity-severity and- frequency have different patterns of relationships, indicating that the nature of these two types of organizational change intensity create different types of stress. Future studies can benefit from measuring the type and level of stress pertaining to organizational change intensity and investigating how it can differentially influence the types of COC. Additionally, few studies have investigated how and why organizational change can create different types and levels of employee stress. Future studies can benefit from adopting methodological triangulation to better help illuminate the role of organizational change as a context that can increase employees' stress (Jick, 1979), and enrich our understanding of the relationship by allowing us to draw conclusions with greater clarity and confidence (Scandura and Williams, 2000).

The results revealed that the research model in this study explained approximately 47 percent of the total variance of ACOC, while explaining about 8 percent of NCOC and CCOC. These results hint that other job demands and resources can better explain NCOC and CCOC. In addition, the JDR model has two different mechanisms, the health impairment process and the motivational process. Thus, future studies can benefit from considering the different JDM processes with other variables related to job demands and resources, which can help better elaborate the nomological networks of NCOC and CCOC.

Implications for practice

The results of this study provide important insights for HR managers that plan and implement organizational change. Organizations now implement change programs frequently due to technological changes, new product development, spin-offs, and global expansion as examples. When they implement change programs, they endeavor to obtain employees' COC. However, they may not always achieve all types of COC. Even if employees do not agree with the change program, organizations still need to implement the change due to strategic needs. And, they may not always focus on increasing ACOC. That said, managers and HR professionals might be able to achieve NCOC or reduce CCOC even if firms do not address employees' ACOC. Based on the results of this study, change agents could begin to focus their efforts on issues related to procedural justice during organizational change, since it can positively influence ACOC and NCOC and negatively affect CCOC as well as mitigate organizational change intensity-severity and- frequency and NCOC. In other words, procedural justice, through fair processes such as allowing employee voice and providing enough information, may reduce the stress from organizational change. Thus, HR managers need to increase opportunities for employees involved in organizational change to voice their opinions and participate in the change. In addition, change agents should accept the ideas expressed by employees regarding change and take their opinions into consideration when designing and implementing the change.

While implementing change programs, the results of this study suggest that HR managers should consider the severity of the change and the extent to which the change program could impact employees' work-life. As organizational changes become more severe, employees tend to experience increased stress, which, in turn, substantially reduces ACOC and increases CCOC. To make matters worse, the stress from severe organizational changes cannot be mitigated by participation programs that enhance procedural justice. Thus, HR managers should try to minimize the severity when they plan and implement organizational change. If the program is desperately needed for a firm's strategic focus, they should provide programs to lower severity and stress. For instance, organizational change intensity-frequency does not directly influence COC components, indicating that change frequency by itself is less likely to exacerbate the stress levels of employees. Thus, change agents should implement their change programs gradually and/or progressively rather than conducting them at one time.

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Appendix

Factors	Items	Standardized loading
Procedural justice	PJ1	0.856
	PJ2	0.861
	PJ3	0.945
	PJ4	0.880
Affective commitment to organizational change	ACOC1	0.816
	ACOC2	0.733
	ACOC3	0.731
	ACOC4	0.756
	ACOC5	0.571
	ACOC6	0.806
Continuance commitment to organizational change	CCOC1	0.508
	CCOC2	0.720
	CCOC3	0.891
	CCOC4	0.883
	CCOC5	0.775
	CCOC6	0.687
Normative commitment to organizational change	NCOC1	0.761
	NCOC2	0.667
	NCOC3	0.633
	NCOC4	0.691
	NCOC5	0.518
	NCOC6	0.827

Note: All loadings are significant at $p < 0.001$

Table A1.
Results of factor analysis

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