

Change-oriented organizational citizenship behavior: effects of work environment characteristics and intervening psychological processes

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Summary

Organizational citizenship behavior (OCB) has attracted major research effort for the last two decades. The vast majority of studies of OCB have been devoted to affiliative forms of such behavior including interpersonal helping, courtesy, and compliance, which are intended to maintain and reinforce the *status quo*. The present study attends to another form of OCB that challenges the *status quo* through suggestions for constructive changes in work methods, processes, and policies. This study identifies a set of workplace characteristics that predict change-oriented OCB. Multi-level analyses of large-scale longitudinal data showed that strong vision and innovative climate predicted change-oriented OCB via both individual- and cross-level processes. These contextual influences were mediated by two intervening variables: psychological empowerment and felt responsibility for change. The results suggest that change-oriented OCB is significantly predicted by only organizational characteristics. Group-level dynamics may be less important for understanding challenging types of OCB than for affiliative types such as helping or compliance. Copyright © 2007 John Wiley & Sons, Ltd.

Introduction

For the last two decades, organizational citizenship behavior (OCB), or contextual performance, has been highlighted as one of the most desired employee-level outcomes in the workplace (Podsakoff, MacKenzie, Paine, & Bachrach, 2000). Although scholars have identified various types of such behavior (e.g., Borman & Motowidlo, 1993), the majority of empirical studies have been devoted to interpersonal helping and compliance. Of the two, helping has been the most frequently and readily identified form of OCB or contextual performance (Podsakoff et al., 2000). According to Van Dyne, Cummings, & McLean Parks (1995), helping and compliance are promotive and affiliative types of

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extra-role behavior designed to improve task performance by maintaining and enhancing existing working relationships and task procedures ('do it smoothly and efficiently').

In contrast to the myriad studies of helping and compliance, another critical aspect of OCB that is promotive but challenging has received only very limited research attention (Bettencourt, 2004). Behaviors such as voice and making suggestions tend to improve work performance ('do it in a better way'), but are likely to disrupt social relationships by challenging the *status quo* of the workplace (LePine & Van Dyne, 1998). In the current study, this challenging type of OCB is referred to as change-oriented OCB. This study extends the OCB literature by identifying workplace characteristics and mediating psychological mechanisms that lead to increased change-oriented OCB.

Another shortcoming of the OCB literature is that the researchers have operationalized organizational or work context variables solely at the individual-level. The vast majority of OCB studies have linked individuals' work environment perceptions to their OCB. Contextual influences on individual behavior, however, implicitly refer to processes in which 'independent and dependent variables are on different levels' (Rousseau, 1985, p. 14). Research efforts investigating contextual predictors of OCB, therefore, must be designed as multi-level studies if they are to adequately assess relationships among variables residing at different levels of analysis (i.e., cross-level effects). The lack of studies with an appropriate research design seriously limits our understanding of the way OCB occurs in work groups and organizations, which are inherently multi-level (Chan, 1998). The present study addresses this gap in the literature by simultaneously investigating individual-level and group-level processes through which work environment perceptions influence change-oriented OCB.

A small number of studies of change-oriented OCB have identified a set of contextual predictors (e.g., Bettencourt, 2004; LePine & Van Dyne, 1998; Morrison & Phelps, 1999). However, none of these studies have investigated the potential psychological mechanisms through which those contextual factors impact employees' change-oriented OCB. The present study proposes that the effects of work environment perceptions on change-oriented OCB are mediated by two intervening psychological processes: psychological empowerment and felt responsibility for change. In summary, this study analyses the multi-level, psychological processes through which workplace characteristics predict change-oriented OCB, a type of citizenship or contextual performance that has received very little attention. Below I define change-oriented OCB and briefly summarize relevant research literature, following which I will outline alternative ways of conceptualizing context. The hypotheses will be tested using longitudinal, multi-level data collected from a large electronics company in Korea.

Change-Oriented OCB

Podsakoff et al. (2000) identified seven dimensions of OCB: helping, sportsmanship, organizational loyalty, compliance, civic virtue, self development, and individual initiative. Six of these seven dimensions (except for the last one, initiative) fall into the category of promotive and affiliative behavior that is oriented toward maintaining existing working relationships/arrangements (Van Dyne et al., 1995). In contrast, individual initiative includes behaviors that are intended to induce change, such as 'voluntary acts of creativity and innovation designed to improve one's task or the organization's performance' (Podsakoff et al., 2000, p. 524). Scholars have used different labels to refer to this change-oriented behavior, including personal initiative, task revision, voice, innovative behavior, and taking charge (Frese, Fay, Hilburger, Leng, & Tag, 1997; Van Dyne & LePine, 1998; Scott & Bruce,

1994; Staw & Boettger, 1990). Although these constructs have slight differences in connotation, they all represent employee behavior that is intended to make constructive changes in the work and task environment (for more discussion, see Frese et al., 1997 and Morrison & Phelps, 1999).

Positioning voice and cooperation as contrasting forms of contextual performance, LePine and Van Dyne (2001) defined voice as 'constructive change-oriented communication intended to improve the situation' (p. 326). Morrison and Phelps (1999) explicitly addressed change-oriented behavior by introducing the construct of *taking charge*, which is extra-role and intended to introduce organizationally functional changes related to work. Integrating these definitions, I define change-oriented OCB as 'constructive efforts by individuals to identify and implement changes with respect to work methods, policies, and procedures to improve the situation and performance' (adapted from Bettencourt, 2004).

Both affiliative and challenging types of OCB are important and required for high performance. Affiliative behavior such as helping and compliance lubricates interpersonal relationships among coworkers and promotes collaborative task performance, which is critical in effectively completing tasks with high interdependence and complexity that require collective effort and intensive coordination. Perhaps this aspect of OCB is most consistent with the definition of contextual performance as behaviors that maintain and enhance social, motivational, and psychological environment for task performance (Borman & Motowidlo, 1993). However, simply creating a harmonious environment and hard-working employees is not sufficient for improved performance. In fact, having collaborative and compliant employees can backfire on the organization: 'a worker who goes beyond the call of duty to accomplish a misconceived job may actually be more dangerous to an organization than a more mundane performer' (Staw & Boettger, 1990, p. 537). With increasing competition and unpredictable changes in the business environment, employees are required to be more and more proactive, flexible, and innovative in their dealings with task-related issues (Bettencourt, 2004; Frese et al., 1997). Van Dyne and LePine's (1998) longitudinal study shows that voice behavior is a significant predictor of task performance after controlling for in-role task behavior and interpersonal helping.

Previous studies have shown that change-oriented OCB can be predicted by both individual and situational variables. LePine and Van Dyne (2001) reported that the amount of change-oriented communication was positively related to extraversion and conscientiousness, but negatively to neuroticism and agreeableness. Change-oriented behavior was also related to other individual disposition variables, including (a) motivational characteristics such as learning goal orientation, action orientation, and need for achievement; (b) general self-efficacy or self-esteem; (c) problem-focused coping; and (d) problem-solving style (Frese et al., 1997; LePine & Van Dyne, 1998; Morrison and Phelps, 1999; Scott & Bruce, 1994).

Several empirical studies have also demonstrated that organizational context variables can significantly affect employees' change-oriented OCB. For example, both transactional and transformational leadership increased change-oriented OCB by improving leader-member exchange quality (Bettencourt, 2004). Change-oriented behavior is also positively related to employees' work related attitudes such as job satisfaction (LePine & Van Dyne, 1998). In addition, employees' propensity to make constructive suggestions is affected by the overall organizational context as represented by the style of top management and organizational climate or culture. For instance, top management openness was a significant predictor of suggestions for work-related changes (Morrison & Phelps, 1999). Scott and Bruce (1994) found that psychological climate for innovation such as perceived support for innovation was a critical factor for R&D workers' innovative behavior. Nevertheless, similar to other studies of OCB, these authors examined the role of contextual factors on employee behavior only at the individual-level analysis, ignoring the possibility of cross-level influences of context on individual behavior (Rousseau, 1985).

The Duality of Contextual Influence on Behavior

The conceptualization of context as a predictor of individual behavior varies significantly in the literature. Some scholars have conceived of context as a psychological, individual-specific construct that emerges from a person's perception and interpretation of the social and physical environment (Augier, Shariq, & Vendelo, 2001). According to this perspective, context influences individual behavior only through the filter of personal experiences and interpretation, and, therefore, there exist as many different contexts as the number of individuals in a given setting:

'Context is determined by the questions which people ask of events. . . just as different people can ask different questions of events, so different people will determine different contexts. . . [they] simultaneously create and inhabit multiple contexts, contexts whose commonality is questionable' (Rapport, 1999, p. 190).

However, many researchers have also argued that some aspects of context may have collective properties that cannot be captured by individual perception or interpretation. For example, some contextual variables, such as shared norms, shared mental models, collective mind (Weick & Roberts, 1993), and group information processing (Hinsz, Tindale, & Vollrath, 1997), have been depicted as collective phenomena. Organizational scholars have maintained that the composite of individuals induces emergent properties that transcend their individual characteristics (Weick & Roberts, 1993). This position endorses a collective nature of context that cannot be accounted for by any single individual's perception or interpretation.

These two approaches imply quite different processes by which context shapes individual behavior. The first perspective, in which context is conceptualized as a psychological construct reflecting each individual's distinct perception and interpretation, suggests that contextual influence is simply an individual-level process that occurs within a person's mind. Most existing studies of OCB seem to take this perspective and have examined the contextual influence on OCB singularly at the individual-level. The second perspective, in which context is regarded as a collective phenomenon, presumes that group-level perceptions of the same workplace characteristics may have distinct effects on individual behavior beyond individual-level perceptions or interpretations (Rousseau, 1985).

Individual and collective perceptions may overlap to the extent that the social unit is tightly knit and successful in creating a shared perception of the environment among members. Nevertheless, it is also common that members of the same group develop different environmental perceptions, even when they share the same work environment (Yammarino & Bass, 1990). Therefore, it would be meaningful to investigate the ways in which individual behavior is influenced by both the individual's own perceptions and group-level perceptions that may be an important element of the individual's social environment. Unfortunately, these two distinct processes of contextual influence on change-oriented OCB have not yet been explicitly differentiated, let alone empirically tested. The present study expands our understanding of contextual influences on change-oriented OCB by investigating group-level as well as individual-level processes through which work environment characteristics influence it.

Antecedents of Change-Oriented OCB

As shown in Figure 1, this study examines three contextual antecedents of change-oriented OCB: strong vision, innovative climate, and supportive leadership. Prior studies have shown that leadership is

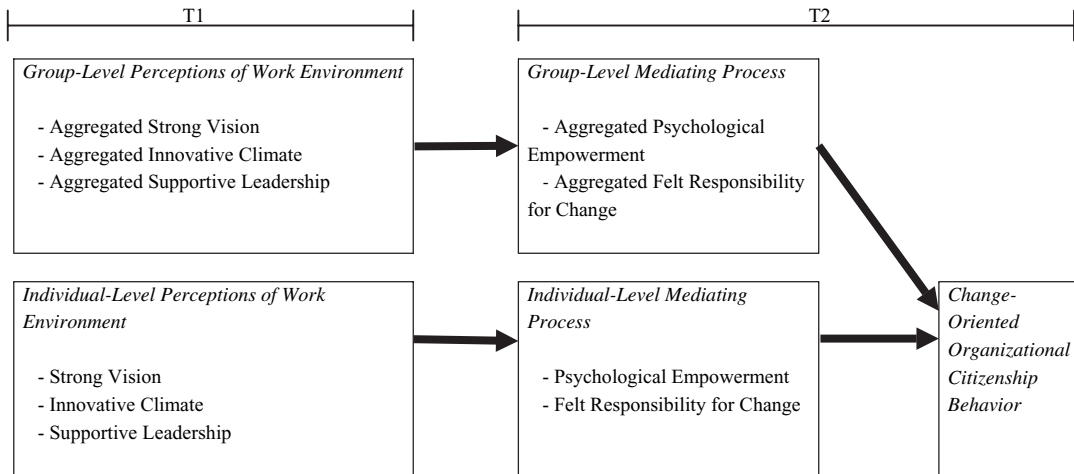


Figure 1. Conceptual framework and research design. *Note:* T1 and T2 indicate the points of data collection

a significant predictor of change-oriented behavior (e.g., Bettencourt, 2004). Although supportive leadership has not yet been examined in regard to change-oriented OCB, the creativity literature has demonstrated that with supportive leaders, employees are more likely to come up with new approaches to work (Amabile, 1988; Oldham & Cummings, 1996). In addition to the leader effect, this study examines the effect of two organizational variables: vision and climate as perceived by employees. Given that change-oriented OCB is targeted at the improvement of organizational effectiveness (cf. OCB-O, Williams & Anderson, 1991) rather than interpersonally oriented to benefit a particular individual (OCB-I), organizational factors may have significant implications for the behavior. With respect to level of analysis, based on the duality of contextual influences on individual behavior, I propose that these work environment variables influence employee creative behavior at both the individual and group levels of analysis.

The second part of the model shown in Figure 1 explores psychological processes through which work environment variables influence change-oriented OCB. This study investigates the mediating role of two situation-specific cognitions of employees: psychological empowerment and felt responsibility for change. In the creativity literature, psychological empowerment or intrinsic task motivation has long been regarded as the mediator between context and creative performance (Amabile, 1988). Although felt responsibility for change was not posited as a mediator, Morrison and Phelps (1999) found that this situation-specific cognition was directly responsible for change-oriented behavior. This study offers a more sophisticated explanation of employees' change-oriented OCB than available in the current literature by proposing and testing psychological processes that may mediate the effect of the work environment on this particular type of OCB. Figure 1 presents a visual summary of hypothesized multi-level, mediated relationships between three sets of variables that may occur over a period of time. Specific hypotheses involving these variables are presented below.

Strong vision

Vision refers to 'a general transcendent ideal that represents shared values' (Kirkpatrick & Locke, 1996). Although the role of vision has not been examined in the context of change-oriented OCB, scholars have identified vision based on shared values as a core component of an organization's capacity for initiating and implementing changes (Zaccaro & Banks, 2004). Vision may facilitate

organizational change by aligning employees' personal values and goals with organizational goals and enhancing their task confidence, which in turn produces a proactive, risk-taking orientation toward tasks (Bass, 1985). Successful formation and assimilation of company vision also increases affective commitment of employees based on increased identification and emotional bonding with the organization (Dvir, Kass, & Shamir, 2004), which is critical for willingness to contribute to the organization. In addition, strong vision tends to generate intellectual stimulation and inspiration among employees (Kirkpatrick & Locke, 1996), which may promote their change-oriented behavior. Unlike specific goals that narrow individuals' attention and channel their effort in a particular direction (Staw & Boettger, 1990), visions (particularly based on strong values) are general and relatively broad, allowing alternative approaches and corrective measures. For this reason, in the presence of a strong, shared vision supported by core values (e.g., quality product, customer satisfaction), employees are likely to voice their concerns and make suggestions for improvements when they believe that current policies, practices, and methods fall short of achieving the vision they collectively pursue.

Hypothesis 1: Strong vision will be positively related to change-oriented OCB both at the individual and group levels of analysis.

Innovative climate

Climate represents the meanings that employees develop regarding their work environment. Organizational climate has direct implications for employee behavior because it reflects employees' perceptions of relatively enduring features of the organization that determine how they operate within it (Schneider & Reichers, 1983). Because climate perception offers a reference for appropriate behavior within the given setting, when employees believe that their workplace supports new ideas and change, and it supplies resources for innovative initiatives, they may generate and express innovative ideas and suggestions for change more freely and frequently (Scott & Bruce, 1994). Innovative climate at the organizational level may have a direct influence on change-oriented OCB because unlike helping, which is targeted at colleagues often within the work unit (OCB-I, Williams & Anderson, 1991), change-oriented OCB is targeted at and intended to benefit the organization (OCB-O), and thus is likely to be affected by organizational level characteristics. Moreover, unlike cooperative behavior, which supports existing work relationships and is positively regarded by supervisors and colleagues, change-oriented OCB (even when it is constructively framed and presented) tends to challenge the *status quo* and disrupt the interpersonal relations and work process endorsed by others (LePine & Van Dyne, 2001; Staw & Boettger, 1990). For this reason, employees may need to feel protected or even encouraged by the entire organization when they take risks in suggesting improved work procedures and policies that may create tension with others in the work unit. Thus, for OCB-O, such as change-oriented OCB, organizational-level support and encouragement may be critical.

Hypothesis 2: Innovative climate will be positively related to change-oriented OCB both at the individual and group levels of analysis.

Supportive leadership

Prior studies of change-oriented behavior have shown that this behavior is significantly related to various leadership characteristics such as leader-member exchange quality, leader's role expectation, contingent reward, transformational leadership, and self-managing practices (Bettencourt, 2004; LePine & Van Dyne, 1998; Scott & Bruce, 1994). The present study examines the effect of supportive

leadership on change-oriented OCB. In predicting employees' creative performance, scholars have focused on open, participative, and supportive leader behaviors (Amabile, 1988). When leaders support followers' task performance and encourage them to make their own decisions regarding their tasks, the followers are more likely to identify ineffective procedures and unnecessary policies and further advance suggestions for improvement. Support from the leader provides additional autonomy and resources that may 'stimulate risk-taking and a willingness to exceed the scope of one's formal job description' (Bettencourt, 2004, p. 169). LePine and Van Dyne (1998) also found that self-managing practices that allow autonomy for decision making increased employees' behavior of expressing constructive challenges to improve processes.

Hypothesis 3: Supportive leadership will be positively related to change-oriented OCB both at the individual and group levels of analysis.

Intervening process: psychological empowerment and felt responsibility for change

Intervening processes fall between independent and dependant variables and explain the relationship between them (Kenny, 1979). As part of the causal chain, intervening processes add sophistication to explanations of the flow of events or phenomena in question. Although the literature has identified a number of environmental factors that predict change-oriented OCB, it has yet to reveal the intervening processes through which contextual influences occur. In this regard, many scholars have argued that workplace characteristics foster or inhibit change-oriented OCB by affecting certain psychological states that may be directly responsible for the behavior, such as availability of alternative or more effective solutions, willingness to take risk, increased self-efficacy, and assessment of likely success (Bettencourt, 2004; LePine & Van Dyne, 1998; Morrison & Phelps, 1999; Staw & Boettger, 1990).

In this study, I propose that psychological empowerment and felt responsibility for change are potential intervening processes between context and change-oriented OCB. Spreitzer (1995) defined psychological empowerment as 'intrinsic task motivation manifested in a set of four cognitions reflecting an individual's orientation to his or her work role: competence, impact, meaning, and self-determination' (p. 1443). Psychologically empowered individuals perform more innovative behavior because as autonomous performers, they are less constrained by technical rules, feel more efficacious about their task activities, and are willing to introduce change (Spreitzer, 1995). Felt responsibility for change refers to 'an individual's belief that he or she is personally obligated to bring about constructive change,' which is critical for discretionary, extra-role behavior (Morrison & Phelps, 1999, p. 407). When employees feel personal responsibility for change, they tend to own the task process and feel accountable for the outcome, which increases their willingness to entail risk in the achievement of the goal and enhances the motivation to correct counterproductive procedures (Frese et al., 1997; Staw & Boettger, 1990).

In this study, it is hypothesized that workplace characteristics influence employees' change-oriented OCB by promoting their psychological empowerment and felt responsibility for change. For example, vision encourages change among employees through the process of empowerment, which offers task autonomy and confidence (Zaccaro & Banks, 2004). In addition, when employees share the vision of the company, they tend to accept challenging task goals and feel responsible for its attainment (Kirkpatrick & Locke, 1996). Supportive leaders may increase employees' feelings of self-determination and decrease their fears of disapproval and evaluation-related concerns, which in turn effectively increases their intrinsic motivation and sense of responsibility for the task and its outcomes (Deci & Ryan, 1985; Oldham & Cummings, 1996). Similarly, innovative climate will result in psychological empowerment of employees by supplying normative support and resources needed for

task performance. Employees experiencing psychological empowerment and felt responsibility for change will exhibit more change-oriented OCB because they are cognitively flexible, willing to pursue new possibilities, and desire to eliminate maladaptive procedures and improve the situation to better achieve the goal (Spreitzer, 1995; Staw & Boettger, 1990).

Hypothesis 4: Psychological empowerment will mediate the effects of individual-level and group-level perceptions of work environment on change-oriented OCB.

Hypothesis 5: Felt responsibility for change will mediate the effects of individual-level and group-level perceptions of work environment on change-oriented OCB.

Organizational Context

Description of the Organization

The data for this study were collected from a division (hereafter, 'Digital') of a large electronics company headquartered in Korea. This company, a member of the Fortune Global 500, is a high-profile manufacturer of many electronic products in the global market, with the annual revenue of 32 billion US dollars at the time of the data collection for this study (2001 and 2002). 'Digital' was one of this company's six divisions, and was primarily involved in the development, manufacturing, and distribution of computer- and multimedia-related products such as desktops/notebooks, printers, digital displays, LCD/PDP TVs, camcorders, DVD players, and audio devices such as MP3 players. Digital had been successful in designing, manufacturing, and marketing its products in the global market. With the reshaping of its business operations and the increasing transfer of the manufacturing function to its own factories in China, Digital's domestic employees in Korea were, at the time of this study, working principally in the R&D, marketing, and planning/management functions.

Organizational Vision, Culture, and Climate

Because most revenues were generated in overseas markets, Digital's vision tended to be globally oriented, pursuing market and technological leadership in the global market. Due to constant, unpredictable, and turbulent technological changes in the electronics industry in general, strategic alliances and partnership with other multinational corporations utilizing similar and complementary technologies had become critical for Digital. The high-tech nature of its business engendered a relatively high level of tension, competitiveness, and fast paced work processes at Digital, which further reinforced strong value orientations toward goal achievement and constant learning and improvement. Reflecting its business and global competition, Digital also emphasized innovation and creativity, and thus strongly encouraged employees to engage in change-oriented behavior, which is the target behavior of the current study. In addition, within the 12 months preceding the present data collection, Digital introduced and implemented a series of new work process innovations such as global Enterprise Resource Planning (ERP), Supply Chain Management (SCM), and Six Sigma, which further highlighted the importance of organizational members' spontaneous behaviors such as change-oriented OCB.

Method

Data collection and sample characteristics

The present data were collected from a division of a large electronics company in Korea. This division was devoted to computer- and multimedia-related products. As part of its organizational change effort, the division conducted a two-wave organizational assessment by administering employee surveys over a period of 2 years. Of the more than 5300 members of the division, employees with less than 1 year of company tenure were excluded from the survey in order to obtain reliable responses based on sufficient organizational experience, resulting in a target sample of 4803 for the first year. Of this target sample, 3108 employees completed the first year (T1) survey, which was administered through the company intranet (response rate = 65%). The response rate was comparable across different functions, gender, education, tenure, and hierarchical positions. The second year (T2) survey was conducted 12 months after the T1 survey. Of the 3108 employees who completed the T1 survey, 2040 also participated in the T2 survey (response rate = 66%).

This sample of 2040 participants consisted of employees from 177 work units, which included R&D teams, functional departments, and work teams in factories. Because the goal of the present study was to examine group-level as well as individual-level processes, I removed work units with less than three participants from the sample. This screening procedure resulted in the final sample of 1923 employees from 133 work units. The size of the work units ranged between 3 and 64 members, with a mean of 14.46 ($SD = 11.89$). This final sample was 93% male with an average age of 32 years and an average organizational tenure of 10 years. More than two thirds of the participants had some form of college education. In terms of functional background, participants from R&D, production, and support comprised 47%, 29%, and 6% of the sample, respectively.

Measures

All independent variables were assessed at T1. The intervening variable and change-oriented OCB were measured at T2. All measures were based on multiple items with acceptable internal consistencies. Each item was followed by a five-point Likert-type scale (1 = *strongly disagree*, 5 = *strongly agree*).

Control variables

To control for systematic biases associated with participants' demographic characteristics, four such variables were included at the individual-level of analysis: age in years, gender (0 = female, 1 = male), tenure with the company in years, and hierarchical position (1 = associate, 2 = assistant manager, 3 = manager, 4 = executive). At the team-level, the size of the work unit was included as a control variable because in the present data set, the range and variation in work unit size was substantial, and group size tends to affect group processes and member behavior (Choi, Price, & Vinokur, 2003).

Strong vision (T1)

Based on the descriptions of the role and nature of vision with respect to change processes (Dvir et al., 2004; Zaccaro & Banks, 2004), a three-item scale ($\alpha = 0.79$) was constructed to measure the presence of strong vision based on shared values within the company. This scale included: 'Our division provides a convincing vision for employees,' 'There exists a strong value that should be appreciated under any circumstances in our division,' 'Our division has a fundamental vision that is shared and pursued by all

division employees.' Thus, the current measure of strong vision assessed employees' belief regarding the presence of a company vision, rather than an objective assessment of its strength or its content.

Innovative climate (T1)

Adapting items from the climate for innovation scale (Scott & Bruce, 1994), I used an eight-item measure ($\alpha = 0.88$) to assess organizational climate with respect to change orientation ('Our division pursues ventures and changes'), support for ideas ('Our division is open to new ideas and new ways of thinking'), and resource availability ('Our division promptly provides materials or equipment needed for task performance').

Supportive leadership (T1)

Adapting Oldham & Cumming's (1996) scale of supportive leadership, I used a five-item scale ($\alpha = 0.84$) to measure each work unit manager's leadership. This scale included items such as 'The unit manager leaves it up to employees to decide how to go about doing their job' and 'The unit manager encourages and stimulates employees to develop new skills.'

Psychological empowerment (T2)

I adopted three items ($\alpha = 0.70$) from Spreitzer's (1995) psychological empowerment scale to measure three subcomponents of empowerment: meaning ('My job activities are personally meaningful to me'), competence ('I am self-assured about my capabilities to perform my work activities'), and self-determination ('I have significant autonomy in determining how I do my job').

Felt responsibility for change (T2)

Participants' perception of personal obligations regarding change was assessed by two items ($\alpha = 0.60$) taken from Morrison and Phelps (1999): 'I feel a personal sense of responsibility to bring about change at work;' 'It's up to me to bring about improvement in my workplace.'

Change-oriented OCB (T2)

Adapting items from prior scales of change-oriented behavior, I measured participants' change-oriented OCB using four items ($\alpha = 0.83$): 'I frequently come up with new ideas or new work methods to perform my task,' 'I often suggest work improvement ideas to others' (adapted from Scott & Bruce, 1994), 'I often suggest changes to unproductive rules or policies,' and 'I often change the way I work to improve efficiency' (adapted from Morrison & Phelps, 1999).

Group-level aggregation of contextual and intervening variables

Participants' individual perceptions of the three work environment variables and two intervening variables were aggregated at the work unit level to investigate their cross-level effects on change-oriented OCB (Chan, 1998). All intraclass correlations of the work environment variables ranged between 0.71 and 0.76, indicating that participants from the same work unit responded in a more similar way than those from different work units. In addition, r_{wg} values for these five variables were high, ranging between 0.82 and 0.95, providing empirical support for inter-rater agreement within the unit.

Analytic strategy

The present hypotheses included predictors at two levels of analysis: the individual and the group (work unit). To examine their multi-level effects, I analyzed the data using multivariate Hierarchical Linear

Modeling (HLM, Bryk & Raudenbush, 1992). The HLM procedure allows decomposition of variance observed at a particular level (e.g., individual) using variables observed at multiple levels (e.g., individual and group), granting an adequate test of multi-level processes such as cross-level effects (Rousseau, 1985). In HLM, the effects of predictors from multiple levels are estimated simultaneously, controlling for each other (e.g., Choi et al., 2003).

Results

Although this study adopted a longitudinal research design, T1 and T2 variables were collected from the same source, which presents potential problems associated with same method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). To test the empirical distinctiveness of the three predictors measured at T1 and the three variables measured at T2, a series of confirmatory factor analyses (CFA) was conducted using EQS (Bentler, 1995). As shown in Table 1, for the 16 items reported at T1, CFA was conducted on three different latent factor models. The results clearly indicate that the hypothesized three-factor model provided a significantly better fit to the data than alternative models. The CFA results based on the nine items collected at T2 also showed that the hypothesized three-factor model performed significantly better than alternative models. Overall, these CFA results demonstrate that although the items were collected from the same source, the constructs maintained empirical distinctness as indicators of different underlying factors (Podsakoff et al., 2003). Tables 2 and 3 present means, standard deviations, and correlations among the study variables at the individual and group levels of analysis, respectively.

Building a multi-level model using HLM

To test the present hypotheses, following the procedure used in Choi et al. (2003), I conducted HLM analyses in a stepwise manner, in which different sets of independent variables were entered

Table 1. Confirmatory factor analyses of variables collected at T1 and T2

Model	χ^2	<i>df</i>	NNFI ^a	AGFI	CFI	RMSEA	AIC
T1 Variables							
One-factor model ^b	2891.70	103	0.86	0.83	0.88	0.096	2685.70
Two-factor model (combining vision and climate as one factor) ^c	1633.77	101	0.91	0.90	0.92	0.072	1431.76
Three-factor model	1351.45	98	0.93	0.92	0.95	0.066	1155.44
T2 Variables							
One-factor model ^d	469.19	26	0.89	0.89	0.92	0.093	417.19
Two-factor model (combining empowerment and responsibility as one factor) ^e	241.35	24	0.94	0.94	0.97	0.069	193.35
Three-factor model	203.77	21	0.95	0.95	0.98	0.067	161.77

^aNNFI = non-normed fit index; AGFI = adjusted goodness-of-fit index; CFI = comparative fit index; RMSEA = root mean-square error of approximation; AIC = Aikake Information Criterion.

^bOne-factor model–Three-factor model: $\Delta\chi^2(5) = 1540.35$ ($p < 0.001$).

^cTwo-factor model–Three-factor model: $\Delta\chi^2(3) = 282.32$ ($p < 0.001$).

^dOne-factor model–Three-factor model: $\Delta\chi^2(5) = 265.42$ ($p < 0.001$).

^eTwo-factor model–Three-factor model: $\Delta\chi^2(3) = 37.58$ ($p < 0.001$).

Table 2. Means, standard deviations, and inter-scale correlations: Individual-level ($N = 1,923$)^{a,b}

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10
1. Age	32.24	5.80	—									
2. Male	0.93	0.26	0.39	—								
3. Tenure	9.85	6.20	0.74	0.22	—							
4. Hierarchical position	2.36	0.66	0.80	0.35	0.49	—						
5. Strong vision (T1)	3.34	0.73	0.13	0.03	0.17	0.03	—					
6. Innovative climate (T1)	3.38	0.67	0.20	0.05	0.21	0.09	0.73	—				
7. Supportive leadership (T1)	3.44	0.73	0.18	0.06	0.15	0.12	0.58	0.69	—			
8. Psychological empowerment (T2)	3.94	0.60	0.31	0.12	0.25	0.26	0.28	0.32	0.29	—		
9. Felt responsibility for change (T2)	3.82	0.64	0.22	0.09	0.20	0.15	0.30	0.34	0.28	0.56	—	
10. Change-oriented OCB (T2)	3.69	0.62	0.34	0.17	0.30	0.27	0.29	0.32	0.24	0.62	0.55	—

^aThe sample size for the last two rows involving psychological empowerment and creative behavior was 1953.

^bCorrelation coefficient greater than 0.06 is significant at $p < 0.01$.

sequentially into a multi-level equation that predicts change-oriented OCB. Similar to unstandardized regression coefficients, the coefficients reported in Tables 4 and 5 (β for individual-level predictors, γ for group-level predictors) can be interpreted as the magnitude of the effect of the predictors on the outcome, controlling for other variables in the equation. For each HLM model, individual- and group-level variances were also reported, which were then used to calculate the amount of explained variance (equivalent to R^2) with additional predictors introduced to the model.

The first model in Table 4, which contains no predictors (null model), provides information on how much variation in the outcome lay within and between work units. The results showed that a substantial portion (93.9%) of outcome variance resided at the individual-level ($\sigma^2 = 0.3601$), but a significant portion of variance in change-oriented OCB (6.1%) nevertheless resided at the group-level ($\tau = 0.0232$, $p < 0.001$). The proportion of group-level variance of change-oriented OCB is relatively small compared with reported group-level variations of other types of OCB such as courtesy (25% of variance at the group-level) and conscientiousness (16% at the group-level) (Kidwell, Mossholder, & Bennett, 1997). Although between-group difference for change-oriented OCB in the present data was relatively small, it was still significant ($\chi^2(132) = 259.60$, $p < 0.001$) and I, therefore, decided to proceed with testing cross-level effects of work environment perceptions on change-oriented OCB (Bryk & Raudenbush, 1992). The group-level null model reported in Table 5 was the last individual-level model with all individual-level predictors included (Model 3 in Table 4). In other words, group-level HLM models were estimated, controlling for all individual-level predictors.

Table 3. Means, standard deviations, and inter-scale correlations: Group-level ($N = 133$)^a

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. Work unit size	14.46	11.89	—						
2. Aggregated strong vision (T1)	3.30	0.30	0.05	—					
3. Aggregated innovative climate (T1)	3.38	0.29	-0.11	0.76	—				
4. Aggregated supportive leadership (T1)	3.44	0.32	-0.11	0.44	0.70	—			
5. Aggregated psychological empowerment (T2)	3.96	0.24	-0.10	0.35	0.38	0.39	—		
6. Aggregated felt responsibility for change (T2)	3.86	0.27	-0.18	0.36	0.45	0.36	0.54	—	
7. Aggregated change-oriented OCB (T2)	3.71	0.27	-0.08	0.44	0.49	0.34	0.72	0.69	—

^aCorrelation coefficient greater than 0.16 is significant at $p < 0.05$.

Table 4. Hierarchical linear models predicting change-oriented OCB: Individual-level analysis

Variables	Null model	Model 1	Model 2	Model 3
Age		0.02**	0.01*	0.00
Male		0.16**	0.16**	0.13**
Tenure		0.01	0.01	0.00
Hierarchical position		0.08*	0.10**	0.06*
Strong vision			0.11***	0.06**
Innovative climate			0.12**	0.02
Supportive leadership			0.00	-0.03
Psychological empowerment				0.42***
Felt responsibility for change				0.24***
Individual-level variance (σ^2)	0.3601	0.3249	0.3035	0.2002
Change in variance ($\Delta\sigma^2$)		0.0352	0.0214	0.1033
Proportion of explained variance		9.8%	5.9%	28.7%
Group-level variance (τ)	0.0232	0.0261	0.0280	0.0389

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Hypothesis testing

The results of individual-level and group-level HLM analyses are presented in Tables 4 and 5, respectively. Among the four individual-level control variables, age, gender, and hierarchical position of participants exerted significant effects on their change-oriented OCB. Specifically, male participants who were older and occupied a higher position in the hierarchy reported greater change-oriented OCB. The group-level control (work unit size), however, was not related to between-group differences in members' change-oriented OCB (see Table 5). Below I explain the hypothesis-testing results.

Strong vision

Hypothesis 1 suggests that strong company vision will increase change-oriented OCB both at the individual and group levels of analysis. Model 2 in Table 4 shows that strong vision as perceived by employees at T1 increased their change-oriented OCB reported at T2 ($\beta = 0.11$, $p < 0.001$). In addition, as presented in Model 1 in Table 5, group-level perception of strong vision had a cross-level effect on

Table 5. Hierarchical linear models predicting change-oriented OCB: Group-level analysis

Variables	Null Model	Model 1	Model 2
Work unit size		0.00	0.00
Aggregated strong vision		0.23*	0.11
Aggregated innovative climate		0.25*	0.14
Aggregated supportive leadership		0.02	-0.09
Aggregated psychological empowerment			0.37***
Aggregated felt responsibility for change			0.49***
Individual-level variance (σ^2)	0.2002	0.2007	0.1991
Group-level variance (τ)	0.0389	0.0210	0.0016
Change in variance ($\Delta\tau$)		0.0179	0.0194
Proportion of explained variance		46.0%	49.9%

* $p < 0.05$.

*** $p < 0.001$.

the outcome ($\gamma = 0.23, p < 0.05$), making the work unit's members exhibit more change-oriented OCB than members of other work units. The present data supported Hypothesis 1.

Innovative climate

Hypothesis 2 proposes a positive relationship between innovative climate and change-oriented OCB. As expected, innovative climate significantly increased change-oriented OCB at both the individual ($\beta = 0.12, p < 0.01$) and group ($\gamma = 0.25, p < 0.05$) levels of analysis. Hypothesis 2 was confirmed.

Supportive leadership

Although Hypotheses 3 posits that supportive leadership increases change-oriented OCB, it was not supported at either the individual-level ($\beta = 0.00$, n.s., see Table 4) or the group-level ($\gamma = 0.02$, ns., see Table 5). Controlling for organizational characteristics such as corporate vision and organizational climate, unit leaders' supportive behavior was not related to unit members' change-oriented OCB.

Mediation by intervening variables

According to Hypotheses 4 and 5, the effects of individual- and group-level perceptions of work environment on change-oriented OCB will be mediated by psychological empowerment and felt responsibility for change. At the individual-level, as reported in Model 3 in Table 4, psychological empowerment and felt responsibility for change were significantly related to change-oriented OCB ($\beta = 0.42, p < 0.001$ and $\beta = 0.24, p < 0.001$, respectively). With the inclusion of the two intervening variables, the regression coefficient of innovative climate became insignificant. Strong vision, however, remained a significant predictor ($\beta = 0.06, p < 0.01$), although its effect size was reduced by half with the inclusion of intervening variables. At the individual-level, therefore, the intervening variables only partially mediated the effects of work environment variables on change-oriented OCB. At the group-level (see Model 2 in Table 5), aggregated psychological empowerment and felt responsibility for change were significantly related to change-oriented OCB ($\gamma = 0.37$ and 0.49 , respectively, both $p < 0.001$). With the inclusion of these two intervening variables, all significant effects of work environment variables became insignificant, indicating full mediation by the intervening variables. Overall, the results provide support for Hypotheses 4 and 5 at both the individual and group levels of analysis.

Discussion

In the contemporary business environment, which is characterized by turbulent change and severe competition, the development of a flexible and innovative workforce is a critical condition for continued organizational effectiveness. In such a context, employees must regularly come up with ideas and express them to improve existing methods, procedures, and policies, particularly when they are misaligned with a changing task environment and rapidly become ineffective or even counter-productive (Bettencourt, 2004). For this reason, challenging forms of OCB, in addition to affiliative forms such as helping or compliance, are becoming a critical component of employee performance (Morrison & Phelps, 1999). Unfortunately, most existing studies of OCB or contextual performance have been focused on affiliative forms that maintain or strengthen the *status quo*, in the form of either existing working relationships or work processes. The present study highlights the importance of challenging or change-oriented OCB and extends the OCB literature by identifying a set of antecedents and intervening processes that affect change-oriented OCB via multi-level processes.

The present HLM results indicate that employee perceptions of workplace characteristics such as the presence of strong corporate vision and innovative climate influence change-oriented OCB through both individual-level and cross-level processes. Moreover, both the individual- and cross-level effects of these workplace variables on change-oriented OCB were mediated by the same intervening processes, including psychological empowerment and felt responsibility for change. Unlike previous studies that have reported differentiated relational patterns among variables at individual versus group levels of analysis (e.g., Choi et al., 2003), the present empirical patterns indicate that for the present set of predictors, their relationships with change-oriented OCB were quite similar across two levels. This leads to the prospect of multi-level models that 'specify patterns of relationships replicated across levels of analysis' (Rousseau, 1985, p. 22). Nevertheless, we must still be cautious in generalizing results obtained at one level to another level. Further conceptual and empirical efforts are clearly needed to develop a multi-level model of challenging forms of OCB (as well as affiliative types), which is largely lacking in the current literature.

In contrast to the insignificant effect of supportive leadership of unit managers, organizational characteristics such as vision and innovative climate showed significant individual- and cross-level effects on change-oriented OCB. In addition, as compared to the group-level variation of interpersonal helping and conscientiousness as reported in Kidwell et al. (1997), between-group difference in change-oriented OCB was relatively small (6% of total variance). Apparently, as a form of OCB targeted at the entire organization (OCB-O, Williams & Anderson, 1991), change-oriented OCB is more strongly related to organizational characteristics than to group characteristics, and perhaps it is less characteristic of a group than an organization. In fact, most group characteristics that have positive effects on affiliative types of OCB (e.g., helping, courtesy, compliance) may have neutral or even inhibiting effects on challenging types of OCB such as change-oriented behavior. For example, support from leaders and coworkers are positively related to interpersonal helping (Podsakoff et al., 2000). However, the same factors may effectively reinforce the existing task procedures that supervisors and coworkers favor and feel comfortable with. In a similar vein, group cohesiveness may have contrasting effects on affiliative and challenging types of OCB. For example, a cohesive group may promote intimate and collaborative relationships among members, but it may prevent its members from expressing ideas that are different from those of others (cf. groupthink, Janis, 1982). In this regard, LePine and Van Dyne's (2001) finding that cooperative behavior was positively related to agreeableness, while change-oriented communication was negatively related to the same personality characteristic, is revealing. Future studies may investigate the differential roles of workplace characteristics with respect to affiliative and challenging types of OCB. For practicing managers, it is critical to understand how to achieve an optimal balance in the work environment to stimulate these two possibly contradictory types of OCB (interpersonal helping/collaboration and change-oriented OCB).

The validity of the present findings is enhanced by several design features such as large-scale, longitudinal data collected from the majority of employees working in a company, and simultaneous, multi-level analyses of multiple routes of contextual influences. Nevertheless, the interpretation of the current findings should be made with some caution due to several limitations. First, both the predictors and the outcome were based on self-reports. Although they were measured 12 months apart, these self-report measures are not free from potential perceptual and motivational biases such as the social desirability effect (Podsakoff et al., 2003). However, for both T1 and T2 scale items, confirmatory factor analysis results supported the hypothesized latent factor structures over alternative factor models (see Table 1). In addition, analyses using group-level aggregated variables are relatively free of same method bias. Notwithstanding, replications of the current findings using multi-source data are clearly needed.

Second, the 12-month gap between the measurement of the predictors and the outcome is not inconsequential, and thus some participants may have found themselves in a work context at T2 that was different from that at T1. Although the 12-month period might have introduced some changes in

the participants' work environment, the results indicate that work environment perceptions still had significant effects on change-oriented OCB at T2. This pattern suggests that work environment has long-lasting influences on employee behavior, and perhaps offers a more conservative test of the relationship than would have been the case had cross-sectional or short-term longitudinal data been used. Empirical investigation of the same relationships based on longitudinal data with either shorter or longer temporal duration would reveal the temporal stability/sensitivity and robustness of contextual influences on change-oriented OCB.

Finally, the present results obtained from a Korean organization may reflect sample-specific dynamics that may be different from those of other countries. For example, Asian societies tend to be more collectivistic and more hierarchically organized than Western societies (Hofstede, 2001). Thus, the present sample of Korean employees and managers might have been more strongly influenced by their social surroundings than their Western counterparts would have been. If this is the case, the significant cross-level processes observed in the present data would be weaker in a study based on a U.S. or European sample. In addition, the present sample was composed predominantly of males (93%), which may limit the generalizability of the current findings to more gender-balanced workplaces.

Despite these potential limitations, the present study provides a more sophisticated process-based, multi-level explanation of change-oriented OCB that has been rarely investigated in the literature. The discovery of workplace characteristics that promote employees' efforts to improve a situation and correct ineffective work procedures also bears practical significance for managers who want to better achieve organizational goals in a changing environment. The present study, however, did not include individual characteristics that might interact with contextual variables to influence employees' inclination to suggest constructive changes (Bettencourt, 2004). It would be intriguing to examine how team-level or organizational-level factors either promote or diminish change-oriented OCB depending on a person's trait-like characteristics (i.e., cross-level interaction, Rousseau, 1985). For example, individuals with proactive personality characteristics may respond more positively and strongly to innovative climate and exploit the opportunity by advancing many work-related suggestions than those with low proactive tendencies. Another intriguing venue for research would be to reveal the ways in which individual and collective perceptions of the work environment influence each other over a period of time (Salancik & Pfeffer, 1978) and possibly interact to shape the innovative actions of individuals and teams. Continued consideration of multi-level processes of change-oriented OCB (as well as for affiliative types of OCB) would open doors to myriad intriguing issues for organizational researchers and offer valuable lessons for practicing managers.

Acknowledgements

This study was financially supported by research grants from the Social Sciences and Humanities Research Council of Canada and the Québec Fonds de recherche sur la société et la culture.

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