

Collective Dynamics of Citizenship Behaviour: What Group Characteristics Promote Group-Level Helping?

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ABSTRACT A basic tenet of research on organizational citizenship behaviour (OCB) is that OCB aggregated across individuals improves organizational performance. Departing from the typical focus on individual-level OCB, the construct of group-level OCB (GOCB) recently emerged as a critical group function that affects various group effectiveness measures. Despite the clear link between GOCB and team performance, the existing literature provides a limited understanding with regard to the antecedents of GOCB, mostly focusing on leadership variables. Establishing helping behaviour (a core dimension of OCB) as a collective construct, this study substantially expands the antecedents of group-level helping, and empirically tests their effects using three different operationalizations of group-level helping. The results, based on a sample of 96 work units, show that membership diversity in gender and education decreased group-level helping, whereas diversity in tenure increased it. Group-level helping was also positively related to leadership characteristics (supportive unit manager, transformational top management) and perceived competence of unit members. In addition, the analysis further indicated that perceived competence is a positive predictor of group-level helping only when the unit members also believe that others are trustworthy in terms of integrity and benevolent motivation. From a methodological standpoint, the study provides important insights by comparing different ways of operationalizing collective constructs.

INTRODUCTION

Organizational citizenship behaviour (OCB) has enjoyed extensive research attention over the past two decades (Organ et al., 2006). The potential benefits of OCB for organizational performance accrue from the aggregate effect of OCB, not from single incidents (Organ, 1988). To date, however, empirical studies of OCB have predominantly examined the phenomenon at the individual level (Choi, 2006; Organ et al., 2006; Podsakoff et al., 2000). Unfortunately, empirical findings related to antecedents of individual-level OCB cannot be automatically generalized to the group level, due to structural differences in the construct at different levels of analysis (Morgeson and

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Hofmann, 1999) and potential misspecification errors that may occur when we attempt to extrapolate a relationship that we observe at one level to another (Rousseau, 1985).

Recently, scholars have begun to investigate OCB as a group-level phenomenon, using diverse construct labels such as unit-level OCB, team OCB, team citizenship, collective OCB, group-level OCB, etc (Bommer et al., 2007; Ehrhart, 2004). These studies have shown that there is significant group-level variation in OCB, indicating that OCB may well be a group-level phenomenon (Schnake and Dumler, 2003). Scholars have characterized group-level OCB (hereafter referred to as GOCB to distinguish it from OCB at the individual level) as a distinct attribute of work groups based on or emerging from interactions among group members (Mayer et al., 2009; Yun et al., 2007). Perhaps due to the focus on the interactive process involved in GOCB, previous studies have principally focused on interpersonal citizenship behaviour such as helping, courtesy, and sportsmanship (Ehrhart et al., 2006; Mayer et al., 2009; Raver and Gelfand, 2005; Shin and Choi, in press).

This study also focuses on such an interpersonal aspect of GOCB, specifically group-level helping, for several reasons. First, of various dimensions of OCB (e.g. conscientiousness, loyalty), helping has been regarded as the most typical citizenship behaviour by researchers and it is the most-studied dimension of OCB (Organ et al., 2006). Second, helping is the only OCB dimension that has shown a consistent, significant positive effect on work unit performance (Ehrhart et al., 2006; Podsakoff et al., 2000). Third, empirical studies have also reported that various aspects of OCB at the group level tend to be collapsed and comprise a single factor (e.g. Lau and Lam, 2008; Tepper et al., 2004). For this reason, although this study attends to helping and courtesy aspects of OCB at the group level, the present results may have relevance to the broader concept of GOCB. In the group process literature, helping behaviour has also been acknowledged as a core group process, although researchers have used different labels such as cooperation, collaboration, and backup behaviour (e.g. Ilgen et al., 2005; Kozlowski and Bell, 2003; Marks et al., 2001; Milton and Westphal, 2005). Taking into account the conceptual overlap between GOCB and those existing group process variables, this study will draw on conceptual and empirical studies from both the OCB and the group process literature.

The majority of existing studies of GOCB are targeted at its consequences (e.g. Bommer et al., 2007; Dunlop and Lee, 2004; Ehrhart et al., 2006; Koys, 2001). These studies have shown that GOCB, particularly group-level helping, is consistently and positively related to various unit performance measures such as sales performance, quantity and quality of output, and customer satisfaction (Podsakoff et al., 2000). In contrast, antecedents of GOCB have been investigated in only a small number of studies, and most of them have principally focused on various aspects of leadership: servant leadership (Ehrhart, 2004), transformational leadership (Richardson and Vandenberg, 2005), trust towards the leader (Lau and Lam, 2008), ethical leadership (Mayer et al., 2009), and aversive leadership (Yun et al., 2007). Due to this bias towards leadership characteristics as the predictor of GOCB, there exists only sporadic evidence regarding group characteristics that affect GOCB: justice climate (Ehrhart, 2004), group-level fit (Shin and Choi, in press), and organizational identification (van Dick et al., 2006). Given that GOCB mostly emerges from interpersonal interactions, it is critical to understand

how various group characteristics (in addition to leadership) predict GOCB. The present study attends to group attributes (e.g. group diversity, trust among members) that predict group-level helping.

This study makes both theoretical and empirical contributions to the emerging literature of GOCB. Theoretically, this study clearly defines and conceptually distinguishes group-level helping from individual-level helping. This study also expands the nomological network of group-level helping by isolating theoretically meaningful antecedents of the construct beyond leadership variables. By empirically testing the predictive validity of these antecedents, it expands our understanding of the functional dynamics of group-level helping. Further, methodologically, this study identifies and compares the validity of three alternative approaches to operationalizing group-level helping: aggregating member-rated group-level helping, manager-rated group-level helping, and aggregating individual-level helping. The present hypotheses are tested using data collected from 1762 employees in 96 work units of a large Korean electronics firm.

GROUP-LEVEL HELPING

Although scholars have begun to empirically investigate OCB at the group level, several conceptual issues including definition, operationalization, and the distinction between individual OCB and GOCB remain ambiguous. In this section, I attempt to clarify these conceptual issues, particularly focusing on group-level helping, a core dimension of OCB. The following discussion on group-level conceptualization and operationalization of helping behaviour may have implications for other constructs that may be investigated at multiple levels of analysis.

Construct Definition

Identifying and investigating a similar construct at different levels of analysis is a common practice because most organizational phenomena are 'inherently multilevel as opposed to occurring at a single level or in a level vacuum' (Chan, 1998, p. 234). Constructs are considered 'multilevel' because of their significance at multiple levels. The present study establishes helping as a multilevel construct by expanding it to the group level of analysis. Drawing on the individual-level definition of helping, I define group-level helping as 'group members' voluntary helping behaviour that provides assistance for preventing or resolving work-related problems of other members' (adapted from Organ et al., 2006, p. 308). In line with previous definitions (Ehrhart, 2004; Raver and Gelfand, 2005; Yun et al., 2007), group-level helping is regarded as a collective phenomenon that is based on *normative or characteristic level* of group member behaviour of supporting and helping each other (cf. referent-shift consensus model; Chan, 1998).

The helping construct is similar to positive group processes identified in the group literature such as cooperation or collaboration, which have been defined as group members' affect, attitude, motivation, and behaviour to promote collective goals (Campion et al., 1993; Ferrin et al., 2007; Kozlowski and Bell, 2003).^[1] For this reason, it is necessary to consider group-level helping as part of group processes that refer to 'members' interdependent acts that convert inputs to outcomes through cognitive,

verbal, and behavioral activities' (Marks et al., 2001, p. 357). Group-level helping may reflect the behavioural aspect of a group's *teamwork* or inter-member interactions that promote (or sometimes hinder) its *taskwork* and goal achievement. In this sense, group-level helping constitutes *group processes* involving interactions among members, rather than emergent states or cognitive, affective, and motivational states that characterize the group (Mathieu et al., 2008).

In their recurring phase model of team processes, Marks et al. (2001) identified ten distinct group processes that may occur in different phases of team performance (i.e. transition, action, and interpersonal processes). Two of the ten group processes are closely aligned with the current conceptualization of group-level helping: (1) *team monitoring and backup responses*, defined as 'assisting team members to perform their tasks' (Marks et al., 2001, p. 367); and (2) *affect management* that refers to 'attempts to calm members down, control frustration levels, boost team morale and cohesiveness among members, and provide empathy' (p. 369). Although the transition and action phases constitute different stages of task performance, Marks et al. posited that interpersonal processes take place across different phases. Thus, action processes (team monitoring and backup) and interpersonal processes (affect management) can take place concurrently.

Recent qualitative (Mathieu et al., 2008) and quantitative review (LePine et al., 2008) of the team literature also indicated that team processes represent various facets of task or interpersonal processes, and researchers tend to examine effects of composite measures involving multiple processes. Moreover, LePine et al.'s (2008) meta-analytic findings demonstrated that teamwork dimensions are highly correlated, comprising sub-dimensions of a supra-ordinate construct of the overall teamwork. In the present study, we conceive of group-level helping as a higher-order process construct that is composed of two distinct teamwork processes: team monitoring and backup responses, and affect management.

Scholars have investigated the process of team monitoring and backup responses under different labels such as backup behaviour, cooperation, and workload sharing. Most studies, however, were focused on its performance implications and its relations with member personality characteristics often in the context of student teams or laboratories (Ilgen et al., 2005; Kozlowski and Bell, 2003; Mathieu et al., 2008). The importance of emotion has been increasingly acknowledged in the management literature (Elfenbein, 2007). Although previous studies reported a positive relationship between positive affectivity of members and team performance, study of affect at the group level is in its inceptive period, waiting for more empirical examinations using field data. Conceptualizing group-level helping as group members' backup behaviour and affect management at the group level, the present study extends the team effectiveness literature by identifying various types of antecedents of group-level helping, such as group composition, inter-member perceptions, and leadership exhibited by both direct supervisors and top managers in organizational settings.

Distinction Between Individual Helping and Group-Level Helping

To establish helping as a group-level construct, it is important to conceptually clarify how group-level helping is distinct from individual helping (Rousseau, 1985). Although the

two constructs share the same content domain, they represent distinct organizational phenomena in several ways. First, individual helping and group-level helping are constructs that reside at different levels of analysis. Similar to other multilevel constructs (e.g. self-efficacy vs. collective efficacy, psychological climate vs. organizational climate), they share the same content, but have different referents (individual vs. group). This shift in referent 'results in a new form of the original construct that is conceptually distinct from the original form' (Chan, 1998, p. 239).

Second, employees are likely to have different perceptions of individual helping (e.g. 'I help others') and group-level helping (e.g. 'members help each other'), although the two constructs may influence each other over time (e.g. 'I help others because members help each other'; Naumann and Ehrhart, 2005). In addition, when a significant perceived gap exists between the two constructs, employees may experience various psychological outcomes such as unfairness (individual helping > group helping) or guilt (individual helping < group helping).

Third, individual helping and group-level helping may be generated and maintained by different factors. Although group-level helping can be predicted by the same set of variables that predict individual helping, it may be more strongly elicited by group-level characteristics that shape interactive patterns among members. This is because group behaviour, such as group-level helping, involves complex and reciprocal social exchange processes involving multiple individuals (Marotto et al., 2007; Morgeson and Hofmann, 1999). For example, individual helping is more likely when the focal person has a strong altruistic motivation. Group-level helping, however, might be more strongly related to collective perceptions of group members' prosocial orientation.

Finally, individual helping and group-level helping may exert level-specific effects on outcomes. Gully et al.'s (2002) meta-analysis demonstrates that the link between team efficacy and team performance is comparable to that between self-efficacy and individual performance, but only when team efficacy is operationalized as a group-level construct. Given that group-level helping characterizes a group rather than individual members, it is likely that group-level helping has a greater influence on team-level outcomes than individual outcomes.

Measurement Approaches

As with other group-level constructs (e.g. team efficacy, group climate), researchers can adopt diverse strategies to measure GOCB. As suggested by Guzzo et al. (1993), identifying and testing the validity of alternative approaches for operationalizing a group-level construct is perhaps the most important task for the development of knowledge regarding that construct. Given that the literature on GOCB is still in its infancy, it is important to identify alternative ways of operationalizing the construct and to empirically test their validity. Until now, empirical findings related to GOCB have been based on responses to survey items provided by group members or the leader. Specifically, scholars have assessed GOCB using the following three types of measures: (1) a leader's report of the group's OCB (e.g. Koys, 2001; Richardson and Vandenberg, 2005); (2) aggregated group members' ratings of the group's (or group members') OCB (e.g.

Ehrhart, 2004; Mayer et al., 2009); and (3) aggregated individual members' OCB (e.g. Dunlop and Lee, 2004; van Dick et al., 2006).

Although the use of managers as key informants is a widely-accepted research practice, it suffers from systematic methodological errors caused by the respondents' position, tenure, personal attitudes, and limited (or biased) opportunities to observe the collective phenomenon (Bagozzi et al., 1991, p. 424). Ehrhart (2004) reported that empirical findings based on managers' ratings of GOCB tend to be less robust and reliable than those based on team members' ratings, perhaps due to managers' limited exposure to team processes and ingratiation efforts of members (Organ et al., 2006).

Aggregating members' ratings to the group level may avoid the problems associated with the use of single informants (Bagozzi et al., 1991). However, just as the aggregation of individual self-efficacy to the group level results in only a weak indicator of collective efficacy (Guzzo et al., 1993), simply aggregating individual helping to the group level may not produce a sound measure of group-level helping. In the present study, therefore, I operationalize group-level helping using the third approach: aggregating members' ratings of the group members' helping. However, at the same time, the present study examines the relationship between group-level helping and its antecedents using all three measurement approaches described above, thus providing an empirical comparison of these alternative operationalizations.

ANTECEDENTS OF GROUP-LEVEL HELPING

Departing from existing studies of GOCB that have concentrated on various forms of leadership as the antecedent of GOCB, the present study attends to inter-member dynamics to explain the emergence of group-level helping. Given that leaders and other members constitute the immediate, daily work environment for group members, it is critical to consider both leader and member characteristics to explain group behaviour. To this end, the present study draws on Cohen and Bailey's (1997) heuristic model for understanding group process and effectiveness to identify theoretically meaningful predictors of group-level helping. As depicted in Figure 1, it examines two forms of input to the group (leadership characteristics and group composition) and two interpersonal perceptions (integrity and competence of group members) as intermediate processes that explain group-level helping. Unlike prior studies solely focused on team leaders, this study examined the effect of leadership at two different levels (team leaders and top management). In regard to member-related dynamics, the present framework attends to the work unit's demographic composition and interpersonal perceptions among members. These group characteristics should determine members' collective evaluation of others in the group (as recipients of helping) that may drive their motivation and actual behaviour to help others (Williams and O'Reilly, 1998). Each relation in this framework is explained in detail below.

Leader Characteristics: Supportive Unit Manager and Transformational Top Management

Previous studies of GOCB have found that servant-leadership, transformational leadership, and a leader's emphasis on teamwork are significantly related to GOCB (Ehrhart,

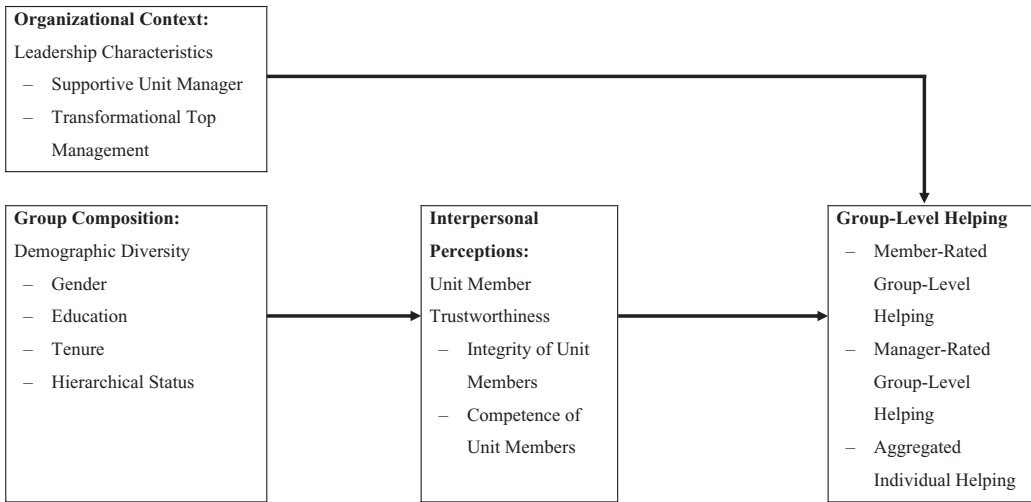


Figure 1. Conceptual framework of the antecedents of group-level helping

2004; Pearce and Herbig, 2004; Richardson and Vandenberg, 2005). The present study attends to the effect of unit managers' supportive leadership on group-level helping. Supportive leaders may increase the level of group-level helping in several ways. First, according to the social learning theory (Bandura, 1986), supportive leaders may increase members' helping behaviour by offering them a behavioural model to emulate (Ullrich et al., 2007). Second, leaders shape the tone of internal group processes by prescribing norms and values, which influence group members' behaviour (Ehrhart, 2004). Finally, a supportive leader may provide substantial job-related latitude to unit members, which confers greater room for discretionary behaviour such as helping (Organ et al., 2006). When leaders act in a courteous and supportive manner towards members by offering positive comments and autonomy, group members may regard mutual support and assistance as an appropriate mode of behaviour.

Hypothesis 1: Group-level helping will be positively related to supportive leadership of the unit manager.

As shown by Chen and Bliese (2002), collective phenomena can be more strongly affected by the group's context (such as top management) than by its own attributes. In the present study, I expect group-level helping to be increased by transformational leadership of top management. Transformational leaders expand and elevate members' awareness and acceptance of the collective goals by involving them in envisioning the future and by inspiring them to achieve that future (Bass, 1985; Marotto et al., 2007). Efforts by top management to formulate and share company vision can increase employees' assimilation of the vision and strengthen their emotional bond to the organization (Dvir et al., 2004). When unit members share positive perceptions of top management and buy into the company's vision, they will be more likely to be devoted to collective goals and collaborate on work-related issues, which should increase helping among them (Dvir et al., 2004).

Hypothesis 2: Group-level helping will be positively related to transformational leadership of top management.

Group Composition: Demographic Diversity of Work Unit Members

The diversity literature has demonstrated that despite its potential benefit for team performance, membership diversity tends to deteriorate group processes by increasing relationship conflict and decreasing communication among members (Tsui et al., 1992; Williams and O'Reilly, 1998). For example, Milton and Westphal (2005) reported that age and race similarity is positively related to cooperation among members. Nevertheless, empirical studies of the relationship between group diversity and group-level helping are rare, perhaps because existing studies have principally focused on the effect of diversity on team performance and social integration measures such as conflict, cohesion, and satisfaction (Horwitz and Horwitz, 2007).

Social categorization theory (Hogg and Terry, 2000) maintains that demographic similarity among individuals engenders feelings of connectedness and community, which increases empathic concerns that are responsible for inducing helping behaviour (Sturmer et al., 2005). In heterogeneous units, members tend to engage in stereotyping of others who belong to different social categories (e.g. 'New recruits may not be able to handle this'), which leads to perceptions that these out-group members are less trustworthy, less capable, and less cooperative than in-group members (Hogg and Terry, 2000). Social psychological studies of helping also find that individuals help others who are similar to themselves, and that this similarity-helping effect may be indirect: 'Demographic factors may indirectly affect people's willingness to contribute to the public good by their influence on what we think about others and how sensitive we are to their needs' (Schroeder et al., 1995, p. 237).

In addition, as Gouldner (1960) suggested, power differentials among members due to various demographic factors such as tenure and hierarchical position may hamper the development of norms of reciprocity (particularly when powerful members impose unfair exchange relationships on others). This situation is apt to generate negative interpersonal perceptions and further decreases group-level helping. Thus, work unit diversity is likely to diminish group-level helping due to its negative effect on interpersonal perceptions such as integrity and competence of unit members.

Hypothesis 3: Group-level helping will be negatively related to demographic diversity in gender, education, tenure, and hierarchical status.

Hypothesis 4: The relationship between demographic diversity and group-level helping will be mediated by perceived integrity and competence of unit members.

Interpersonal Perceptions: Integrity and Competence of Work Unit Members

Given that the primary target of interpersonally-oriented GOCB, such as group-level helping, is other members of the work unit, the way in which unit members perceive each

other may have significant implications for helping among them. Identifying trust as a critical condition for the emergence of positive group processes such as cooperation (Ferrin et al., 2007), organizational scholars have argued that 'sustained effective coordinated action is only possible when there is mutual confidence or trust' (McAllister, 1995, p. 25). Unfortunately, despite numerous empirical studies of individual-level trust (either towards the leader or other members) that reveal its positive association with various outcomes such as citizenship behaviours and task performance (Colquitt et al., 2007; Restubog et al., 2008), the relationship between group-level trust and group-level helping has yet to be examined.

In work units, group-level helping is more likely when unit members perceive others to be trustworthy because: (1) trust shapes positive expectations of the behaviour of others (McAllister, 1995); (2) the expectation of reciprocity is particularly important in relationships with no authority structure or formal definition of obligations, such as those among unit members (Gouldner, 1960); and (3) helping each other is largely a discretionary behaviour that cannot be formally enforced (Choi, 2006; Ferrin et al., 2007).

The trust literature has identified benevolence, integrity, and ability as the predominant determinants of trust belief (Mayer et al., 1995). In empirical studies, researchers have often separated ability from the other two dimensions (e.g. Levin and Cross, 2004; Szulanski et al., 2004), perhaps because ability is related to skills and knowledge of a trustee (thereby capturing the 'can-do' aspect of trustworthiness), whereas benevolence and integrity are more about the *character* or motivation of the trustee (thereby capturing the 'will-do' aspect of trustworthiness) (Colquitt et al., 2007). In this study, the character aspect is labelled as 'integrity' (including both benevolence and integrity) and the ability aspect as 'competence', and their distinct effects on group-level helping are examined.

Perceptions of integrity reflect unit members' positive appraisal of others' interpersonal and task-related motivation (Snell and Wong, 2007). Therefore, when unit members believe that other members are not trustworthy in regard to benevolence and integrity, they may become averse to helping others because of fear that their efforts might be exploited (Choi, 2006; Hart et al., 2001). Blau (1964) pointed out that social exchange is not limited to a dyadic relationship but often extends to a group through *indirect chains of exchange* in which members shape the individual-group exchange cycle, instead of simple individual-individual exchange cycles. In this sense, work unit members are more likely to collectively exhibit helping behaviour when they can trust others' motivation to maintain a fair exchange relationship (Tan and Zizzo, 2008).

Hypothesis 5: Group-level helping will be positively related to integrity of work unit members.

Perceptions of competence reflect unit members' positive assessment of other members' skills and knowledge related to task performance. In organizations, helping is largely motivated and maintained by an expectation of reciprocity (Organ et al., 2006), which necessitates the target's ability to return the favour. In that sense, efforts expended on helping incompetent others are likely to be wasted because they are unlikely to accrue any reciprocal benefit. A recent dyad-level study (Van Der Veegt et al., 2006) indeed showed that individuals provide more help to others with greater task knowledge than to

those with less knowledge, thus resulting in a paradoxical situation in which members who really need help receive less support from others. Moreover, incompetent members may be in chronic need of assistance, which may reduce others' motivation to help over time. In addition, it is more likely that individuals need help from the competent than the incompetent, rendering the provision of help to competent others more valuable to the helper by increasing his or her social capital (Bolino et al., 2002). Thus, group-level helping is more likely to occur when unit members collectively perceive that the work unit is composed of competent members.

Hypothesis 6: Group-level helping will be positively related to perceived competence of work unit members.

In addition to their main effects, the two aspects of trustworthiness are expected to interact with each other to predict group-level helping. LePine and Van Dyne (2001) proposed that group members' decisions to help others are shaped by the attributions they make regarding low performance of others. Specifically, members will help low performers when they believe that the low performance is due to uncontrollable causes such as bad luck or low ability, but not when it is due to controllable factors such as low accountability or reliability (i.e. integrity). Hart et al. (2001) demonstrated that people tend to collaborate more when working with less able but hard-working co-workers than when they work with more able but shirking co-workers. These studies suggest that the role of competence in eliciting group-level helping may be more important for high-integrity members than for low-integrity members because the benefit of competence may be realized only when the recipients of helping are benevolent and integral, and thus are willing to reciprocate favours (LePine and Van Dyne, 2001). Therefore, the following interaction relationship is hypothesized:

Hypothesis 7: Integrity of work unit members moderates the relationship between competence and group-level helping in such a way that the relationship between competence and group-level helping is stronger when integrity is high than when it is low.

METHOD

Data Collection Procedure and Sample Characteristics

The data for the present study were collected from a division of a large electronics company in Korea. The target sample included 6594 employees working in 12 business units of this division. Of this target sample, 4223 employees completed the survey (response rate = 64%), which was administered through the company intranet. This initial sample consisted of employees from 239 work units, which included R&D teams, functional departments, and work teams in factories.

Because the focus of this study was group-level dynamics, work units with less than three participants ($n = 45$) were excluded from the current analysis. In addition, 98 work units that showed less than acceptable within-group agreement as indicated by $r_{wg} (< 0.70)$

and a_{wg} indexes (<0.50) were also removed from the sample to ensure that the study variables reflect the shared collective properties of the work unit. This screening procedure resulted in a final analysis sample of 1762 employees from 96 work units. In this final sample, the number of participants from each work unit ranged between 3 and 86 with a mean of 18.5 ($SD = 19.50$). Eighty-nine per cent of the participants were male. The average age was 33 years ($SD = 5.99$) and the average organizational tenure was 7.8 years ($SD = 6.01$). The average length of formal education was 15.6 years ($SD = 2.35$). In terms of functional background, the current sample included R&D (58%), support (24%), sales (11%), and production (7%).

Measures

All group composition variables were acquired from the company database by using the employee identification numbers of participants. Multi-item psychometric scales were used to measure all study variables. Each item was followed by a five-point Likert-type scale. All scales showed acceptable levels of internal consistency. In addition, each scale exhibited statistically significant intraclass correlations [ICC(1) and ICC(2)], indicating significant variations across work units and reliability of group-level scores (Bliese, 2000). Although $r_{wg(j)}$ values (James et al., 1993) have been widely used to compute within-group agreement, they have several limitations such as dependency on scale and sample size and the bias caused by the uniform null distribution assumption (Brown and Hauenstein, 2005). To address this issue, an alternative approach for computing within-group agreement, $a_{wg(j)}$ (Brown and Hauenstein, 2005), was employed in addition to $r_{wg(j)}$. The ICC, $r_{wg(j)}$, and $a_{wg(j)}$ values suggested that the individual-level data had sufficient and reliable unit-level agreement and variance to justify the group-level aggregation of the present study variables.

Group diversity. To test the effect of group composition, this study examined the diversity of work units in four areas: gender, education, tenure, and hierarchical status (1 = entry level, 2 = associate, 3 = manager, 4 = executive). Diversity coefficients for company tenure were computed using the coefficient of variation (Pfeffer and O'Reilly, 1987), in which a scale-invariant index of diversity was calculated by dividing the standard deviation by the mean at the group level. For the categorical composition variables (gender, education, and hierarchical status), an entropy-based diversity index (Pfeffer and O'Reilly, 1987) was calculated by the equation:

$$H = -\sum_{i=1}^n P_i (\ln P_i)$$

where i is a particular category, n is the total number of possible categories, and P_i is the proportion of the members of the particular category within the group.

Supportive unit manager. Adapting items from Oldham and Cummings (1996), unit managers' supportive leadership was measured by five items ($\alpha = 0.89$): (1) 'The unit manager

praises good work of employees'; (2) 'The unit manager encourages employees to participate in important decisions'; (3) 'The unit manager leaves it up to me to decide how to go about doing my job'; (4) 'The unit manager gives me a chance to make important decisions on my own'; and (5) 'The unit manager encourages me to develop new skills'. The inter-rater agreement statistics were as follows: ICC(1) = 0.12, ICC(2) = 0.77 ($F = 3.41$, $p < 0.001$), $r_{wg(5)} = 0.91$, and $a_{wg(5)} = 0.68$.

Transformational top management. By modifying items used in prior studies (Bass, 1985; Podsakoff et al., 1996), a four-item scale ($\alpha = 0.82$) was constructed to measure behavioural indicators of transformational leadership exhibited by top managers, such as inspiring employees, challenging the status quo, and providing intellectual stimulation: (1) 'Top management provides a strategic direction to achieve our vision in a changing business environment'; (2) 'Top management encourages change and risk taking to improve the status quo'; (3) 'Top management encourages employees to take fresh perspectives on old problems'; and (4) 'Top management considers a broad range of perspectives when solving problems'. The inter-rater agreement statistics were: ICC(1) = 0.07, ICC(2) = 0.71 ($F = 2.42$, $p < 0.001$), $r_{wg(4)} = 0.90$, and $a_{wg(4)} = 0.72$.

Integrity of unit members. Drawing on prior studies of interpersonal trust (Mayer and Davis, 1999; McAllister, 1995), a four-item scale ($\alpha = 0.71$) was constructed to assess participants' judgments of their peer members' trustworthiness in terms of integrity and benevolence. The four items were: (1) 'In performing tasks, unit members adhere to the basic principles of integrity'; (2) 'Unit members do not engage in any unethical behaviour'; (3) 'Unit members are willing to contribute to our unit's goal even at the expense of personal costs'; and (4) 'Unit members put in their best effort to walk the talk'. The inter-rater agreement statistics were: ICC(1) = 0.04, ICC(2) = 0.62 ($F = 1.54$, $p < 0.001$), $r_{wg(4)} = 0.90$, and $a_{wg(4)} = 0.72$.

Competence of unit members. A four-item index ($\alpha = 0.77$) was developed to assess unit members' work-related competence. The four items were: (1) 'Unit members approach and solve problems in an effective manner'; (2) 'Unit members try to understand the core issue of the problem at hand before they attempt to solve it'; (3) 'Unit members are able to identify important tasks and perform them'; and (4) 'Unit members put effort into improving their task-related skills'. The inter-rater agreement statistics were: ICC(1) = 0.04, ICC(2) = 0.63 ($F = 1.61$, $p < 0.001$), $r_{wg(4)} = 0.93$, and $a_{wg(4)} = 0.78$.

Group-level helping. To measure group-level helping, we adopted items from Moorman and Blakely's (1995) scale of interpersonal helping. The referent of the items was changed to work unit for all three items ($\alpha = 0.70$): (1) 'Unit members go out of their way to help colleagues with work-related problems'; (2) 'Unit members show genuine concern and courtesy towards co-workers, even under the most trying business or personal situations'; and (3) 'Unit members voluntarily help new employees settle into the job'. By responding to these items, unit members reported the overall level of group-level helping in their work unit. The inter-rater agreement statistics for this scale were: ICC(1) = 0.05, ICC(2) = 0.65 ($F = 1.84$, $p < 0.001$), $r_{wg(3)} = 0.87$, and $a_{wg(3)} = 0.72$.

Alternative measures of group-level helping. When a construct can be operationalized in several different ways, each option may present distinct benefits and challenges. To compare validity of different operationalizations of group-level helping in the present conceptual framework, we assessed it by using two additional approaches that have been used in prior studies: manager ratings of group-level helping and aggregation of individual-level helping. Unit managers (e.g. department heads, R&D team leaders) evaluated their work unit's overall level of helping by responding to the same three items ($\alpha = 0.69$) that were used to measure group-level helping as described above. In addition, unit members were asked to rate their own helping on the same set of three items ($\alpha = 0.77$) with the rater him/herself as the referent (e.g. 'I go out of my way to help colleagues with work-related problems'). Unit members' individual-level helping scores were aggregated to the group level (inter-rater agreement statistics: ICC(1) = 0.04, ICC(2) = 0.63 ($F = 1.60$, $p < 0.005$), $r_{wg(3)} = 0.90$, and $a_{wg(3)} = 0.74$).

Analytic Strategy: Creating Two Subgroups Within Each Work Unit

Demonstrating the presence of method variance at multiple levels of analysis, Ostroff et al. (2002) recommended a split-group design to reduce concerns associated with same source bias. This design obtains data on group-level predictors and outcomes from separate sources within the same group. Following this recommendation, I created two subgroups (subgroups A and B) within each work unit by randomly assigning each member into one of the two subgroups. If a work unit was composed of 20 members, for instance, each subgroup was represented by ten members. These two subgroups were used for assessing different sets of group-level variables: (1) subgroup A's survey responses were used to obtain the predictor variables; and (2) subgroup B provided the data for group-level helping.

RESULTS

Although the present group-level psychometric variables were based on two separate subgroups within each work unit, all four predictors were reported by members of subgroup A, which presents a need to check their empirical distinctiveness. To this end, a confirmatory factor analysis (CFA) was performed. A CFA using 17 items comprising the four predictors showed that the four-factor model fit the data well (χ^2 (df = 113) = 1209.56, $p < 0.001$; CFI = 0.92, RMSEA = 0.074), and performed significantly better than alternative three-factor, two-factor, and single-factor models (all $p < 0.001$).^[2] Table I presents descriptive statistics and correlations among the study variables, including the two alternative measures of group level helping (manager-rated group-level helping, aggregated individual-level helping). All analyses presented below are based on group-level helping as rated by unit members and aggregated at the group level unless otherwise noted.

Developing a Structural Model and Alternative Models

To perform an omnibus test of the present hypotheses, structural equation modelling (SEM) was employed (Bentler, 2006). In conducting a group-level SEM analysis, the

Table I. Means, standard deviations, and inter-scale correlations of group-level aggregated data (N = 96)

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Work unit size	18.45	19.50	-											
2. Gender diversity	0.30	0.23	-0.03	-										
3. Education diversity	0.74	0.37	0.41	-0.01	-									
4. Tenure diversity	0.37	0.13	0.16	0.34	0.28	-								
5. Hierarchical status diversity	0.71	0.23	0.18	0.17	0.39	0.35	-							
6. Supportive unit manager (A) ^a	3.58	0.46	-0.07	0.12	-0.01	0.24	-0.02	-						
7. Transformational top management (A)	3.60	0.34	-0.03	0.08	0.17	0.21	0.02	0.56	-					
8. Integrity of unit members (A)	3.93	0.29	0.02	0.13	-0.07	0.17	-0.05	0.43	0.39	-				
9. Competence of unit members (A)	3.71	0.30	0.02	0.00	0.08	-0.02	0.10	0.48	0.45	0.50	-			
10. Member-rated group-level helping (B)	3.77	0.33	0.04	-0.16	0.13	0.18	0.34	0.09	0.14	-0.01	0.19	-		
11. Manager-rated group-level helping ^b	3.61	0.34	-0.07	-0.06	-0.05	0.14	0.04	0.45	0.40	0.25	0.46	0.28	-	
12. Aggregated individual helping (B)	3.86	0.58	-0.28	0.21	-0.06	0.30	-0.03	0.20	0.21	0.04	0.19	0.32	-0.07	-

Notes:

^a The letter in parentheses indicates the subgroup (A or B) of a work unit from which the particular measure was obtained.

^b The sample size involving manager-rated group-level helping was 40.

r > 0.20, *p* < 0.05; *r* > 0.26, *p* < 0.01; *r* > 0.35, *p* < 0.001.

sample size was too small to develop a model with all scale items as indicators of the latent constructs. Nevitt and Hancock's (2004) simulation study demonstrated that although SEM statistics are robust at reduced sample sizes (even at $n \leq 50$) with non-normal distributional forms, 'it is unlikely that practitioners will be able to obtain usable model estimates at or below a sample size-to-parameter ratio of 1:1' (p. 464). In the current context, if we include all scale items in the SEM model, the subject-to-parameter ratio becomes 0.21:1, which is quite low. For this reason, a single-indicator model was developed and the subject-to-parameter ratio became 1.75:1, which approaches the recommended level of 2:1 (Nevitt and Hancock, 2004). In the present structural model, measurement error was incorporated into the model by setting the random error of each scale to its variance multiplied by one minus its reliability (variance $\times [1 - \alpha]$; see Bollen, 1989). In addition, common method variance was controlled for by adding a common method factor that explains shared variances of the four predictors reported by subgroup A.

The hypothesized model that included all structural paths as depicted in Figure 1 generated decent model fit (χ^2 (df = 19) = 25.39, $p = 0.148$; CFI = 0.97, RMSEA = 0.059). To explore the possibility that other theoretically plausible models better explain the data (MacCallum et al., 1992), two alternative models were identified. The first model tested the possibility that group diversity variables had only direct effects on group-level helping without any mediation by trustworthiness variables. This model showed a worse fit (χ^2 (df = 23) = 32.03, $p < 0.100$; CFI = 0.95, RMSEA = 0.064) than the hypothesized model. The second alternative model incorporated the possibility that the mediation by trustworthiness variables is only partial; thus group diversity variables had both direct and indirect effects on group-level helping. This partial-mediation model exhibited very good fit to the data (χ^2 (df = 15) = 16.87, $p = 0.220$; CFI = 0.98, RMSEA = 0.052), which was a meaningful improvement from the hypothesized model ($\Delta\chi^2$ (Δ df = 4) = 8.52, $p < 0.08$). The path coefficients also showed that there are significant direct effects of diversity variables on group-level helping. The results of this partial mediation model are depicted in Figure 2, which includes only significant paths in order to simplify the visual presentation of the structural relations among variables.^[3]

Structural Relations Among Study Variables

Supporting Hypotheses 1 and 2 regarding leadership factors, the structural model shown in Figure 2 indicated that group-level helping was significantly predicted by both supportive unit manager and transformational top management ($\beta = 0.22$ and 0.16, both $p < 0.05$).

Hypothesis 3 predicts that work units with greater demographic heterogeneity will exhibit less group-level helping. The structural model in Figure 2 showed that three of the four diversity variables were meaningful predictors of group-level helping. As expected, membership diversity in gender and education were negatively related to group-level helping ($\beta = -0.15$ and -0.17 , both $p < 0.05$). In contrast to the hypothesis, however, diversity in tenure was a positive predictor of group-level helping ($\beta = 0.17$, $p < 0.05$). This unexpected positive effect of tenure diversity suggests that, in the sampled work units, helping or being courteous to others may take the form of mentoring junior

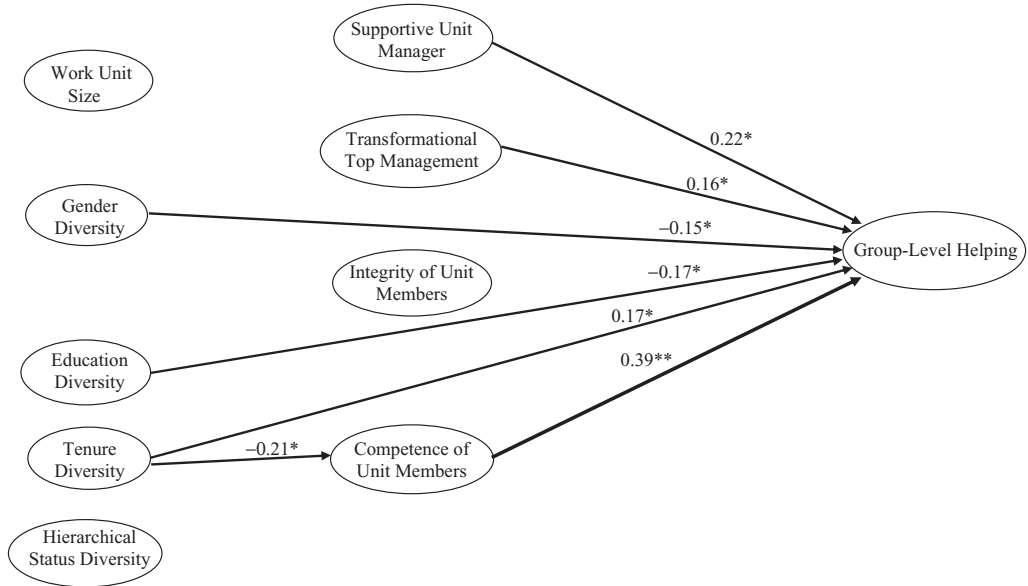


Figure 2. Interaction between trustworthiness and competence of unit members in predicting group-level helping

Notes: Thicker lines represent statistically more significant results. For a simple presentation of the structural model, insignificant paths are not included in the diagram.

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

members by senior members or maintaining harmonious relationships among members with differing tenure.

Hypotheses 5 and 6 suggest that integrity and competence of unit members increase group-level helping. The structural model shows that only perceived competence (but not integrity) was a significant predictor of group-level helping ($\beta = 0.39$, $p < 0.001$), thus supporting Hypothesis 6. Hypothesis 4 suggests a mediation of the relationship between diversity and group-level helping by perceived integrity and competence. As shown in Figure 2, tenure diversity significantly decreased perceived competence of unit members ($\beta = -0.21$, $p < 0.05$), which was a significant predictor of group-level helping. Thus, a mediating process was observed for the path from tenure diversity to unit member competence. In combination, diversity in tenure seems to play a complex role in that it decreases competence perception among members (perhaps because seniors believe that junior members are not ready to perform), but at the same time it increases group-level helping (perhaps because seniors are willing to provide guidance and tips for performance and assist new recruits).

Testing the Interaction Between Integrity and Competence

According to Hypothesis 7, the effect of unit member competence on group-level helping will be moderated by the level of integrity of members. To test this hypothesis, integrity and competence were mean-centred and the interaction between them was computed.

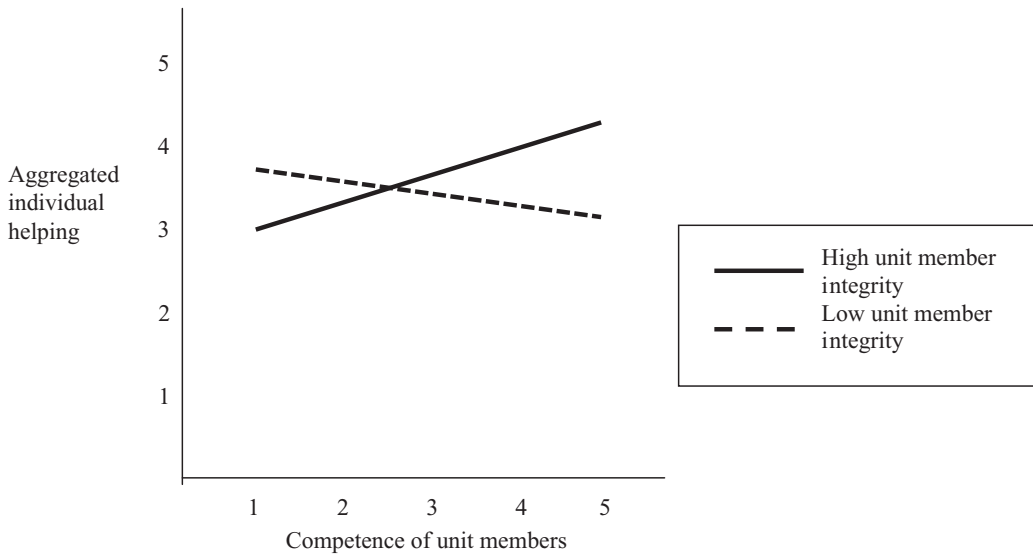


Figure 3. Interaction between trustworthiness and competence of unit members in predicting group-level helping

Then, the significance of the interaction was tested by the following hierarchical regression equations: (1) model 1 with all study variables (i.e. diversity variables, leadership variables, and the main effects of integrity and competence) entered to predict group level helping ($R^2 = 0.34$, $p < 0.001$); and (2) model 2 with all study variables and the interaction between integrity and competence ($\Delta R^2 = 0.03$, $p < 0.05$). Along with the significant increase in the explained variance, the interaction term was also significant ($\beta = 0.18$, $p < 0.05$).

To determine whether this interaction followed the hypothesized pattern, separate regression analyses were conducted for two subgroups with high (one SD above the mean) and low (one SD below the mean) unit member competence (Aiken and West, 1991). Figure 3 visually depicts the resulting interaction pattern, which confirms Hypothesis 7 as the link between competence and group-level helping was positive only when unit members' integrity was high, whereas the same relationship was slightly negative when member integrity was low.

Results from Alternative Operationalizations of Group-Level Helping

The results reported above were based on aggregated group-level helping reported by work unit members. To compare different operationalizations, we tested the same structural model as shown in Figure 2 using manager-rated group-level helping and aggregated individual-level helping. The model fit was decent for both models (χ^2 (df = 15) = 20.29, $p = 0.161$; CFI = 0.97, RMSEA = 0.061 and χ^2 (df = 15) = 16.52, $p = 0.236$; CFI = 0.98, RMSEA = 0.050, respectively).

In the case of manager-rated group-level helping, there was only one significant predictor: work unit size ($\beta = -0.19$, $p < 0.05$), indicating that managers of large work

units reported less group-level helping among members. In contrast, aggregated individual-level helping was predicted by perceived unit member competence ($\beta = 0.22$, $p < 0.05$) as well as by group diversity variables such as gender diversity ($\beta = -0.27$, $p < 0.01$), tenure diversity ($\beta = 0.20$, $p < 0.05$), and hierarchical status diversity ($\beta = 0.33$, $p < 0.01$). Similar to the positive effect of tenure diversity on member-rated group-level helping, tenure and hierarchical status diversity were positively related to aggregated individual-level helping, perhaps due to increased tendencies of mentoring of seniors and compliant behaviours of junior members.

In summary, the results based on leader-rated group-level helping were very different and much weaker than those based on group-level helping as rated by unit members. The SEM model using aggregated individual helping exhibited results that were relatively similar but less significant as compared to those based on group-level helping. Consistent with the group-efficacy literature (Gully et al., 2002), the present results indicated the advantage of referent-shift consensus model over direct consensus model in assessing collective constructs such as group-level helping.

DISCUSSION

In contrast to the existing studies of GOCB that have focused principally on its performance implications, the present study has isolated potential antecedents of group-level helping, a key form of GOCB, and empirically tested them in a large organizational setting. Taking into consideration the significance of group-level helping as a critical group process that accounts for both goal-directed action and interpersonal interactions among members (Marks et al., 2001), the present framework was developed drawing on findings from the group process literature as well as the OCB literature. This study offers the first empirical evidence of the link between group diversity and GOCB. The present analysis also revealed that co-worker and leader characteristic variables that predicted individual-level OCB also comprised significant predictors of GOCB. This suggests the possibility of *multilevel homology* to the extent that OCB and GOCB have identical functional relationships: factors that predict OCB may also predict GOCB (multilevel theory; Rousseau, 1985).

Nevertheless, given that the nature of the current predictors capture interactive and collective dynamics among individuals, their significant effects on individual OCB reported in previous studies may well be a result of their cross-level effects (group to individual) rather than purely within-individual relations. The question of multilevel homology versus level discontinuity involving OCB and GOCB requires additional empirical investigation based on expanded arrays of variables that reflect genuine individual-level and group-level dynamics (cf. Chen and Bliese, 2002). Below I highlight the key findings of this study and discuss their theoretical and empirical implications, along with limitations of the study.

Antecedents of Group-Level Helping

The present analysis showed that whereas gender and education diversity decreased group-level helping, diversity in tenure increased it (see Figure 2). Diversity in hierarchi-

cal status was also positively related to aggregated individual-level helping. In the sample of Korean work units, members likely felt more comfortable when they were different from their fellow members in tenure and hierarchical position, both of which provide a sense of social order and harmony that fit their values, which are based on strong collectivism, power distance, and respect for seniority (Hofstede, 2001).

The present findings also suggest an alternative theoretical possibility: when we broaden the concept of helping to include providing work-related tips to junior members, mentoring, and other forms of knowledge transfer, it is plausible to presume that diversity in age, tenure, and hierarchical status among members may promote helping among members. This is because members who are similar in those social categories may be at a similar career stage and thus in a competitive position, which could reduce cooperative motivation and behaviour. Thus, members with similar tenure or organizational position may feel psychological comfort with each other (Tsui et al., 1992; Williams and O'Reilly, 1998), but these positive attitudes may not induce actual behaviour of helping because of competition for resources such as promotion or positive appraisal from the manager (cf. the role of structural equivalence for cooperation; Milton and Westphal, 2005). Particularly, in Asian countries where 'face' comprises a critical norm in interpersonal relations, individuals may experience shame and feel hesitant (or even that it is inappropriate) to seek and provide task assistance or knowledge to those in similar tenure or organizational position (Tsui, 2003). This theoretical speculation regarding the differentiated role of diversity with regard to attitudes and behaviour should be further investigated in different cultural contexts.

This study also showed that GOCB is significantly related to leadership exercised by top management (cf. positive effect of ethical leadership of top management on GOCB; Mayer et al., 2009). Transformational top management may operate as a favourable task environment for the entire work unit with respect to its collective engagement in helping behaviour. Future studies could explore the possibility that various leadership practices such as supportive, transformational, and servant leadership create group processes and/or conditions that are more directly responsible for increased GOCB.

GOCB was also affected by interpersonal perceptions held by unit members. A higher level of GOCB was exhibited in work units where members perceived that others were competent, a pattern which is consistent with a recent dyad-level finding (Van Der Veegt et al., 2006). The significant interaction between the two trustworthiness variables further revealed that the positive association between unit member competence and group-level helping was maintained only when members perceived others to possess positive motivation in terms of benevolence and integrity (see Figure 3). This pattern provided the first group-level empirical evidence in intact organizational teams regarding the ability-motivation interaction that has been theorized in the literature on individual motivation and helping (Hart et al., 2001; LePine and Van Dyne, 2001; Snell and Wong, 2007).

Comparing Three Different Measures of Group-Level Helping

The present study identified three different approaches to measuring group-level helping and tested their empirical validity as indicators of group-level helping. Although

manager ratings of OCB have been highly recommended over self-reports in studies of individual-level OCB because of the substantial threat of self-report bias (Podsakoff et al., 2000), the present data demonstrated that manager ratings may not be necessarily better than aggregated member ratings of GOCB. In addition, confirming the theoretical arguments that a group-level construct is distinct from the aggregation of its individual-level counterpart (Chan, 1998; Guzzo et al., 1993), the current data demonstrated that aggregated group-level helping is empirically distinct from aggregated individual helping. This confirms the theoretical argument that GOCB reflects the dynamics of the *entire group* and is thus distinct from individual OCB (Bommer et al., 2007; Ehrhart et al., 2006; Yun et al., 2007).

A comparison of the three sets of SEM results indicated that aggregated unit member ratings of group-level helping exhibited the results that were most consistent with the theoretically predicted construct functions of group-level helping (see Figure 1). These findings suggest that it is preferable to use measures that directly address a given phenomenon at the group level with multiple raters. At this juncture, therefore, it is recommended that researchers assess GOCB at the group level, and that measurement items be referenced to the entire group in order to maintain the consistency of the theory, measurement, and inference from the data (Rousseau, 1985). However, given that the present study was based on a single organization and integrated only a limited number of antecedents, it is premature to cast doubt on a particular measurement approach.

In the selection of an adequate measurement approach, the choice of rater is critical because managers and employees tend to have different conceptualizations of OCB-type behaviour and possess different levels of information about different types of OCB (Lam et al., 1999). Supervisors may be well informed about or sensitive to employees' compliance or conscientiousness, but peers may be a better source of data on interpersonal helping or courtesy (Organ et al., 2006). Ideally, researchers may rely on diverse sources including group members, managers, and external constituents (e.g. senior managers, customers), each of which has distinct strengths and shortcomings. Further empirical studies employing multiple operationalizations of GOCB will facilitate meta-analytic comparisons of the validity associated with different types of GOCB measures, which may eventually lead to a consensus regarding appropriate research practice in the academic community.

Study Limitations and Future Research

The present study has several limitations. First, the data were collected from a Korean electronics company, and some of the findings (e.g. positive effects of diversity in tenure and hierarchical status) may reflect the strong collectivistic culture emphasizing seniority and hierarchy that characterizes typical Korean organizations. Second, although the present analysis was based on multiple sources of data (company personnel records, two subgroups within the same unit, manager ratings), they are still cross-sectional, rendering causal direction to be ambiguous. For example, increased GOCB might increase perceptions of trustworthiness of unit members, rather than the other way around. Third, some of the measures (such as work unit size based on the number of study participants

and the shortened version of the transformational leadership measure) suffer from limited validity. Particularly, the current measure of transformational leadership focused on dimensions that may be pertinent to top management, thus omitting other core dimensions such as individualized consideration. These measurement issues warrant caution in interpreting the results.

Finally, although group-level helping was explicitly conceived of as a critical group process in line with the existing literature in this study (Marks et al., 2001; Mathieu et al., 2008), the current measure of group-level helping was a combination of task assistance and interpersonal courtesy because it was based on interpersonal aspects of OCB (altruism and courtesy). This approach inevitably invites the fundamental question regarding the meaning of OCB at the group level. Despite the conceptual overlap between GOCB and existing group process constructs, the emerging literature on GOCB has highlighted the need to investigate OCB at the group level without explicitly linking it with similar group process constructs (Bommer et al., 2007; Mayer et al., 2009). As the OCB construct is increasingly extended to the group level, scholars will need to attend to potential conceptual overlap between GOCB and other group processes (e.g. team coordination, workload sharing, cooperation) and develop a clear theoretical bridge between the GOCB and the group process literature.

This study has several theoretical implications. First, the data demonstrated that GOCB is distinct from aggregated individual OCB and that different operationalizations of GOCB engender different empirical findings. This presents a caveat for researchers when selecting measurement strategy or when comparing results based on different measures of GOCB.

Second, it should be noted that the present research framework provided only a preliminary nomological network of group-level helping, and excluded many other potential predictors of GOCB, which need to be explored in future studies. For example, GOCB may be a function of members' collective identification with the work unit, group salience, and degree of common fate (Pearce and Herbig, 2004; Tan and Zizzo, 2008). Recent studies indicate that employees develop identification towards different targets (e.g. profession, team, organization) that are responsible for different types of OCB corresponding to the target (e.g. improving skills, helping teammates, complying with organizational rules) (Christ et al., 2003; Ullrich et al., 2007). Given this link between identity and OCB, various constructs associated with or indicating the strength of group-level identification such as group commitment, cohesion, and pride in group membership may be positively related to GOCB.

Finally, it would also be useful to explore potential multilevel and cross-level mechanisms by which individual helping and group-level helping influence each other over time (Marotto et al., 2007; Rousseau, 1985). It would be intriguing to observe whether the evolutionary process suggested by multilevel selection theory (McAndrew, 2002) or similar types of cross-level processes (e.g. group-level helping operating as a pressure for individual helping, group-level removal of non-helpers or cheaters over time) actually occur in organizations. Given the multilevel nature of organizational phenomena, it is imperative to explore group-level ramifications of various types of OCB beyond the individual level.

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NOTES

- [1] In contrast to the prevailing focus on task-related cooperation and coordination, group-level helping as a form of GOCB represents interpersonal citizenship behaviour among members that include both task assistance and social support targeted at other members to improve their task performance and well-being. When we look at the items used to measure group-level helping and GOCB in prior studies, some items are very similar to previous measures of collaboration or cooperation (e.g. 'help colleagues with work-related problems'). Some other items, however, reflect the typical and distinct content domain of OCB (similar to contextual performance), which is somewhat different from the traditional measures of task-focused collaboration (e.g. 'show genuine concern and courtesy', 'encourage each other when someone is down'). In this sense, group-level helping is similar to contextual performance that maintains psychological and social rubric for core task performance and facilitates and lubricates interpersonal relations within the work unit (Van Scotter and Motowidlo, 1996).
- [2] Subgroup B reported two different measures of helping: individual-level and group-level helping. A CFA of the two-factor model resulted in a good fit to the data (χ^2 (df = 8) = 47.33, $p < 0.001$; CFI = 0.99, RMSEA = 0.053). The difference between the two-factor model and the single-factor model was highly significant ($\Delta\chi^2$ (Δ df = 1) = 807.28, $p < 0.001$), indicating that individual helping and group-level helping were empirically distinct. The covariance between the two helping measures was 0.20 (SD = 0.01), suggesting a high discriminant validity.
- [3] The current analytic strategy based on split group design could have introduced systematic bias in the results. Specifically, the predictor variables were obtained from subgroup A and the outcome measures from subgroup B of each work unit. However, the data sources can be reversed and subgroups A and B can be used to obtain outcomes and predictors, respectively. When the data sources were switched in this way, the overall empirical pattern remained quite similar to the results reported in Figure 2. In addition, the results remained unchanged when we tested the same structural model using teams with less than 50 members ($N = 84$) to ensure that unit members had meaningful social exchanges among themselves.

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