The paradox of self-management: individual and group autonomy in work groups

CLAUSS W. LANGFRED*
John M. Olin School of Business, Washington University in St. Louis, Campus Box 1133, One Brookings Drive, St. Louis, MO 63130-4899, U.S.A.

Summary
This study explores how autonomy at the individual and the group levels directly affect group cohesiveness, and how they indirectly influence group effectiveness. Hypotheses suggesting that individual and group autonomy will be oppositely related to cohesiveness are supported in data collected from a large sample of work groups in two separate organizations. Also supported are hypotheses suggesting a group cohesiveness/group performance orientation interaction as a mediator of the relationships between autonomy at both levels and group effectiveness. The findings highlight the importance of considering autonomy at both individual and group levels simultaneously when designing work groups that incorporate autonomy. Copyright © 2000 John Wiley & Sons, Ltd.

Introduction

Autonomy in work groups and teams has become increasingly important to both researchers and practitioners in recent years (Guzzo and Dickson, 1996). While there has been considerable focus on the effects of either individual autonomy or group autonomy on performance and other outcome measures, little attention has been given to the potential effects of both occurring simultaneously in a team or work group setting. This study will explore one way in which individual and group autonomy affect group effectiveness, namely mediated through differential effects on group cohesiveness.

The use of work groups and teams has grown considerable in the U.S. over the past decades, with up to half of all employees soon to be working in team situations (Manz and Sims, 1993; Steward and Manz, 1995). Work groups and teams have become critical to organizational effectiveness (Dunphy and Bryant, 1996; Kalleberg and Moody, 1994), and their use is pervasive in modern organizations (Appelbaum and Batt, 1994; Argote and McGrath, 1993), as is the increasing incorporation of autonomy into their designs. Based on a 1993 survey, Lawler et al.

* Correspondence to: Claus Langfred, John M. Olin School of Business, Washington University in St. Louis, Campus Box 1133, One Brookings Drive, St. Louis, MO 63130-4899, U.S.A. Tel: (314) 935 5205. Fax: (314) 935 6359. E-mail: langfred@mail.olin.wustl.edu

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(1995) found that 68 per cent of Fortune 1000 firms use self-managed work teams and 91 per cent use employee participation groups of some sort, compared with 28 per cent and 70 per cent, respectively, in 1987. While the concept of self-managed or autonomous work groups has existed for a long time, the widespread use and adoption of principles of autonomy and self-management has been relatively recent in the United States (Guzzo and Dickson, 1996).

With the increased adoption of work groups and teams that incorporate autonomy in their designs, the importance of understanding the relationship between autonomy and group effectiveness has only increased. A number of studies have explored the relationship between group-level autonomy and group performance (Adler and Cole, 1993; Barker, 1993; Goodman et al., 1988; Sheridan, 1991; Strauss, 1955). Other studies have explored the relationship between individual autonomy and performance, satisfaction and other outcomes (Deci and Ryan, 1987; Hackman, 1983; Loher et al., 1985; Spector, 1986). Still other studies have focused directly on the performance and effectiveness of these new team designs (Cohen and Ledford, 1994; Cohen et al., 1996; Cordery et al., 1991; Cotton, 1993). Overall, research on self-management and autonomy in groups appears to show clear benefits, both in performance and in attitudes and behaviors (Guzzo and Dickson, 1996; Cohen and Bailey, 1997).

The fact that autonomy can simultaneously reside at both the group and the individual level in a work group is often neglected in studies of self-management or group autonomy. A group may have considerable discretion in deciding what group tasks to perform and how to carry them out, for example, but individual members within the group may have very little discretion or control over their jobs. The definition of self-managing work teams suggested by Wellins et al. (1990) is characterized by relatively low individual autonomy, yet most descriptions of self-management, such as Hackman’s (1986), describe high motivation, initiative and proactive behavior from individual group members. Cohen and Ledford (1994) define self-managing teams as groups of interdependent individuals that can self-regulate their behavior on relatively whole tasks, which suggests group autonomy, but does not preclude individual autonomy. As Barker (1993) pointed out, self-managing groups may end up controlling group members more rigidly than under traditional management styles. Alternatively, groups that have tasks very tightly controlled by authoritarian management could conceivably have members that enjoy considerable autonomy in individual jobs.

As have been pointed out by Banker et al. (1996), autonomy in groups can be conceptualized along a continuum. I extend that notion in Figure 1 to show the two-dimensional area of group designs resulting from different combinations of individual and group autonomy. Close to the origin is the ‘traditional’ work group (type 0), with little to no autonomy at either the group level or the individual level. In this case the group has little or no control over group work, and individuals within the group have little or no discretion in carrying out their assigned tasks. While many organizations are moving away from such group designs to more participative systems (Lawler et al., 1995; Guzzo and Dickson, 1996), particular production processes or products may still be best served by the ‘traditional’ work group. Production processes characterized by high task interdependence both within and between work groups, for example, may be an ideal setting for this type of work group. Other examples would include production processes that have little uncertainty, but require high coordination and monitoring, or settings where individual and team autonomy or discretion is not appropriate for legal, cultural or other non-technology-related reasons.

The three remaining group designs labeled in Figure 1 relate to self-management in some form (as it has been defined or described by various researchers), but those three group designs are very different from one another. Which type of self-management is most appropriate for a given organization will depend on multiple factors, including (but not limited to) task technologies and
interdependencies, contextual characteristics and the organizational culture. One example, the combination of high group autonomy and low individual autonomy (type 1), is often described in self-management literature, and is similar to the work teams described by Barker (1993). The example of low group autonomy and high individual autonomy (type 2) is most likely seen in manufacturing organizations with a tightly coupled intergroup work flow, where the output of the group is very important, not the internal process. The final example of self-managed work teams, incorporating both high group and high individual autonomy (type 3), may not be as common, but would likely exist in organizations with a very loosely coupled production systems. Such a group design might be found in software development and design teams, or in industries involved in other creative tasks. It may also be common in research teams in pharmaceutical, hi-tech or other industries, where the team has only vague and unspecified goals due to the uncertainty of scientific discovery, and where individual researchers may have a lot of latitude and discretion in their daily work. Group designs of this nature may also result from a strong culture and focus of employee empowerment, as opposed to task or interdependence requirements.

However, some researchers have suggested that the widespread adoption of these new work group designs perhaps should be tempered by a balance between individual-level and group-level autonomy within the team. It has been pointed out that performance may suffer if group-level autonomy is forced on a group where members function very independently (i.e. autonomously) of one another (Pearce and Ravlin, 1987; Liden et al., 1997). Manz (1993) has suggested a 'paradox' between autonomy at the group level and autonomy at the individual level, and his concerns are echoed by Neck et al. (1996) who point out that a balance is necessary between self-leadership of individual team members and self-leadership of the team as a collective. Similarly, Markham and Markham (1995) suggest that it may be difficult to incorporate both individual autonomy and group autonomy in the same work group. In a recent paper on empowerment, Kirkman and Rosen (1999) emphasized the importance of taking both individual and group...

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effects into account, stating that ‘what is needed most now in the team effectiveness literature is research that examines empowerment at the individual and team levels simultaneously’ (p. 70).

The purpose of this study is to take the first step in exploring the simultaneous effects of individual and group autonomy, examining the possible interaction or conflict between individual-level autonomy and group-level autonomy in work groups. It focuses specifically on the differential effects of individual and group autonomy on group cohesiveness, and then explores the extent to which group cohesiveness mediates the effects of both types of autonomy on group effectiveness. The expectation is that individual and group autonomy have opposite effects on group cohesiveness, and that group cohesiveness mediates the effects of autonomy on group effectiveness.

Hypotheses

In this section, a model of how autonomy at both the individual and the group level indirectly influences group effectiveness is developed. Figure 2 shows the general model.

Researchers have developed numerous typologies in an effort to understand work group or team phenomena (Katzenbach and Smith, 1993; Mohrman et al., 1995). Even so, disagreement remains regarding even the fundamentals of what constitutes a ‘team’ and how work teams are distinct from work groups (Guzzo and Shea, 1992). For example, some researchers feel that ‘team’ connotes more than ‘group’—describing a type of group with relatively more commitment or cohesion (Katzenback and Smith, 1993). I agree with Cohen and Bailey’s (1997) view that little distinction exists between the popular management literature’s use of ‘team’ and the academic literature’s use of ‘group’, and will in this paper use the terms ‘work group’ and ‘team’ interchangeably.

McGrath (1984) defines a group as ‘those social aggregates that involve mutual awareness and potential mutual interaction’. Mutual awareness implies that members of a group believe they
belong together (on some dimension) and form an identifiable unit. It should be noted that in the context of work groups the assumption of group members interacting to achieve a common goal or directive is often added to McGrath's definition (Guzzo and Dickson, 1996). In this paper, a work group is defined as a social unit (as perceived by themselves and by others), with a common goal or directive, that exists within a larger organizational system.

**Group autonomy and cohesiveness**

Group autonomy is the amount of control and discretion the group is allowed in carrying out tasks assigned by the organization. It is very important to note that the group autonomy is not the aggregation of individual autonomy to the group level, but a purely group-level construct with no meaningful existence at the individual level. It should also be noted that group autonomy does not relate to internal processes of the group. For example, if a group is granted autonomy over group action in the organization, the decision on how to use such autonomy might be arrived at in a number of different ways—ranging from consensus, vote, coalition or even election of a leader to exercise the autonomy. Such group level autonomy could also be exercised by an appointed leader as long as that leader is a member of the group, and group autonomy may thus be reflected externally by the group leader's authority in carrying out group-level tasks.

Group cohesiveness, on the other hand, is a construct that has been defined and operationalized in a variety of ways (Dion and Evans, 1992), and researchers have struggled with issues of definition, operationalization and measurement for decades (Golembiewski, 1962; Keyton, 1992). Muddrack (1989) has pointed out that no definition of group cohesiveness has yet gained general acceptance, and has called for more explicit and unambiguous definitions of cohesiveness. In general, the cohesiveness of a group can be thought of as the extent to which 'strong ties' exist within a group (Granovetter, 1973) or the extent to which members of the group like each other and want to remain members of the group (Shaw, 1981). Recently, researchers have started to conceptualize and measure cohesiveness as a multidimensional construct, incorporating both task cohesion and social cohesion into their definitions (Dion and Evans, 1992). Some researchers have taken the additional step of incorporating task commitment into their definitions of cohesiveness (Mullen and Copper, 1994), but such a definition can confound cohesiveness with other constructs—like group norms or group performance orientation. To avoid such confusion, cohesiveness is defined in this study as the extent to which group members like, and interact with, other group members and want to remain part of the group.

There are a number of different mechanisms by which group autonomy may relate to group cohesiveness. When the organization grants autonomy to a work group, it has several effects on group members within each group. It increases the salience of the group as a unit, since the autonomy is at the group level, and relates to group-level tasks. Second, since the autonomy relates to group-level tasks, it also increases the salience of the group's task environment within the larger organization, which likely includes other work groups. Finally, the willingness of the organizational leadership to grant the autonomy may cause group members to make inferences about the beliefs of management and the relative status or importance of the work group.

As mentioned above, autonomy at the group level is likely to focus the attention of group members on the group as a unit, thereby increasing perceived group identity and the salience of group membership. Since the autonomy is over the implementation of assigned group tasks, the salience of the group as a unit will continue to be emphasized as the group exerts its discretion. Research in social identity theory (Turner, 1987) has shown how categorization leads to social identification, which in turn is regarded as a perception of oneness with a group (Ashforth and Mael, 1989), and which increases the commitment of group members to the group and its goal.
As a result of increased group-level autonomy members are likely to identify more with the work group, increasingly seeing it as 'theirs' (Hackman and Morris, 1975), and consequently becoming more cohesive.

Autonomy at the work group level also increases the salience of the external environment to group members. This is in part a result of the increased focus on the group as a unit and its actions. As the work group is embedded in the larger organizational structure, an increased focus on the group itself, its boundaries and its activities, will also lead to an increased awareness of the task environment within which it functions. In addition, increased group autonomy will often involve coordination with other groups or managing resource ties or dependencies with other groups or parts of the organization. Thus in several ways, the salience of the external task environment and of other groups in the organization will increase with group-level autonomy.

Social psychological research has demonstrated a number of ways in which increases in the salience of the external environment can increase group cohesiveness. Much of the research in social identity theory (Turner, 1987) relates specifically to how outgroup salience leads to social identification (Ashforth and Mael, 1989). Radloff and Helmrich (1968) demonstrated that increased perceptions of an external threat increased group cohesiveness. An increased awareness of the task environment in general is also likely to focus attention on perceived organizational support for the group. Bushe and Johnson (1989) point out that when group members believe the environment is not supportive, meaning that the group’s task is not valued by the organization, motivation and performance suffer. Autonomy may be perceived as a sign of organizational support or interest in the group’s task.

The more the group is aware of the external environment, the more likely it is to notice other groups in particular. This represents not only an increase in outgroup visibility, but also in ingroup–outgroup categorization. Outgroup visibility has been found to affect cohesiveness (Kahn and Ryan, 1972). If an increase in autonomy increases the perception of an ingroup–outgroup categorization, it will increase both the mutually perceived identity between ingroup members as well as their perceived dissimilarity from outgroup members (Turner, 1987). Much of the research on groups in social psychology has focused on issues of ingroup versus outgroup differentiation (Locksley et al., 1980). Effects such as ingroup favoritism and outgroup discrimination are well documented and robust (Howard and Rothbart, 1980). Even random assignment of individuals to groups leads to discrimination against outgroups and increased intragroup cooperation and cohesiveness (Tajfel, 1981).

The third effect of group autonomy is in the beliefs of group members, either individually or collectively, about the motivation of the management that grants autonomy. It is not an unreasonable belief that autonomy would be granted to more successful or trustworthy groups. In fact, it is a pervasive social belief that if one performs well, one will be rewarded—in organizations often in the form of increased responsibility. One would expect groups not highly regarded by management to be more carefully controlled and monitored than reliable or trusted groups. Group autonomy will be perceived as a signal of management's faith and endorsement of the group, increasing the status relative to groups with less or no autonomy. Greater group autonomy is expected to lead to status, and hence increased membership desirability in a group.

Social identity theory researchers have noted that the distinctiveness and prestige of a group leads to increased social identification (Ashforth and Mael, 1989). All else being equal, it is assumed that membership in a high-status group is more desirable than membership in a low-status group. Since cohesiveness is in part defined as the liking for group membership, increased desirability of membership is very similar to, and includes dimensions of, cohesiveness. Furthermore, membership in a high-status group is likely more difficult to attain than in a low-status group. High costs of membership, such as through a more difficult or unpleasant initiation,
has been found to lead to an increase in the new member’s liking for, and identification with, the group (Gerard and Matthewson, 1966).

These considerations suggest the following hypothesis.

_Hypothesis 1:_ There will be a positive relationship between group autonomy and group cohesiveness.

**Individual autonomy and cohesiveness**

Individual autonomy influences group cohesiveness by the reduction in interpersonal interaction that is associated with individual autonomy. As individual work becomes more independent, and as individuals exert more control over the scheduling and implementation of their own tasks, there will be less interaction between group members. Given reduced contact between group members, the potential for high group cohesiveness to even develop in the first place is severely restricted in work groups with high individual autonomy.

In addition, it is very important to note that while individual autonomy, the amount of discretion and control an individual has in the implementation of an assigned task, by definition requires more individual discretion and freedom, cohesiveness in a group often implies the opposite. It has long been pointed out that cohesive groups have more power to influence members to conform to group norms than do less cohesive groups (Festinger et al., 1952). The enhanced ability of cohesive groups to enforce behaviour therefore restricts individual behavior and discretion compared with less cohesive groups. In other words, cohesive groups have more control over members, leaving less freedom for those members to act independently (Feldman, 1984). High group cohesiveness and high individual autonomy thus appear to be inversely related, and an increase in one will be at the price of the other.

While it is possible that causality may flow in both directions in the negative relationship between individual autonomy and cohesiveness, it is worth noting that individual autonomy has an exogenous component to it. In organizational work groups, the amount of individual autonomy is often externally determined by management, and the possible negative effect of cohesiveness on individual autonomy will be somewhat constrained by this restriction.

Given individual autonomy, not only will interpersonal interactions decrease, but individuals often become more motivated and satisfied with their job (Argote and McGrath, 1993). In such a situation, it is likely that individual group members will identify themselves more in terms of their individual job and tasks, and less in terms of group membership. As group membership becomes less important, group cohesiveness is likely to decrease—again consistent with the categorization and social identification literature (Turner, 1987).

These considerations suggest the following hypothesis:

_Hypothesis 2:_ There will be a negative relationship between individual autonomy and group cohesiveness.

**Cohesiveness, group performance orientation, and effectiveness**

Group effectiveness is the extent to which explicit group goals, that are assigned by the organization, are achieved. The successful attainment of such goals includes both the quality of group outputs as well as their timeliness. The relationship between cohesiveness and group effectiveness is expected to be moderated by a group’s performance orientation or ‘orientation...
toward productivity’ (Mudrack, 1989), or group norms (a high performance group norm is equivalent to a strong group performance orientation). Since more cohesive groups have more conformity-inducing power over members, particularly with respect to enforcing adherence to group norms (Feldman, 1984), the more cohesive the group, the stronger the effect of a group’s performance orientation. The power of the group to enforce an orientation is regardless of the direction of that orientation. Very cohesive groups may thus be extremely unproductive—if the orientation of the group is towards things like social stability, conflict reduction, or even keeping productivity down, instead of towards productivity or performance (Goodman et al., 1988; Barker, 1993). In fact, one such example is the increased susceptibility of very cohesive groups to problems such as ‘groupthink’ (Janis, 1982). Also, very cohesive groups may also be particularly vulnerable to group polarization and decision-making biases (Bateman et al., 1987; Bazerman, 1994; Sniezek, 1992).

The notion of a moderator operating on the relationship between group cohesiveness and performance was originally suggested in the 1950s (Festinger et al., 1952), and continues to have widespread acceptance in modern texts on management and organizational behavior (Bartol and Martin, 1998; Hellriegel et al., 1998).

While several researchers have recently questioned the existence of a moderator, suggesting instead a stable (albeit weak) relationship between cohesiveness and effectiveness (Evans and Dion, 1991; Mullen and Copper, 1995), their meta-analytic findings remain inconclusive at best (Langfred, 1998). I suggest, consistent with the literature, that high group effectiveness depends not only on cohesiveness, but also on the group’s performance orientation.

Hypothesis 3: The relationship between group cohesiveness and group effectiveness will be moderated by group performance orientation.

Group cohesiveness as a mediator

In this study it has been hypothesized that both individual and group autonomy relate to group cohesiveness. It has also been hypothesized that group cohesiveness (which has long been considered a major determinant of group effectiveness) relates to group effectiveness. The widespread and continually increasing adoption of self-management and participatory styles of management in the workplace has made a detailed understanding of the relationships between autonomy (both individual and group) and effectiveness crucial. Research has already demonstrated direct relationships between individual autonomy and effectiveness as well as between group autonomy and effectiveness. If individual autonomy negatively affects group cohesiveness via increased independence and lowered interaction among individual group members, and group autonomy positively affects group cohesiveness via increased group identification, greater intra- and inter-group salience, and perceived group status and prestige, then it is imperative to examine the mediating role of cohesiveness in both the relationship between individual autonomy and group effectiveness and the relationship between group autonomy and group effectiveness. The fact that these effects can occur simultaneously only makes their empirical exploration more important.

Since the effect of group cohesiveness on group effectiveness is expected to be moderated by group performance orientation, it is important to note that cohesiveness alone will not mediate the relationships between both types of autonomy and group effectiveness. Rather, the above discussion suggests that the interaction of group cohesiveness and group performance orientation will mediate (in part or entirely) the relationship between individual autonomy and group
effectiveness as well as group autonomy and group effectiveness, and leads to the following hypotheses:

Hypothesis 4a: The relationship between group autonomy and group effectiveness will be mediated by the group cohesiveness/performance orientation interaction.

Hypothesis 4b: The relationship between individual autonomy and group effectiveness will be mediated by the group cohesiveness/performance orientation interaction.

Control

Research has demonstrated a negative relationship between group size and cohesiveness (Mullen et al., 1989). As a group increases in size, it becomes more difficult for a member to significantly interact with all other members, and specialization and intra-group organization become necessary. In this way, and also contingent on the nature of the task, group size can have a significant influence on group effectiveness.

Summary

Group and individual autonomy are expected to relate in opposite ways to group cohesiveness, which in turn is expected to relate to group effectiveness, albeit moderated by group performance orientation. Presently, there is no research exploring the simultaneous effects of individual-level and group-level autonomy on work group cohesiveness or effectiveness, and this study represents the first empirical attempt to do so.

Methods

Research settings

To test the hypotheses, it was necessary to locate organizations that both rely on groups to perform tasks, and grant some degree of autonomy to groups and individuals within groups—with enough variability to allow for meaningful statistical testing. Data from two separate organizations were used. One of these was a social service agency and the other was a military regiment. These two very different sites were selected primarily because they met the two criteria, but also because of both their differences and their similarities. While culture and context differs enormously between the two organizations, both are largely government organizations, ultimately founded upon hierarchical and bureaucratic structures.

The military provides a ‘cleaner’ environment for testing hypotheses, as group structures are very clear and salient, tasks are very well defined and authority is very clearly delineated. The presence (or lack of) autonomy will be very unambiguous, as will group-level phenomena such as cohesiveness and group performance orientation. The particular organizational units studied also provided a very stable environment for researching groups, due to the stability of group membership and lack of turnover. While such a research environment might provide considerable statistical conclusion (or internal) validity, it is perhaps at the cost of external validity. The social service agency provides a somewhat more ‘realistic’ environment. While workers surveyed...
function as members of a group, the formality and rigidity of group boundaries is less strict. By the same token, lines of authority are less clear and direct than in a military setting, and more ambiguity exists with respect to variables of interest.

Despite the differences, both sites are very well suited for the study of individual and group autonomy effects on group cohesiveness and effectiveness. Both organizations rely on groups to perform tasks, and autonomy plays an important part in that performance. While one might expect relatively more individual autonomy in a social service agency, and perhaps relatively more group autonomy in the military, both organizations vary considerably on both individual and group autonomy.

Social service agency
Data were obtained from the Illinois Department of Children and Family Services (DCFS). The DCFS is an agency often suffering from high levels of uncertainty and ambiguity. The absence of a well-defined technology places the primary burden of coping with environmental uncertainty and turbulence on the actions and decisions of local work groups. As is the case for many social service agencies, local conditions dictate to some extent the interpretation of organizational goals and the definition of what constitutes success for the organization. Agency goals are somewhat paradoxical, including both protecting children from abuse or harmful environments on the one hand, as well as preserving intact family structures on the other hand. These goals are often mutually exclusive, as the majority of child abuse occurs at the hands of family members.

Individual workers see their tasks as largely unstructured and often have to rely on their own judgments to organize their work and implement task requirements. While most employees of the DCFS are organized in work groups, much of the work is very independent, and workers often function with considerable autonomy and discretion in judgment and decision-making. Depending on any number of factors, such as specific tasks assigned to a group, geography, caseload backlogs, and even political considerations, work groups can have a lot of discretion and freedom in the performance of their tasks, or they can be very constrained.

Military
Data were collected from three army infantry companies in the Danish military. All three had the hierarchical and modular structure typically found in NATO military organizations. A typical company consisted of three platoons, each with three squads. The squad is the fundamental work group and the smallest functional unit in the military, containing between 8 and 12 men. At the level of platoons and squads, subunits are interchangeable and undifferentiated, with identical internal structures, training, and capabilities.

In a typical military organization, unit tasks are defined specifically, with little or no ambiguity as to desired outcomes. Since the ultimate purpose of training is to allow military units to function under very turbulent and unpredictable circumstances, emphasis is often placed upon local action and decision-making in the implementation of assigned tasks. Combat training involves the simulation of high environmental turbulence and uncertainty, which often results in the rapid delegation of decision-making authority and discretion in task implementation to lower levels of the organization. The ability to effectively function under conditions of extreme turbulence is important as a primary component of group effectiveness and is essential for the interunit coordination that is necessary for organizational effectiveness.

Despite general high task interdependence, it is not uncommon for groups as well as individuals within groups to have considerable autonomy. Depending on tasks, some groups may in
fact be accustomed to considerable autonomy. Squads regularly used for reconnaissance have to be able to work very independently as a group, and often function out of contact with their superiors and the formal chain of command for extended periods of time. In addition, regular infantry squads that normally function within platoons may at any point be given tasks that require considerable discretion and autonomous behavior—such as scouting duties, ambushes or other services where the squad functions independently from the rest of the platoon. Often, squads may inadvertently become separated from their larger parent units, and may have to function independently for a time. Within squads, individuals with specialized functions often have considerable autonomy. Individuals that operate specialized weapons systems, for example, may enjoy considerable discretion in the squad’s use of the weapons.

Respondents

Social service agency
Supervisors and workers across 8 of 11 DCFS regions in Illinois were surveyed. Supervisors are the work group leaders, and represent only the one group they belong to. Sampling was stratified by region, task, and organizational level, in order to ensure a balanced distribution of responses. Sampling was random within these strata in the Chicago (Cook County) area, and comprehensively elsewhere in Illinois. Questionnaires were completed by respondents at agency facilities during the work day. Participation was voluntary, with a 90 per cent individual response rate, and a 95 per cent group response rate.

A sample of 67 work groups was gathered, based on a total of 633 completed questionnaires. Only employees with more than 12 months tenure, and only groups from which three or more individuals responded, were included in the final sample. The lowest within-group response rates were represented by groups of 8 to 10 individuals of whom only three responded, and the highest by groups in which all group members responded. In terms of work experience, 18 per cent of respondents reported one to two years, 17 per cent reported three to five years, 27 per cent reported six to 10 years, and 38 per cent reported over 10 years. Data were not available on turnover, but the amount of work experience suggests quite low historical turnover. No groups were recently formed, and all represented stable and long-term groups of at least one year. The sample was 62 per cent female and 38 per cent male, but groups with respondents from only one gender were very rare. Overall, about 30 per cent of the sample were from the Chicago area, and the remaining 70 per cent represented different regions of Illinois, including East St. Louis.

Military
Enlisted men (privates) and non-commissioned officers (sergeants) were surveyed from three companies in the Danish military regiment. Sergeants are the work group leaders and represent only the group they belong to. Sampling was comprehensive and took place on one day across all three organizational units. Participation was voluntary, with a 94 per cent individual response rate and a 100 per cent group response rate.

A sample of 61 work groups was gathered, based on 410 completed questionnaires. As in the DCFS, only groups from which three or more individuals responded were included in the final sample. However, the lowest within-group response rates were 75 per cent, with most groups responding with all members. In terms of work experience, over 95 per cent of respondents fell into one of two categories—privates with 8 months experience or sergeants with 18 months experience. Due to the unique nature of drafted army companies, there is no voluntary turnover,
and involuntary turnover is less than 2 per cent. All groups had been formed 8 months previously, and all represented stable groups over the entire period. The sample was 100 per cent male.

Measures

The worker instrument as well as the supervisor/manager instrument of the Organizational Assessment Inventory, (henceforth, OAI—see Van de Ven and Ferry, 1980) was used. The worker instrument was administered to DCFS workers and military privates, the individual group members. The supervisor/manager instrument was administered to DCFS supervisors and military sergeants, the group leaders. Generic OAI instruments were adapted to DCFS conditions through interviews and reviews of draft instruments by former staff and by child abuse experts, followed by pre-testing in a single agency region. For studying the military units, the OAI was first translated from English to Danish by a military expert fluent in both languages. The translated instrument was then examined by a second military expert (in Denmark) to verify the correspondence to the original English version. In the same manner, the experts also implemented and confirmed the adaptation of the instrument to the military context. This adaptation consisted of substituting military terms and jargon for otherwise generic terms in the instrument, in the interest of greater understanding and acceptability on the part of respondents. The translated and adapted instrument was then validated on the basis of additional consultation with both active and former officers and enlisted men. Pre-testing allowed for feedback, evaluation of the modified instrument, and adjustments. For both organizations, five-point Likert scales were used, the minimum number recommended by Cox (1980), as well as the most widely used format (Babakus et al., 1987).

Scales were constructed to represent the study variables from existing OAI indicators. Indicators from the OAI were selected for scales on the basis of a priori theoretical agreement with the model constructs and similar established scales. Following the formation of the scales, reliability analysis was used to verify internal consistency. Formal confirmatory factor analysis was then performed to verify convergent and discriminant validity, as well as the overall fit of the model. The constructs, the number of items in each construct, and the Cronbach alpha coefficients are displayed in Table 1 and are discussed in more detail below, as are fit indices.

Individual autonomy

This construct was measured by a 4-item scale including the number of rules and procedures constraining the individual (reverse-coded), the amount of control the individual has over such rules and procedures, as well as the amount of individual control over the nature and the pace of work.

Group autonomy

This construct was measured by a 2-item scale consisting of the perceived amount of influence the group leader had in deciding group work and tasks on a daily basis, and the amount of influence the group leader had in determining group effectiveness criteria. The perceptions of the group leader, reported on the supervisor/manager instrument were used for this scale.

It is important to note that since the group leader is a member of the group, the discretion he/she wields represents the group-level autonomy available to the group in the larger organizational
Table 1. Constructs and indicators

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<th>Construct</th>
<th>Indicators</th>
<th>DCFS α</th>
<th>Military α</th>
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| Individual autonomy    | Control over pace of work  
                        Authority in determining tasks to be performed  
                        Number of written rules and procedures pertaining to job (R-C)  
                        Authority in determining rules and procedures for own work |
| Group performance      | Amount of effort put into work  
                        Attitudes towards work load  
                        Feelings of responsibility for work goal attainment |
| orientation            |                                                                                                                                          | 0.71   | 0.90       |
| Cohesiveness           | Feedback and help from other group members  
                        Helpfulness of other group members  
                        Friendliness and cooperativeness of group members  
                        Desire to switch to other group (R-C)† |
|                        |                                                                                                                                          | 0.70   | 0.92       |
| Group autonomy*        | Amount of influence in deciding group work and tasks  
                        Amount of influence on deciding group performance criteria |
|                        |                                                                                                                                          | 0.86   | 0.90       |
| Group effectiveness*   | Performance of group operations  
                        Quality/accuracy of work |
|                        |                                                                                                                                          | 0.80   | 0.72       |

* From the manager/supervisor instrument given to group leaders.  
† Additional item added to the military.

structure. Decisions as to how such discretion should be exercised might be reached by consensus, vote or coalition agreements, or they might be made by a single person who could be either elected from within or appointed from without. However, regardless of the internal decision making processes of the group, the external manifestation of these decisions represent the autonomy available at the group level of activity. In addition, while individual group members have an awareness of how much autonomy the group enjoys in the organization (especially compared with other groups of their peers), the group leader is a more accurate judge of precisely how much autonomy is allowed the group by the organization.

**Group cohesiveness**

This construct was measured by a 3-item scale consisting of group members’ perceptions regarding the amount of feedback, helpfulness, friendliness, and cooperativeness among group members. For the military sample one additional item relating to the desire to remain in the group was included. Most measures of cohesiveness, especially those generated from surveys, are necessarily aggregated from individual data. While such measures do speak to the cohesiveness construct, the use of aggregated individual measures may disguise differences in cohesiveness between groups with comparable means but differing variances (Golembiewski, 1962). It may be possible to fashion less obtrusive group-level measures of cohesiveness, such as through studying group exits (the extent to which members leave groups) or turnover. This was not possible in this study, due to the nature of the data. Most of the military sample was composed of conscripts and there was practically no voluntary turnover. In the interest of having consistent measures across the study, aggregated individual measures generated from surveys were used.

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Group performance orientation
This construct was measured by a 3-item scale. The performance orientation of the group was measured in terms of the reported amount of effort put into the daily work, the attitudes toward the work load, and the extent to which respondents felt personal responsibility for goal attainment. A high aggregated score indicates the presence of a strong group performance orientation, and a low score indicates a weak group performance orientation. This construct aggregates individual group members’ perceptions and has no meaning at the individual level, as it concerns the attainment of group goals.

Group effectiveness
This construct was measured by a 2-item scale consisting of the perceived quality and accuracy of group work and the overall performance of group operations. Perceptions of the group leader (from the supervisor/manager instrument) were used to avoid using group members’ perceptions for both the dependent and independent measures in the majority of the analyses. While group leader perceptions will be biased, they will be less distorted than the self-serving perceptions of workers. Group leaders are generally also better trained to assess group effectiveness than individual group members.

Control
Group size was reported by the group leader.

Reliability
The indicators for each construct all loaded on one factor, with none loading less than 0.5, and the majority loading much higher. Cronbach alphas were consistently greater than 0.7 for all scales in both settings. Confirmatory factor analysis yielded a comparative fit index (CFI) greater than 0.90 for both the DCFS and the military. Confirmatory factor analysis results are displayed in Appendix 1.

Aggregation issues
Studying group-level variables based on perceptual data collected at the individual level invariably raises the issue of aggregation from the individual-level measures to the group level of analysis (George and James, 1993). Several methods for evaluating the appropriateness of such aggregation exist, among them the within-group interrater reliability statistic (James et al., 1984), later revised to an interrater agreement statistic (James et al., 1993), and the within-and-between-analysis approach (Yammarino and Markham, 1992). In this study, both the $r_{wg}$ statistic developed by James et al. (1984, 1993) and the intraclass correlation coefficient (ICC) discussed by Shrout and Fleiss (1979) are used. In general, the $r_{wg}$ statistic may be slightly better suited to evaluate the appropriateness of aggregation as it takes into account relative difference among raters by incorporating scale size into its calculation.

The variables for which a test for the appropriateness of aggregation is necessary are group cohesiveness and group performance orientation, both based on individual group members’ perceptions of group-level constructs. A test for the appropriateness of aggregation for the individual autonomy variable is less relevant, as it is not a group-level construct, and different group members in a group might have different levels of individual autonomy, depending on
particular tasks. The measure of interest for individual autonomy is the aggregated level of individual autonomy in the group, but the agreement on those individual perceptions is less relevant than it is for variables meaningful only at the group level.

Analysis

Statistical tests
The analysis and testing of the model was conducted in three separate stages. In the first stage, a series of multiple regression equations were used to test hypotheses relating to the relationships between autonomy at different levels and cohesiveness. This was followed by moderated multiple regression equations used to test the hypothesized moderated relationship between group cohesiveness and group effectiveness. Of statistical methods used to test for moderated effects, moderated multiple regression is considered more powerful and ‘vastly superior’ to alternatives such as testing subgroup-based correlation coefficients (Stone-Romero and Anderson, 1994). To test the moderating effect of group performance orientation on the relationship between cohesiveness and group effectiveness, the multiplicative product of the standardized cohesiveness and group performance orientation variables was used, as recommended by Baron and Kenny (1986). Because of this, variables were standardized prior to all analyses. Finally, assuming that causality was established in the former cases, the mediating effect of the cohesiveness/group performance orientation interaction was tested by exploring the relationship between individual and group autonomy and group effectiveness without and with the mediating variables included, looking for a reduction (or complete elimination) of the direct relationship.

Results

An overview of the data (means, standard deviations and intercorrelations) for the DCFS and the military are displayed in Table 2. The regression results that will be discussed are displayed in Table 3 through Table 6.

Aggregation
For group cohesiveness, the scale had a $r_{wg} = 0.94$ and an ICC = 0.81 in the military, and a $r_{wg} = 0.84$ and an ICC = 0.75 in the DCFS. In both cases aggregation appears appropriate. For group performance orientation, the scale had a $r_{wg} = 0.93$ and an ICC = 0.84 in the military sample, and a $r_{wg} = 0.85$ and an ICC = 0.71 in the DCFS sample. Again, aggregation appears appropriate. The same, but less relevant analyses for individual autonomy yielded a $r_{wg} = 0.91$ and an ICC = 0.86 in the military sample, and a $r_{wg} = 0.71$ and an ICC = 0.37 in the DCFS.

Group autonomy and group cohesiveness
Hypothesis 1 predicted a positive relationship between group autonomy and group cohesiveness. Table 3 shows that for the DCFS, group autonomy was significantly and positively related to cohesiveness ($t_{64} = 2.31, p < 0.05$). Table 3 also shows that in the military sample, there was no
Table 2. Means, standard deviations, and intercorrelations

(a) DCFS

<table>
<thead>
<tr>
<th></th>
<th>Means</th>
<th>Standard Deviation</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Effectiveness</td>
<td>3.26</td>
<td>0.89</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Cohesiveness</td>
<td>2.64</td>
<td>0.91</td>
<td>0.28*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Group performance orientation</td>
<td>3.74</td>
<td>0.97</td>
<td>0.34†</td>
<td>-0.08</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Individual autonomy</td>
<td>3.19</td>
<td>0.74</td>
<td>-0.41†</td>
<td>-0.45†</td>
<td>-0.02</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>5. Group autonomy</td>
<td>3.39</td>
<td>0.83</td>
<td>0.33†</td>
<td>0.38†</td>
<td>0.02</td>
<td>-0.32†</td>
<td>1.00</td>
</tr>
<tr>
<td>6. Group size</td>
<td>9.06</td>
<td>2.70</td>
<td>-0.18</td>
<td>-0.06</td>
<td>-0.19</td>
<td>0.10</td>
<td>-0.12</td>
</tr>
</tbody>
</table>

*0.01 Significance.
†0.001 Significance.

(b) Military

<table>
<thead>
<tr>
<th></th>
<th>Means</th>
<th>Standard Deviation</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Effectiveness</td>
<td>4.03</td>
<td>0.75</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Cohesiveness</td>
<td>2.14</td>
<td>0.73</td>
<td>-0.65†</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Group performance orientation</td>
<td>3.98</td>
<td>0.66</td>
<td>0.25*</td>
<td>-0.16</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Individual autonomy</td>
<td>3.56</td>
<td>0.77</td>
<td>0.44†</td>
<td>-0.36†</td>
<td>0.38†</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>5. Group autonomy</td>
<td>2.82</td>
<td>0.74</td>
<td>-0.29*</td>
<td>0.08</td>
<td>0.35*</td>
<td>0.09</td>
<td>1.00</td>
</tr>
<tr>
<td>6. Group size</td>
<td>7.21</td>
<td>3.69</td>
<td>0.26*</td>
<td>-0.14</td>
<td>0.14</td>
<td>0.21</td>
<td>-0.27</td>
</tr>
</tbody>
</table>

*0.01 Significance.
†0.001 Significance.

Table 3. Regression results with a group cohesiveness dependent variable

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>DCFS</th>
<th>Military</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Standardized beta coefficients and standard errors</td>
<td></td>
</tr>
<tr>
<td>Group size</td>
<td>0.01 (0.036)</td>
<td>-0.04 (0.036)</td>
</tr>
<tr>
<td>Group autonomy</td>
<td>0.27 (0.115)*</td>
<td>0.10 (0.129)</td>
</tr>
<tr>
<td>Individual autonomy</td>
<td>-0.37 (0.115)†</td>
<td>-0.36 (0.127)†</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.52</td>
<td>0.37</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.23</td>
<td>0.10</td>
</tr>
<tr>
<td>Regression $F$</td>
<td>7.55†</td>
<td>3.11*</td>
</tr>
<tr>
<td>df</td>
<td>3.62</td>
<td>3.57</td>
</tr>
</tbody>
</table>

* $p < 0.05$; † $p < 0.01$.

A significant relationship between group autonomy and group cohesiveness. This provides strong support for hypothesis 1 in the DCFS, but not in the military, providing limited overall support for hypothesis 1.

**Individual autonomy and group cohesiveness**

Hypothesis 2 predicted that there would be a negative relationship between individual autonomy and group cohesiveness. Table 3 shows that individual autonomy was significantly and negatively
Table 4. Regression results with group effectiveness dependent variables

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>DCFS Model 1</th>
<th>DCFS Model 2</th>
<th>Military Model 1</th>
<th>Military Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group size</td>
<td>-0.10 (0.038)</td>
<td>-0.11 (0.035)</td>
<td>0.16 (0.026)*</td>
<td>0.18 (0.026)*</td>
</tr>
<tr>
<td>Group orientation</td>
<td>0.35 (0.114)†</td>
<td>0.34 (0.105)†</td>
<td>0.13 (0.098)</td>
<td>0.16 (0.096)</td>
</tr>
<tr>
<td>Group cohesiveness</td>
<td>0.30 (0.112)†</td>
<td>0.36 (0.104)†</td>
<td>-0.61 (0.098)†</td>
<td>-0.57 (0.097)†</td>
</tr>
<tr>
<td>Orientation × Cohesiveness</td>
<td>0.37 (0.092)†</td>
<td>0.37 (0.092)†</td>
<td>0.21 (0.102)†</td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.48</td>
<td>0.60</td>
<td>0.69</td>
<td>0.72</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.19</td>
<td>0.31</td>
<td>0.45</td>
<td>0.48</td>
</tr>
<tr>
<td>$R^2$ Change</td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
</tr>
<tr>
<td>Regression $F$</td>
<td>6.04†</td>
<td>8.47†</td>
<td>17.30†</td>
<td>14.98†</td>
</tr>
<tr>
<td>$df$</td>
<td>3.62</td>
<td>4.61</td>
<td>3.57</td>
<td>4.56</td>
</tr>
</tbody>
</table>

* $p < 0.05$; † $p < 0.01$.

related to cohesiveness both in the DCFS and in the military ($t_{64} = -3.19$, $p < 0.01$ for the DCFS, $t_{59} = -2.83$, $p < 0.01$ for the military). This provides strong and consistent support for hypothesis 2.

Cohesiveness, group performance orientation, and effectiveness

Hypothesis 3 predicted that the relationship between cohesiveness and effectiveness would be moderated by the group orientation. As Table 4 shows, the interaction between group performance orientation and cohesiveness was statistically significant in the DCFS and the military ($t_{64} = 3.52$, $p < 0.01$ for the DCFS; $t_{59} = 2.16$, $p < 0.05$ for the military). This provides strong and consistent support for hypothesis 3.

Group cohesiveness/group performance orientation interaction as a mediator

Hypotheses 4a and 4b predicted that the group cohesiveness/group performance orientation interaction would mediate the effects of group autonomy on group effectiveness (Hypothesis 4a) and the effects of individual autonomy on group effectiveness (Hypothesis 4b). Since the relationship between group autonomy and effectiveness was not significant in the DCFS, that specific relationship is not examined.

Table 5 shows the regression results with group effectiveness as the dependent variable, but without any mediator variables included. The standardized beta coefficient for group autonomy was $-0.32$ ($p < 0.01$) in the military. The standardized beta coefficient for individual autonomy was $-0.33$ ($p < 0.01$) in the DCFS, and $0.46$ ($p < 0.01$) in the military. Table 6 shows the same relationships, with group effectiveness as the dependent variable, but with potential mediators included in the regression model. If cohesiveness (interacting with group performance orientation) mediates the relationships between individual and group autonomy and group effectiveness, then the magnitude of the direct relationships should be reduced or entirely eliminated with the addition of the mediators to the models (Baron and Kenny, 1986). In this analysis, the standardized beta for group autonomy was $-0.25$ ($p < 0.05$) in the military. The standardized

Table 5. Regression results with a group effectiveness dependent variable

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>DCFS</th>
<th>Military</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group size</td>
<td>-0.13 (0.037)</td>
<td>0.08 (0.032)</td>
</tr>
<tr>
<td>Group autonomy</td>
<td>0.21 (0.118)</td>
<td>-0.32 (0.115)†</td>
</tr>
<tr>
<td>Individual autonomy</td>
<td>-0.33 (0.118)†</td>
<td>0.46 (0.113)†</td>
</tr>
<tr>
<td>( R^2 )</td>
<td>0.48</td>
<td>0.57</td>
</tr>
<tr>
<td>Adjusted ( R^2 )</td>
<td>0.20</td>
<td>0.28</td>
</tr>
<tr>
<td>Regression ( F )</td>
<td>6.28†</td>
<td>8.93†</td>
</tr>
<tr>
<td>( df )</td>
<td>3.62</td>
<td>3.57</td>
</tr>
</tbody>
</table>

*\( p < 0.05; \)†\( p < 0.01.\)

Table 6. Regression results with a group effectiveness dependent variable

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>DCFS</th>
<th>Military</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group size</td>
<td>-0.08 (0.032)</td>
<td>0.07 (0.026)</td>
</tr>
<tr>
<td>Cohesiveness</td>
<td>0.16 (0.114)</td>
<td>-0.49 (0.096)†</td>
</tr>
<tr>
<td>Group orientation</td>
<td>0.33 (0.098)†</td>
<td>0.17 (0.100)</td>
</tr>
<tr>
<td>Cohesiveness ( \times ) Orientation</td>
<td>0.36 (0.087)†</td>
<td>0.14 (0.108)</td>
</tr>
<tr>
<td>Group autonomy</td>
<td>0.23 (0.106)</td>
<td>-0.25 (0.109)*</td>
</tr>
<tr>
<td>Individual autonomy</td>
<td>-0.24 (0.110)*</td>
<td>0.24 (0.101)*</td>
</tr>
<tr>
<td>( R^2 )</td>
<td>0.68</td>
<td>0.78</td>
</tr>
<tr>
<td>Adjusted ( R^2 )</td>
<td>0.41</td>
<td>0.56</td>
</tr>
<tr>
<td>Regression ( F )</td>
<td>8.45†</td>
<td>13.56†</td>
</tr>
<tr>
<td>( df )</td>
<td>6.59</td>
<td>6.54</td>
</tr>
</tbody>
</table>

*\( p < 0.05; \)†\( p < 0.01.\)

The beta for individual autonomy was -0.24 (\( p < 0.05 \)) in the DCFS, and 0.24 (\( p < 0.05 \)) in the military.

The results demonstrated a reduction in the standardized beta coefficients in all cases. The decrease in the variance explained by the direct relationship when the mediator terms are added is accounted for by those terms. This indicates moderate support for Hypothesis 4a, as it was only tested in the military (indicating partial mediation) and strong support for Hypothesis 4b, which was supported in both samples (indicating partial mediation in the DCFS and the military).

Conclusions

The data show that both group and individual autonomy relate to group effectiveness in the two organizations studied. The group cohesiveness/group performance orientation interaction was found to partially mediate this relationship. The data thus also indicate, as has been suggested in the past, that the group’s performance orientation moderates the relationship between group
cohesiveness and group effectiveness. In summary, the results show some support for hypothesis 1, indicating a significant positive relationship between group autonomy and group cohesiveness in the DCFS sample, but not in the military. Hypothesis 2, the predicted negative relationship between individual autonomy and group cohesiveness, was supported in both cases.

This study has contributed to the study of autonomy in work groups in several ways. It has added to the small, but growing, number of empirically rigorous studies of autonomous groups and self-management in organizational settings (Guzzo and Dickson, 1996; Cohen and Bailey, 1997). By studying a large number of work groups in two organizations, using validated measures, more reliable and generalizable conclusions may be drawn. It is important to note that, even though data were gathered from two separate organizations, both are large government organizations, and so the findings may not generalize to all organizations. Given the very large contextual differences between a social service agency and a military infantry regiment, however, the generalizability may not be limited purely to large government bureaucracies.

Second, this study has attempted to add much needed integration (Cohen et al., 1996) to the study of self-management and autonomy. It extends prior research by suggesting a way by which the degree of autonomy, at both the individual and the group level, can simultaneously influence work group cohesiveness, and indirectly, work group effectiveness. The findings of the study are crucial to a better understanding of self-management in groups. The design of self-managed work teams often involves autonomy at both individual and group levels (Wellins et al., 1991; Hackman, 1986), but researchers mostly study self-management as a categorical feature of groups—examining performance differences between self-managed teams versus non-self-managed teams—as opposed to studying the effects of different types of autonomy across all ‘types’ of teams. Including autonomy as a continuous variable in an analysis of group effectiveness, as opposed to comparing the effectiveness of one category of groups versus another, captures more information in the analysis, and allows for a better and more detailed understanding of a complex relationship.

A practical implication is that, if an organization using work groups or teams believes in ‘empowering’ its employees by granting them more autonomy, or letting teams be more self-managing, for example, great care must be taken in the implementation. As this study has shown, autonomy at the individual level may conflict with autonomy at the group level, producing countervailing influence on the cohesiveness and, indirectly, effectiveness of the work group. An organization could thus experience little or no results from empowering employees, if such empowerment included granting autonomy at both individual and group levels. Depending on the structure of the organization, and the nature of the work flow and task technology, the location of autonomy may be critical to organizational effectiveness.

This study also follows the recommendations of researchers to study groups in the organizational contexts in which they are embedded (Mowday and Sutton, 1993; Orasanu and Salas, 1993; Argote and McGrath, 1993) as opposed to ‘context-stripped’ laboratory settings (McGrath, 1991). There are clear contextual differences between the two sites in this study, and while such differences have not been addressed in this study, future research should focus on identifying specific organizational features or characteristics that may influence the relationships in question. It has been noted, for example, that task interdependence is one of several aspects of an organization’s context that may influence the cohesiveness–performance links in work groups (Langfred and Shanley, 1997; Shanley and Langfred, 1998). How organizational context may affect the relationships between autonomy and performance in work groups is an important area to be addressed in future research.

Theoretical implications of this study include more complex modelling of the causes of groups effectiveness, especially with respect to the simultaneous and indirect effects of individual and
group autonomy. While studies of self-managed teams in organizations contribute to overall knowledge, the importance of a theoretical model for why autonomy in a group or team should affect performance is emphasized by the complex relationship between different levels of autonomy and effectiveness revealed in this study. Possible other mediating factors between autonomy and effectiveness, such as motivation and satisfaction, must also be explored to develop a more comprehensive model of the causal links between these constructs.

In conclusion, the proposed model of the relationship between individual and group autonomy and group effectiveness was largely supported in the data collected. However, it is evident that there is a considerable need for more extensive research, particularly in organizational settings, in order to construct a more complex, but also more robust and generalizable, model. Such research should be focused on further exploring other mechanisms that may mediate the effects of autonomy on group effectiveness, as well as examining how specific contextual characteristics of different types of organizations may affect these relationships.

Appendix: Confirmatory factor analysis results

<table>
<thead>
<tr>
<th>Construct</th>
<th>DCFS Factor loading</th>
<th>Military Factor loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cohesiveness</td>
<td>0.662</td>
<td>0.888</td>
</tr>
<tr>
<td></td>
<td>0.882</td>
<td>0.835</td>
</tr>
<tr>
<td></td>
<td>0.532</td>
<td>0.795</td>
</tr>
<tr>
<td></td>
<td>0.917</td>
<td></td>
</tr>
<tr>
<td>Individual autonomy</td>
<td>0.568</td>
<td>0.834</td>
</tr>
<tr>
<td></td>
<td>0.500</td>
<td>0.921</td>
</tr>
<tr>
<td></td>
<td>0.872</td>
<td>0.719</td>
</tr>
<tr>
<td></td>
<td>0.522</td>
<td>0.853</td>
</tr>
<tr>
<td>Group performance orientation</td>
<td>0.725</td>
<td>0.895</td>
</tr>
<tr>
<td></td>
<td>0.876</td>
<td>0.825</td>
</tr>
<tr>
<td></td>
<td>0.867</td>
<td>0.996</td>
</tr>
<tr>
<td>Comparative fit index (CFI):</td>
<td>0.933</td>
<td>0.950</td>
</tr>
<tr>
<td>Adjusted goodness-of-fit (AGFI):</td>
<td>0.897</td>
<td>0.857</td>
</tr>
<tr>
<td>Bollen incremental fit index (IFI):</td>
<td>0.934</td>
<td>0.950</td>
</tr>
<tr>
<td>Chi-square (df):</td>
<td>187.191 (59)</td>
<td>374.441 (72)</td>
</tr>
</tbody>
</table>

References


