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INNOVATION IN WORK TEAMS

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We review the literature on innovation in work teams published in recent years, with the aim of identifying factors that play an important role in the innovation process. According to theoretical models and the results of empirical studies, these factors are as follows: task characteristics, external demands, team composition, various team states and processes (task orientation, shared goals and vision, cooperative relationships, reflexivity, participation, support for innovation, and conflict management), and leadership. We also stress the need for more research on the consequences of team innovation.
Key words: *innovation, work teams, team processes, leadership.*

En este trabajo se revisa la literatura más reciente sobre innovación en los equipos de trabajo, con el objetivo de mostrar cuáles son los factores más importantes que intervienen en el proceso de innovación. De acuerdo con los modelos teóricos y los estudios empíricos realizados, tales factores son: las características de las tareas que realiza el equipo, las demandas externas, la composición del equipo, un conjunto de procesos y estados grupales (orientación a la tarea, objetivos y visión compartidos, relaciones de cooperación, reflexividad, participación, apoyo a la innovación, y gestión del conflicto), y el liderazgo. Asimismo, se resalta la necesidad de investigar las consecuencias de la innovación para los equipos de trabajo y sus miembros.
Palabras clave: *innovación, equipos de trabajo, procesos grupales, liderazgo.*

THE IMPORTANCE OF INNOVATION IN ORGANIZATIONS

One of the conclusions of the 34th Annual Conference of the European Association of Industrial Economics, held in Valencia in 2007, was that "innovation is at the root of countries' economic growth and productivity. Countries that generate strategies of promotion of innovation will ensure their growth and competitiveness with other countries with low production costs" ("Los expertos en Economía Industrial", 2007). One of the goals of sector-oriented and cross-sector policies in the national and international context for the promotion of competitiveness is that organizations which shape the productive fabric of our society are innovative. There are plenty of reasons for such a requirement. One of these is its contribution to economic growth and social welfare. But moreover, in a globalized world in which market conditions can change rapidly, regulations change more frequently than before in the different fields of activity (local, regional, national, international), the demands made on organizations are more and more complex, and competitiveness is on the increase, organizations must be innovative in order to survive (Amabile, 1983; De Dreu, 2006; Tjosvold, Tang, & West, 2004). Perhaps because of this, some authors argue that the factor most affecting the competitiveness of organizations is the will of management to promote innovation (Botkin, 1985).

It is becoming more and more common for organizations, in order to stimulate innovation and increase their response capacity, to develop structures in which work teams are the basic unit (Anderson & West, 1998; Pearce & Ensley, 2004; Tjosvold et al., 2004). An assumption underlying this strategy is the belief that the confluence of different perspectives and skills in work teams will facilitate the development of new ideas. Moreover, the application of such ideas will require the collaboration of several people working in coordinated fashion (Axtell, Holman, & Wall, 2006; Fay, Borrill, Amir, Haward, & West, 2006). If an innovation conceived and developed by a work team is successful, it can be incorporated in other areas of the organization, giving rise to a new practice at the organizational level (Anderson & West, 1998; Caldwell & O'Reilly, 2003).

Therefore, in the present article we review the most recent literature on innovation in work teams, with the aim of identifying the most important factors involved in the innovation process. Other recent reviews can be consulted in Anderson, De Dreu and Nijstad (2004), West (2002a), and West and Hirst (2003).

WHAT IS INNOVATION?

Before focusing our attention on the factors mentioned above, it should be made clear what is understood by innovation. According to West and Farr (1990), innovation in the work context is "the intentional introduction and application within a role, group, or organization of ideas, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, the group, organization or wider society" (p. 9). This definition permits a distinction to be

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drawn between innovation and creativity. The latter refers to the process of generation of new ideas, while innovation requires the application of such new ideas with a view to promoting certain changes and improvements (West, 2002b). Thus, innovation includes creativity, but is something more than it. Another aspect of the above definition that should be highlighted is that an innovation must be new for the structural unit involved (job or role, team, organization). It is a question, then, of relative, not absolute, novelty (Anderson et al., 2004; West, 2002b). Thus, what for one work team may be highly novel, for another might be common practice.

Likewise, innovations in the work context can be rated on the basis of a series of criteria. West and Anderson (1996) proposed the following: 1. Magnitude (importance of the consequences of the changes made), 2. Radicality (degree to which the status quo is altered as a consequence of the changes made), 3. Novelty (degree to which the changes made are novel), and 4. Impact (extent to which the changes made improve the effectiveness of the unit involved).

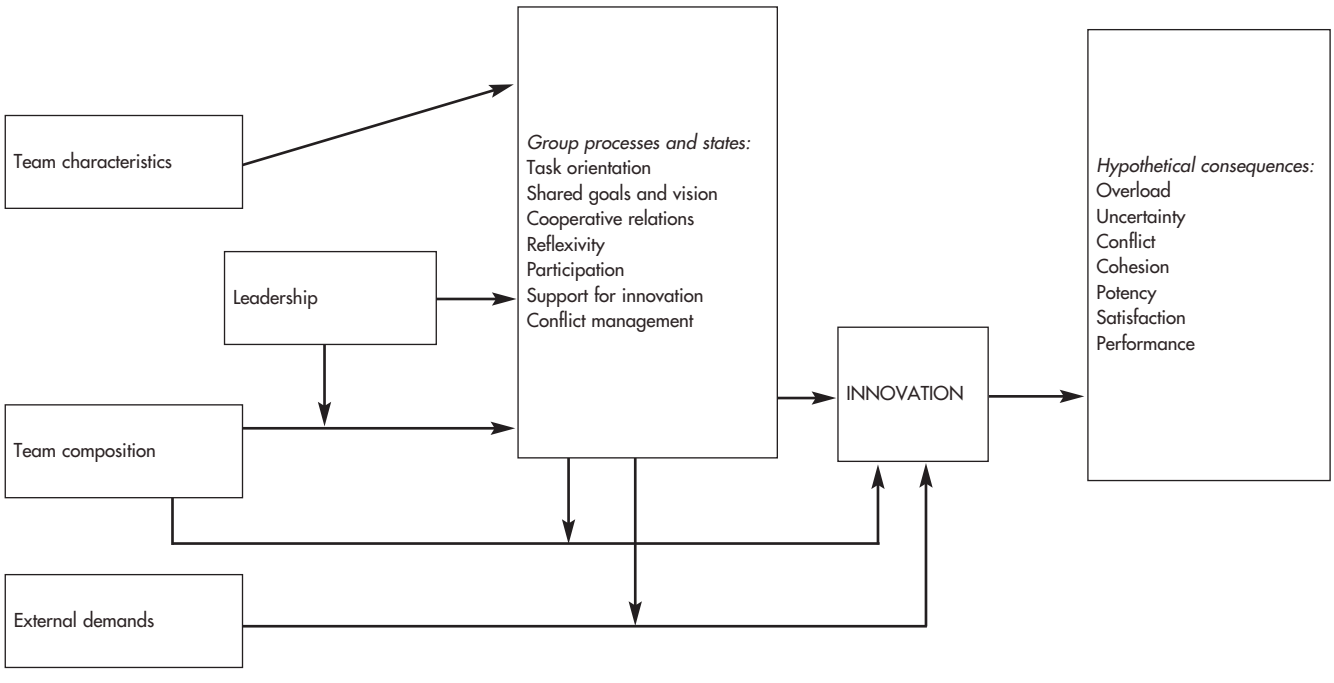
Finally, it should be pointed out that innovations in organizations frequently occur as the result of an iterative, cyclical – rather than linear – process, in which it is difficult to establish an ordered sequence of clearly defined phases (Anderson et al., 2004). Creativity plays a crucial role in the early phases of the innovation process, when team members must develop new ideas to respond to certain needs and demands. Nevertheless, it is the factors that stimulate and facilitate the application of these ideas that play the most relevant role in the process of innovation (West, 2002b). We shall consider such factors in the following section.

FACTORS INVOLVED IN THE INNOVATION PROCESS

The factors we shall analyze in this section have been highlighted in some theoretical models on innovation in work teams (e.g., Anderson et al., 2004; Janssen, van de Vliert, & West, 2004; West, 2002a; West & Hirst, 2003) and/or studied in empirical research. Theoretical models provide theoretical support for the importance of the factors considered, whilst empirical research offers evidence on the role played by such factors in real work teams. Both are important elements for understanding the innovation process in work teams. For reasons of space we shall concentrate here on factors referring to work teams. However, it should be borne in mind that the activity of work teams takes place in a higher-level context (the organization), so that we can expect some of its properties (e.g., climate and culture of the organization, its structure, size and age, and the sector of activity in which the organization is involved) to influence the factors we shall analyze presently (see West & Hirst, 2003).

The theoretical models that have inspired the research on innovation in work teams reflect the influence of the *inputs-processes-ouputs* heuristic model (McGrath, 1964). In this

FIGURE 1
FACTORS INVOLVED IN THE INNOVATION PROCESS IN WORK TEAMS



framework, innovation is considered as a team output, and group processes as a mediator of the relations between team inputs and innovation[1] (e.g., Drach-Zahavy & Somech, 2001). However, as we shall see presently, recent studies have shown that the relations between innovation and its hypothetical antecedents are more complex than they may appear at first sight from the *inputs-processes-outputs* heuristic model, since some of the group processes also act as modulators of the relationship between certain inputs (e.g., functional diversity) and innovation (Fay et al., 2006).

Figure 1 shows a model that helps to structure and organize the analysis of the most important factors involved in the innovation process in work teams. The model identifies a series of input factors (characteristics of team tasks, external demands, and team composition), a set of group processes and states, and leadership, as antecedents of innovation, as well as considering the possible consequences of innovation for work teams.

Task characteristics

A work team is a group of individuals who: a. carry out a set of tasks relevant for the organization to which they belong, b. share one or more goals, c. frequently interact to carry out their tasks, d. show a relationship of functional interdependence, e. have a team identity that permits them to be distinguished from other units, and f. form part of a higher-level unit (the organization) that places limits and restrictions on the team and influences its exchanges with other units of the organization (Kozlowski & Bell, 2003). A work team's tasks contribute to defining its structure, functioning and composition (West, 2002a). According to this author, the extent to which such tasks enhance the autonomy of the team and provide opportunities for learning, development and social interaction, and the degree to which the team participates in the task from beginning to end (identity of the task), influence the team's level of task-orientation (or intrinsic motivation). This construct refers to a collective motivational state that is the product of the individuals' responses to the properties of the team's tasks (Amabile, 1983), which will in turn influence its level of creativity and innovation. This sequence of relationships is described in Amabile's (1983) componential model of creativity, whereby intrinsic motivation is considered as one of the factors that enhance creativity. Thus, from this perspective it is proposed that the influence of task characteristics on the team's level of innovation is mediated by its degree of task-orientation.

External demands

Work teams also innovate in response to external demands and threats, such as uncertainty about the future, time pressure and competitiveness (West, 2002a). From this perspective, innovation is a strategy for reducing such threats (Menor, Kristal, & Rosenzweig, 2007). Moreover, external demands play a motivational role. Innovation implies modifying the status quo and certain patterns of functioning. This provokes resistance to change and conflict, the management of which requires constant effort – effort that must be motivated, at least partially, by external demands (West, 2002a).

Some empirical studies highlight the role of external demands. For example, Borill and cols. (2000) found, in a sample of healthcare teams, that the most innovative teams were those located in areas with poor health indicators in the population (high external demand), which showed high levels of participation in decision-making. That is, external demands and participation in the team interacted to predict innovation.

The available empirical evidence on the relationship between external demands and innovation in work teams is scarce. An interesting hypothesis to consider is that the relation can be represented by an inverted U-shaped curve, since it makes sense to expect that extremely high levels of external demands may become dysfunctional (West, 2002a).

Team composition

The relationship between team members' characteristics and team outputs has been the object of research for the last few decades. A large part of such research has explored the composition of teams through indicators of diversity (Williams & O'Reilly, 1998; Jackson, Joshi, & Erhardt, 2003; van Knippenberg & Schippers, 2007). The diversity of a work team refers to the extent to which the individuals making it up differ with regard to any of their attributes, either visible/superficial (e.g., sex, age), or invisible/profound (e.g., education, area of specialization, values, personality). It is reasonable to assume that the greater the range of cognitive resources (information, knowledge, opinions, perspectives) and competences with which the diversity is associated, the better disposed the team will be to develop novel solutions to the demands and problems it faces (Polzer, Milton, & Swann, 2002; Webber & Donahue, 2001). For example, a multidisciplinary team in a market research consultancy developing a project for a client that is made up of a psychologist, a sociologist, a marketing expert, a computer specialist and a statistician, , will be able to generate more novel, richer and more diverse responses to the client's demands than a team made up solely of marketing experts. This hypothesis of a positive linear relationship between diversity of information and competencies, on the one hand, and innovation, on the other, based on theories of information and decision-making (Williams & O'Reilly, 1998), is at the basis of some empirical studies. Thus, Bantel and Jackson

[1] The term *inputs* refers to the composition and resources of work teams, whilst *processes* are the activities of team members for carrying out their tasks (Kozlowski & Ilgen, 2006).

(1989) found, in a sample of managerial teams, that diversity in relation to the functional area of the organization from which the managers came was positively related to the number of innovations introduced. Later, Drach-Zahavy and Somech (2001) found, in a study on teams in schools, that functional diversity (diversity related to the professional roles of team members) correlated positively with the team's innovation. Likewise, González-Romá and West (2005) observed, in a sample of primary healthcare teams, that functional diversity was positively related to the quantity and quality of the innovations applied by the teams. More recently, in the cinema industry, Perretti and Negro (2007) found the inclusion of new members in the production teams to be positively related to two measures of genre innovation.

Nevertheless, the relationship may not be as simple as it appears. Many researchers that have studied the relationship between diversity and work team outcomes have obtained contradictory and inconclusive results (see the reviews by Williams & O'Reilly, 1998; Jackson et al., 2003; van Knippenberg & Schippers, 2007). The differences between team members may trigger processes of social categorization (Tajfel, 1981; Turner, 1987) that result in the emergence of sub-groups within the team (e.g., veterans and "newcomers"). These sub-groups can initiate a process of differentiation and discrimination that affects the team's capacity for working in a coordinated manner, and hence, its capacity for applying novel ideas.

Recently, therefore, authors have stressed the notion that for diversity in work teams to contribute to innovation it must be accompanied by group processes that facilitate integration of team members and constructive discussion of different opinions and ideas (West, 2002a). Work in support of this idea includes that of O'Reilly, Williams and Barsade (1998), who observed in a sample of teams in an industrial organization with "a nationwide reputation for sound management and diversity" (p. 191) that ethnic diversity of the teams positively predicted their innovation level.

Fay et al. (2006) found that the positive relationship between number of professional roles present in multi-professional health teams and quality of innovations was modulated by the quality of the group processes that developed within the teams, so that this positive relationship was stronger the better the group processes considered (shared vision, psychological security, task-orientation and social interaction). That is, functional diversity contributed to innovation if quality group processes took place in the teams.

Somech (2006) observed, in a sample of primary healthcare teams, that the relationship between functional diversity and group reflexivity (i.e., the extent to which group members reflected in a collective way on the team's goals, strategies, functioning and environment) was modulated by participative leadership (i.e., the extent to which team members participated in decision-making). Moreover, reflexivity totally mediated the relationship between the interaction 'functional diversity*participative leadership' and the team's innovation. These results imply that teams with high functional diversity and a high degree of participative leadership are those that show the highest level of group reflexivity, which is in turn associated with a higher level of innovation.

The results discussed above suggest the importance of certain group processes as facilitators of innovation. We shall consider such processes in the following section.

Group processes

A large part of the research carried out on innovation in work teams has attempted to determine which group processes promote innovation. Theoretically, these processes are the most immediate antecedents of innovation (see Figure 1). In this section we shall focus on a series of group processes on which the most recent studies have contributed empirical evidence.

Developing shared team goals and a shared team vision . Clarifying and sharing the goals of the team, as well as a vision of its future, can initially facilitate innovation guiding the production and filtering of new ideas (West, 2002a). Moreover, in order to better coordinate their efforts, team members must understand what the shared goals to be achieved are, and the type of team they want to contribute to constructing. Finally, shared goals and a shared vision will enable the team to achieve the degree of commitment necessary for overcoming obstacles and resistance during the application of new ideas (West & Anderson, 1996).

The empirical evidence available supports the importance of this process. West and Anderson (1996), in a sample of management teams, and Borrill and cols. (2000), in a sample of healthcare teams, found that clarity of the team's goals and commitment to them were positively related to its innovation. Pearce and Ensley (2004), in a sample of teams at an automotive parts factory, observed that a shared vision of the future state of the team positively predicted teams' level of innovation.

Developing cooperative relationships. Implementing new ideas in work teams requires the collaboration of several people. Tjosvold (2002) has highlighted the role of cooperative relationships in facilitating innovation. In situations of cooperation, individuals believe that the achievements of other members of the team contribute to their own achievements, and to achievement of the team's shared goals. When one person makes progress, they all gain. In situations of competition, individuals believe that when someone achieves their goals, other members will have more difficulty achieving theirs. When one person makes progress, the rest lose out. Tjosvold (2002) argues that in situations of cooperation it is easier to interact through open consideration and debating of points of view that differ from one's own, which facilitates the production of novel

ideas. These patterns of interaction also contribute to creating a climate of psychological safety within the team that does not inhibit the expression of new ideas. Furthermore, they promote social support among team members and their commitment to the proposals developed – aspects which will be of crucial importance during the phase of implementation of the new ideas.

The study by Tjosvold and cols. (2004) provides evidence in support of some of the relationships proposed above. In a sample of work teams from different types of organization, these authors observed that the relationship between cooperation and innovation was mediated by group reflexivity; that is, the greater the degree of cooperation in the teams, the higher their level of reflexivity, which was in turn related to a greater degree of innovation. In contrast, the greater the extent of the competitive relations presented by the teams, the lower their level of reflexivity, and consequently, their level of innovation.

Reflexivity. The study by Tjosvold and cols. cited above highlights the significant role played by reflexivity as an immediate antecedent of innovation. Reflexivity is the degree to which team members reflect openly and collectively on the team's goals, strategies, functioning and environment, and act in consequence to respond to certain circumstances, internal or external, current or future (West, 1996). Group reflexivity has three nuclear elements: reflection, planning and action (West, 2000). Reflexivity offers opportunities for innovation, since it implies that the work team is continually reviewing its own reality and making plans to change it.

Diverse studies have shown that reflexivity predicts various indicators of the efficacy of work teams (see West, 2002a). As regards its relationship to innovation, the above-cited studies by Tjosvold et al. (2004) and Somech (2006) support the existence of a positive relationship.

Participation in decision-making. Active participation of the members of work teams in decision-making facilitates social interaction and the distribution of information, knowledge and perspectives. In such conditions, it is highly likely that some ideas give way to other, higher-quality ones. Moreover, participation helps to reduce resistance to change and promotes commitment to the new ideas developed, thus contributing to their implementation by the work team (West & Hirst, 2003).

West and Anderson (1996) showed that participation in the team was positively related to a global measure of innovation, and of all the predictors considered, participation was that which displayed the strongest relation to number of innovations implemented.

Support for innovation. In teams in which members are encouraged to contribute new ideas, the application of such ideas is approved, and support and resources are offered for that application, innovation will be greater than in teams in which support for innovation is low (West, 2002a). Support for innovation also includes tolerance of error (Agrell & Gustafson, 1996).

In the above-mentioned study by West and Anderson (1996) it was observed that support for innovation was the predictor showing the strongest relationship to the global innovation measure employed, and to innovation novelty. Caldwell and O'Reilly (2003) found a positive relation between a measure of support for creativity and innovation in teams.

Group conflict and its management. Conflict can emerge in work teams as a result of discrepancies among its members over task content, work goals and the procedures for achieving them (task conflict), and of the perception of personal incompatibilities and differences of values (relational conflict) (Gamero, González-Romá & Peiró, in press). Relational conflict hinders the processing of relevant information, thus prejudicing team performance. Moreover, it has a negative effect on the affective response of team members (De Dreu & Weingart, 2003; Gamero et al., in press). As regards task conflict and its relationship to team outcomes, there is some degree of controversy. Some researchers are of the view that task conflict promotes open debate on ideas, which helps the team to analyze in greater detail the information on the tasks in hand, and that this in turn leads to better performance (Jehn, Northcraft, & Neale, 1999). However, in their meta-analysis, De Dreu and Weingart (2003) found a negative correlation between task conflict and group performance.

Studies exploring the relationship between group conflict and innovation in work teams are as yet somewhat scarce. Recently, De Dreu (2006) tested the hypothesis that the relationship between task conflict and innovation could be represented by an inverted U-shaped curve. The idea is that a moderate level of conflict produces the necessary activation for making a detailed analysis of the problem in question, which facilitates the production of novel ideas. Moreover, it motivates the team members to work for resolving their differences. When level of conflict is very low, this initial level of activation is lacking. When it is very high, the associated interpersonal tension prevents team members from focusing on the problem at hand and producing novel solutions, also reducing motivation to work cooperatively on the selection and application of solutions (De Dreu, 2006). The results obtained by De Dreu supported the curvilinear relationship between task conflict and innovation, also showing that this relation was mediated by the use of cooperative problem-solving strategies, so that task conflict presented a curvilinear relation with use of the mentioned strategies, and this variable showed a positive relationship with team innovation.

The importance of a cooperative approach to conflict management, whose significant features would include shared goals, efforts to understand others' opinions, orientation toward mutual benefit and the development of solutions incorporating

diverse points of view, is also supported by the results of the study by Chen, Liu and Tjosvold (2005). These researchers found that the use of a cooperative approach correlated positively with innovation in the teams studied, whilst the use of competitive strategies, characterized by pressure and intimidation for 'convincing' others, and the perception of conflict as a win-or-lose situation, correlated negatively.

Leadership

Leaders of work teams exercise significant influence on the perceptions, affective responses and behaviours of members of work teams (González-Romá, Peiró, & Tordera, 2002; Sy, Côté, & Saavedra, 2005; Schaubroeck, Lam, & Cha, 2007). Diverse studies have shown that the quality of leadership influences team performance (Burke et al., 2006; G. Chen, Kirkman, Kanfer, Allen, & Rosen, 2007), and although the number of studies dealing with the relationship between leadership and innovation in work teams is still relatively small[2] (West & Hirst, 2003), there are good reasons to consider leadership as an important factor in the innovation process in teams.

Agrell and Gustafson (1996) highlight the relevance, to the relationship between leadership and innovation, of the points made by Maier (1970) in his studies on the influence of leadership on problem-solving and creativity in groups. The results of the experiments carried out by Maier and cols. point to a series of principles for action, including: a. leaders should promote profound analysis of the situation and stimulate the development of a large number of alternative solutions, b. they should protect the phase in which ideas are developed from criticism within the group, which can inhibit such development. In this phase, criticism should be replaced by alternative solutions, c. they should ensure that all opinions are expressed, d. they should express their positive expectations about group members, since this contributes to the generation of new ideas, and e. they should avoid expressing their ideas at the beginning of the discussion, since their opinions do not tend to be adequately valued.

Recently, Mumford, Scott Gaddis and Strange (2002) reviewed the literature on leadership of groups involved in creative work. In their conclusions, Mumford and cols. propose an integrative leadership style that includes three principal functions: 1. Generation of ideas: facilitating the generation of ideas, for which it is necessary to construct a suitable climate; 2. Structuring of ideas: guiding the assessment of ideas and the work carried out, setting out the expected results and identifying and integrating the projects to be developed; and 3. Promotion of ideas: obtaining support and resources for the application of ideas.

In carrying out their functions, leaders can facilitate innovation by contributing to the development of certain group processes. By clarifying the team's goals and creating a shared vision of it, stimulating participation in decision-making, periodically making time for collective team reflection, managing conflict in a cooperative fashion, and offering support for the implementation of new ideas, leaders can contribute to innovation in work teams. Dackert, Loov and Martensson (2004) obtained positive correlations between leadership oriented toward persons and toward change and development, on the one hand, and support for innovation, on the other. Moreover, person-oriented leadership also correlated positively with participation in the team. West et al. (2003), in different samples of healthcare teams, found that clarity with regard to who was in charge was positively related to a global measure of group processes that included indicators of participation in the team, support for innovation, clarity of and commitment to team goals, and use of constructive controversy. Furthermore, they observed a positive relationship between the global measure of group processes and innovation, so that the relationship between clarity of leadership and innovation in teams was mediated by group processes. Finally, as pointed out earlier, it should be borne in mind that leadership can also modulate the relationship between team composition and some group processes (see Somech, 2006).

Thus, the studies carried out to date indicate that leadership of work teams can contribute in a significant way to promoting innovation (Mumford & Licuanan, 2004).

THE CONSEQUENCES OF INNOVATION

As we pointed out earlier, in the theoretical models that have inspired research on innovation in work teams, it appears as a team outcome. Therefore, except on a few occasions (e.g., Pearce & Ensley, 2004), empirical studies have treated innovation as a criterion or dependent variable, ignoring the influence innovation may have on certain states and processes of teams (Anderson et al., 2004).

Innovation may imply new tasks for the members of work teams, thus contributing to an increase in their workload (Anderson et al., 2004; Janssen et al., 2004). Likewise, the changes made may generate some ambiguity and uncertainty, exposing the team to conflict, both internal and with other units of the organization (Anderson et al., 2004; Janssen et al., 2004). All of this may, in the short term, have a negative effect on group efficacy (De Dreu, 2006). Nevertheless, the potential consequences will depend on the team's resources, on group processes (e.g., conflict management), and on the result of the application of the new ideas (Janssen et al., 2004). If the last of these is successful, the team's potency (that is, the collective

[2] The journal *Leadership Quarterly* devoted, in 2003 and 2004, two special issues to the relations between leadership, creativity and innovation.

belief about its efficacy), its cohesion, the satisfaction of its members and its performance will all improve.

The promising results of the scarce research on the consequences of innovation in work teams suggest that in future it will be necessary to devote more attention to this question. Pearce and Ensley (2004) observed that the extent to which teams held a shared view about their future state, on the one hand, and innovation, on the other, were reciprocally and positively related, so that, in a type of virtuous circle, greater shared vision was associated with higher levels of innovation, which in turn contributed to greater shared vision.

FINAL REMARKS

Research in this field has generated a body of knowledge that can be used for designing interventions whose final goal is to promote innovation in organizations. On the basis of the review carried out, it can be expected that a team which performs motivating tasks in context with a certain level of demands, and which has a leader who promotes the group processes considered, will be an innovative team. Likewise, depending on the relationships between leadership, group processes and innovation, it can be expected that interventions aimed at promoting certain skills in team leaders, and at developing the group processes analyzed, will have notable effects. In order to stimulate innovation, team leaders should possess the technical and professional expertise corresponding to the team's area of activity, skills for developing creativity that permit them to mobilize the potential of their followers, and integration and managerial skills that help them to oversee the implementation of changes (Mumford & Licuanan, 2004; West & Hirst, 2003). The selection, socialization and training of leaders in an organization can all contribute to their developing competencies for promoting innovation (Chen et al., 2005). At the same time, bearing in mind that innovation often requires teamwork, the selection, socialization and formation of the members of an organization should take into account teamwork-relevant competencies (see Stevens & Campion, 1994, 1999). Such competencies will facilitate the development of group processes that have a positive influence on innovation.

As we argued above, in the coming years research on innovation in work teams should focus on the consequences of innovation (Anderson et al., 2004; Janssen et al., 2004). Likewise, considering that teams operate in a broader context (the organization), it will be necessary to use multi-level research designs that permit researchers to determine which properties of the organization stimulate innovation in teams and which inhibit it, as well as how innovation in a team influences the experiences of the individuals that make it up.

Innovation is an iterative, cyclical process, rather than a linear one, and which develops over time. However, the majority of the studies reviewed are cross-sectional, and hence present a series of limitations to an understanding of the dynamic of this process in real situations. There is a need for longitudinal studies that cover the innovation process in a broader fashion, from the initial phases whose most important feature is the generation of ideas, to the periods in which the consequences of innovation can be observed.

There is considerable variety in the measures of innovation employed in the studies reviewed: from global self-report measures made up of two items (Caldwell & O'Reilly, 2003) to the use of external experts who assessed each one of the innovations implemented by teams over a given period in relation to a series of innovation dimensions (magnitude, radicality, novelty and impact) (e.g., West et al., 2003). In our view it would be advantageous, in future, to increase the use of measurement designs similar to those employed by West and cols. (2003). This would not only help to avoid certain biases and undesired effects, but would also make possible more detailed analysis of innovation.

Innovation contributes to the survival of organizations operating in changing environments. But in addition to this it helps to develop the creativity and social skills of those working in organizations, as well as to improve the context in which they do their job. These are good reasons to promote innovation in organizations and in work teams, and indeed to support its study, which will ultimately allow us to improve our understanding of the phenomenon and manage it more appropriately.

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REFERENCES

Agrell, A., & Gustafson, R. (1996). Innovation and creativity in work groups. In M. A. West (Ed.), *The handbook of work group psychology* (pp. 317-344). Chichester: John Wiley.

Amabile, T. M. (1983). The social psychology of creativity: A componential conceptualization. *Journal of personality and social psychology, 45*(2), 357-376.

Anderson, N., De Dreu, C. K. W., & Nijstad, B. A. (2004). The routinization of innovation research: A constructively critical review of the state-of-the-science. *Journal of Organizational Behavior, 25*(2), 147-173.

Anderson, N. R., & West, M. A. (1998). Measuring climate for work group innovation: Development and validation of the team climate inventory. *Journal of Organizational Behavior, 19*(3), 235-258.

Axtell, C., Holman, D., & Wall, T. (2006). Promoting innovation: A change study. *Journal of Occupational and Organizational Psychology, 79*, 509-516.

Bantel, K., & Jackson, S. E. (1989). Top management and innovations in banking: Does the composition of the team make a difference? *Strategic Management Journal, 10*, 107-124.

Borrill, C. S., Carletta, J., Carter, A. J., Dawson, J., Garrod, S., Rees, A., et al. (2000). *The effectiveness of health care teams in the national health service*. Birmingham, UK: Aston Centre for Health Service Organization.

Botkin, J. (1985). Transforming creativity into innovation: Processes, prospects, and problems. In R. Kuhn (Ed.), *Frontiers in creative and innovative management* (pp. 25-40). Cambridge, MA: Ballinger.

Caldwell, D. F., & O'Reilly, C. A. (2003). The determinants of team-based innovation in organizations - the role of social influence. *Small Group Research, 34*(4), 497-517.

Chen, G. Q., Liu, C. H., & Tjosvold, D. (2005). Conflict management for effective top management teams and innovation in china. *Journal of Management Studies, 42*(2), 277-300.

Chen, G., Kirkman, B. L., Kanfer, R., Allen, D., & Rosen, B. (2007). A multilevel study of leadership, empowerment, and performance in teams. *Journal of Applied Psychology, 92*(2), 331-346.

Dackert, I., Loov, L. A., & Martensson, M. (2004). Leadership and climate for innovation in teams. *Economic and Industrial Democracy, 25*(2), 301-318.

De Dreu, C. K. W. (2006). When too little or too much hurts: Evidence for a curvilinear relationship between task conflict and innovation in teams. *Journal of Management, 32*(1), 83-107.

De Dreu, C. K. W., & Weingart, L. R. (2003). Task versus relationship conflict, team performance, and team member satisfaction: A meta-analysis. *Journal of Applied Psychology, 88*(4), 741-749.

Drach-Zahavy, A., & Somech, A. (2001). Understanding team innovation: The role of team processes and structures. *Group Dynamics-Theory Research and Practice, 5*(2), 111-123.

Fay, D., Borrill, C., Amir, Z., Haward, R., & West, M. A. (2006). Getting the most out of multidisciplinary teams: A multi-sample study of team innovation in health care. *Journal of Occupational and Organizational Psychology, 79*, 553-567.

Gamero, N. González-Romá, V. & Peiró, J. M. (in press). The Influence of Intra-Team Conflict on Work Teams` Affective Climate: A Longitudinal Study. *Journal of Occupational and Organizational Psychology*.

González-Romá, V., & West, M. A. (2005). *Demographic diversity and team innovation: Testing linear and non-linear relationship models*. Unpublished manuscript.

González-Romá, V., Peiró, J. M., & Tordera, N. (2002). An examination of the antecedents and moderator influences of climate strength. *Journal of Applied Psychology, 87*(3), 465-473.

Jackson, S. E., Joshi, A., & Erhardt, N. L. (2003). Recent research on team and organizational diversity: SWOT analysis and implications. *Journal of Management, 29*(6), 801-830.

Janssen, O., van de Vliert, E., & West, M. (2004). The bright and dark sides of individual and group innovation: A special issue introduction. *Journal of Organizational Behavior, 25*(2), 129-145.

Jehn, K. A., Northcraft, G. B., & Neale, M. A. (1999). Why differences make a difference: A field study of diversity, conflict, and performance in workgroups. *Administrative Science Quarterly, 44*(4), 741-763.

Kozlowski, S. W. J., & Bell, B. S. (2003). Work groups and teams in organizations. In W. C. Borman, D. I. Ilgen & R. J. Klimoski (Eds), *Handbook of psychology, Volume 12, Industrial and organizational psychology* (pp. 333-376). Hoboken, NJ: John Wiley & Sons.

Los expertos en Economía Industrial señalan a la innovación como el principal reto para los próximos años (2007, 17-23 Septiembre). *Noticies. Fundació Universitat-Empres de València*, p. 1.

Maier, N. R. F. (1970). *Problem solving and creativity in individuals and groups*. Monterrey, CA: Brooks/Cole.

McGrath, J. E. (1964). *Social psychology: A brief introduction*. New York: Holt, Rinehart, & Winston.

Menor, L. J., Kristal, M. M., & Rosenzweig, E. D. (2007). Examining the influence of operational intellectual capital on capabilities and performance. *Manufacturing and Service Operations Management, 9*(4), 559-578.

Mumford, M. D., & Licuanan, B. (2004). Leading for innovation: Conclusions, issues, and directions. *Leadership Quarterly. Special Issue: Leading for Innovation, 15*(1), 163-171.

Mumford, M. D., Scott, G. M., Gaddis, B., & Strange, J. M. (2002). Leading creative people: Orchestrating expertise and relationships. *Leadership Quarterly, 13*(6), 705-750.

O'Reilly, C. A., Williams, K. Y., & Barsade, S. (1998). Group demography and innovation: Does diversity help? In E. Mannix, & M. Neale (Eds.), *Research in the management of groups and teams* (pp. 183-207). Greenwich, CT: JAI Press.

Pearce, C. L., & Ensley, M. D. (2004). A reciprocal and longitudinal investigation of the innovation process: The central role of shared vision in product and process innovation teams (PPITs). *Journal of Organizational Behavior, 25*(2), 259-278.

Perretti, F., & Negro, G. (2007). Mixing genres and matching people: A study in innovation and team composition in Hollywood. *Journal of Organizational Behavior, 28*(5), 563-586.

Polzer, J. T., Milton, L. P., & Swann, W. B., Jr. (2002). Capitalizing on diversity: Interpersonal congruence in small work groups. *Administrative Science Quarterly, 47*(2), 296-324.

Schaubroeck, J., Lam, S. S. K., & Cha, S. E. (2007). Embracing transformational leadership: Team values and the impact of leader behavior on team performance. *Journal of Applied Psychology, 92*(4), 1020-1030.

Somech, A. (2006). The effects of leadership style and team process on performance and innovation in functionally heterogeneous teams. *Journal of Management, 32*(1), 132-157.

Stevens, M. J., & Campion, M. A. (1994). The knowledge, skill, and ability requirements for teamwork: Implications for human resource management. *Journal of Management, 20*(2), 503-530.

Stevens, M. J., & Campion, M. A. (1999). Staffing work teams: Development and validation of a selection test for teamwork settings. *Journal of Management, 25*(2), 207-228.

Sy, T., Côté, S., & Saavedra, R. (2005). The contagious leader: Impact of the leader's mood on the mood of group members, group affective tone, and group processes. *Journal of Applied Psychology, 90*(2), 295-305.

Tajfel, H. (1981). *Human groups and social categories: Studies in social psychology*. Cambridge, UK: Cambridge University Press.

Tjosvold, D., Tang, M. M. L., & West, M. (2004). Reflexivity for team innovation in china - the contribution of goal interdependence. *Group & Organization Management, 29*(5), 540-559.

Tjosvold, D. (2002). Theory-oriented reviews for applied psychology. *Applied Psychology: An International Review, 51*(3), 387-393.

Turner, J. (1987). *Rediscovering the social group: A social categorization theory*. Oxford, UK: B. Blackwell. van Knippenberg, D., & Schippers, M. C. (2007). Work group diversity. *Annual Review of Psychology, 58*, 515-541.

Webber, S. S., & Donahue, L. M. (2001). Impact of highly and less job-related diversity on work group cohesion and performance: A meta-analysis. *Journal of Management, 27*(2), 141-162.

West, M. A. (2000). Reflexivity, revolution and innovation in work teams. In M. Beyerlein, D. A. Johnson & S. T. Beyerlein (Eds.), *Product development teams*. (pp. 1-29). Stamford,CT: JAI Press.

West, M. A., & Farr, J. L. (1990). Innovation at work. In M. A. West, & J. L. Farr (Eds.), *Innovation and creativity at work: Psychological and organizational strategies* (pp. 3-13). Chichester: John Wiley.

West, M. A. (2002a). Sparkling fountains or stagnant ponds: An integrative model of creativity and innovation implementation in work groups. *Applied Psychology-an International Review-Psychologie Appliquee-Revue Internationale, 51*(3), 355-387.

West, M. A. (2002b). Ideas are ten a penny: It's team implementation not idea generation that counts. *Applied Psychology-an International Review-Psychologie Appliquee-Revue Internationale, 51*(3), 411-424.

West, M. A., & Anderson, N. R. (1996). Innovation in top management teams. *Journal of Applied Psychology, 81*(6), 680-693.

West, M. A., Borrill, C. S., Dawson, J. F., Brodbeck, F., Shapiro, D. A., & Haward, B. (2003). Leadership clarity and team innovation in health care. *Leadership Quarterly, 14*(4-5), 393-410.

West, M. A., & Hirst, G. (2003). Cooperation and teamwork for innovation. In M. A. West, D. Tjosvold & K. G. Smith (Eds.), *International handbook of organizational teamwork and cooperative working* (pp. 297-319). Chichester, England: Wiley.

Williams, K., & O'Reilly, C. A. (1998). Demography and diversity in organizations: A review of 40 years of research. In B. Staw, & L. Cummings (Eds.), *Research in organizational behaviour* (pp. 77-140). Greenwich, CT: JAI Press.