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Conflicts in innovation and how to approach the "last mile" of conflict management research – a literature review

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Abstract

Purpose – The purpose of this study is to present the state-of-the-art in empirical research on conflicts in innovation in organizations and to outline strategic implications both for research and practical application with the specific focus on intervention studies.

Design/methodology/approach – Literature search in the Web-of-Science identified 32 empirical publications from 1990 to July 2012. Characteristics of the studies, methodological approaches and empirical findings are summarized and discussed. Strategic implications are derived.

Findings – The literature review reveals studies of the relationship between conflict and innovation on different organizational levels. Most of the studies address different aspects of conflict as antecedents of innovation, while some address conflict as an outcome of innovative behavior or structures. Almost all authors come up with theoretical and practical implications. But intervention studies which could close the gap between theory and practice, here termed the "last mile" of conflict management, are yet to be addressed.

Research limitations/implications – While several implications are derived that aim at consolidating and deepening the understanding of the conflict – innovation dynamics, the major implication is to develop a knowledge-oriented research approach and to expand the scope of research to intervention studies. Constructive controversy is described as an example of this new research avenue.

Practical implications – From intervention studies, researchers could gain more direct, practical insights into actual work processes. Managers could profit by incorporating first-hand knowledge augmented by researchers' expertise.

Originality/value – This article provides a systematic review of the relationship between conflict and innovation in the business context and practical implications thereof.

Keywords Conflict, Literature review, Intervention, Conflict management, Innovation, Constructive controversy

Paper type Literature review

1. Introduction

Innovation is one of the core dimensions of organizational outcomes (Posthuma, 2011) and, therefore, one of the most popular topics in organizations today. Innovation is regarded as being crucial in order for organizations to survive in today's rapidly changing markets (West, 2002), defined as the planned, effective introduction of change in organizations (Rank *et al.*, 2004; West and Farr, 1990). Early approaches framed innovation as a rather technical process (Utterback and Abernathy, 1975), but today it is increasingly seen as a social process

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(Paletz and Schunn, 2010) or even a dialectical process (Bledow *et al.*, 2009) in which conflicts are inherent. Studies reveal that a certain amount of conflict and the constructive management of conflicts can even foster innovation on different levels in organizations (De Dreu, 2006; Tjosvold and Yu, 2007). Thus, conflict management is a highly relevant topic both for researchers and practitioners.

For many years, researchers have been addressing how business organizations manage conflicts in innovation. They have scrutinized conflicts in different conceptualizations and in relationship to various other constructs as antecedents, mediators or moderators. Due to the variety of approaches and findings, for researchers, it is not easy to get an accurate overview of the state of the art in research on innovation conflict, conflict management and what the open questions are. For practitioners, it is not easy to derive practical implications from the variety of studies. Because this is the first systematic analysis in this field, a literature review appears appropriate to structure the state of the art in a broad fashion. This can serve as a first step for conducting meta-analyses of specific constructs of interest.

The goal of this review is to structure the empirical findings, present the state-of-the-art research findings and then derive implications for future research. In the following section, the method and procedure of the literature search are described. In the third section, results are presented. Different types of conflict and different conflict handling styles have been identified both as determinants and outcomes of innovation. The relationship between conflict and innovation in terms of antecedents, mediators and moderators will be presented. Also, the wide range of theoretical and practical implications that have been derived from empirical insights gained in the studies is summarized. It will be apparent that all studies end with research and practical implications but have not yet ventured further into intervention studies. Thus, the need for consolidating empirical findings gained so far and for expanding the scope of research will be identified. In section four, we therefore shift to a higher-level perspective and draw conclusions from the literature review as a whole looking beyond what was found in the individual studies. It will be argued for the development of a knowledge-oriented research approach to integrate the efforts of future studies into a common effort, as knowledge can be identified as the very heart, "the DNA" of innovation processes. Furthermore, it is remarkable that in the final analysis, authors do not really accede the field of applied science, i.e. conduct intervention studies (studies in which practical methods are developed and evaluated with regard to their effectiveness in the work processes of organizations). This is a result that other literature reviews have also found (e.g. Anderson *et al.*, 2004). Intervention studies which we strongly advocate would allow researchers and practitioners to profit from in-depth, first-hand insights into the daily business of conflict management in organizational innovation. In closing this argumentation, constructive controversy, a specific approach to conflict management (Johnson *et al.*, 2006), is illustrated as one example for how the "last mile" in innovation conflict management can be addressed to support both innovation practice and innovation research effectively.

2. Method used in this study

To provide an overview of the relevant research, a literature research and analysis were conducted. The literature search was carried out by consulting the Web of Science database. Web of Science provides access to the world's leading citation databases. It

comprises more than 12,000 of the highest impact journals from multiple disciplines. By using this database, the most significant journal articles can be assumed to be identified in a clear and reproducible way.

The literature search aimed at identifying empirical journal articles that examine conflicts related to innovation in organizations (inclusion criteria). In a first step, the terms "conflict", "organization", "innovation", "team" and "individual" were put into the search fields under the category "topic". All terms were used with truncations ("conflict"*, "organization"*, "innovat"* and "team"* and "individ"*). Additionally, related terms to conflict were used ("conflict"* or "dissent" or "controversy" or "dispute" or "difference of opinion" and "individ" or "person" or "employee"). In the second step, a refinement was applied by restricting the search to articles. By doing so, all conference papers were excluded. This search identified 270 articles. In the third step, the article abstracts were analyzed and, if necessary, at the full-text level to ascertain whether they empirically examined conflicts related to innovation in organizations. Applying this in-depth screening system, 30 articles comprising 32 studies were identified by July 2012.

The studies were then scrutinized regarding their basic characteristics and the constructs they addressed. Specific attention was paid to the applied part of the studies, i.e. how far the scope of innovation conflict management research reaches out into the direction of application and intervention studies.

3. Results

3.1 Characteristics of the empirical studies

The studies examined date from 1998 to 2012. As shown in Table I, most of the studies date between the years 2000 and 2009, although the number of studies in the

Characteristics	No. of studies	(%)
Publication year		
1990-1999	2	6
2000-2009	17	53
2010-2012 (July)	13	41
Main methodological approach		
Quantitative	29	91
Qualitative	3	9
Target level of the measures		
Individual level	4	25
Group level	16	50
Inter-group level	3	9
Organizational level	1	13
Inter-organizational level	1	3
Level of Analysis		
Individual	19	59
Team	13	41

Note: $N = 32$ studies in total

Table I.
Characteristics of the studies reviewed

last time period (2010 to July 2012) indicates an intensification of research in the field. One can assume that contemporary increasing relevance of innovation in organizations predicts a higher scientific and practical interest in the years ahead.

Most of the studies use quantitative methods for measuring the constructs, applying questionnaires with established scales. Only one of the 32 studies is designed as an experiment. Three studies apply qualitative methods using critical incident technique (Flanagan, 1954), narrative interviews, document analyses or observation. All studies are designed as cross-sectional analyses except for one study which deploys a longitudinal design. The main target level of the analyses is on the group level, but some studies also examine the individual, inter-group, organizational and inter-organizational levels, an inclusion that depicts the high relevance of teams when innovation and conflict are researched together. About 40 per cent of the studies analyze the results on the individual level, while the other studies analyze on the team level after aggregating individual data.

3.2 Conceptualizations of conflict in the empirical studies

The studies follow different approaches and conceptualizations of "conflict". While some studies focus on different types of conflict, others examine different forms of conflict management, or ask for conflict-related effects.

Table II describes the different types of conflicts examined in the studies; 19 of the 32 studies scrutinize types of conflicts. This number reveals the importance of characterizing conflicts for understanding the relationship between conflicts and innovation processes. Clearly, most of the studies refer to both task and relationship conflicts, and in doing so, try to reveal different dynamics inherent in these two types of conflict (cf. Jehn, 1995, 1997). Four studies analyze only one conflict type –

Characteristics	No. of studies	(%)
Types of conflict		
Task conflict	1	5
Relationship conflict	2	11
Process conflict	1	5
Task and relationship conflict	9	47
Task, relationship and process conflict	2	11
Others	4	21
Modes of conflict management		
Five-style model	4	44
Two-style model	3	22
Constructive controversy	2	22
Debate and decision comprehensiveness	1	11
Conflict effects		
Productive/constructive conflict	2	67
Constructive and destructive conflict	1	33

Note: 19 of the 32 studies examine types of conflicts, nine studies focus on different modes of conflict management, and three studies analyze effects of conflicts

Table II. Characteristics of the studies reviewed with regard to conflict aspects scrutinized

task, relationship conflict or process conflict (Jehn and Mannix, 2001). Two studies address all three types of conflicts.

Only some of the studies explore the role of conflict management behavior in relationship to innovation. Four of them refer to probably the most-established models in conflict research: the two-dimensional models provided by Thomas (1992) and Rahim (1983). For instance, the studies of Dyer and Song (1998), Gobeli *et al.* (1998), Song *et al.* (2006) as well as Chen *et al.* (2012) measure conflict management styles according to these two models, models rooted in the works of Follett (1940) as well as Blake and Mouton (1984). The models use different terms to define five discrete conflict styles: integrating, accommodating, compromising, forcing and avoiding (Rahim, 1983), which result from the individual's consideration of his/her own and other's interests. While Chen *et al.* (2012) Gobeli *et al.* (1998) and Song *et al.* (2006) assess all five styles, Dyer and Song (1998) limit their assessment to what they consider to be the three key styles: forcing, avoiding and integrating.

Other studies use a two-style model for assessing conflict behavior, referring to the social psychological approach established by Deutsch (2006). Depending on the nature of the social relationship within teams, especially the goal interdependence, the interactions of team members tend to be either cooperative or competitive, i.e. view conflicts in the context of pursuing common goals or conflicts as a win–lose struggle (Chen *et al.*, 2005a). Tjosvold *et al.* (2010) use the dichotomic scales of cooperative and competitive conflict management, while Chen *et al.* (2005a) add "avoidance" as a third category of conflict management style. Paulsen *et al.* (2009) assess cooperative conflict management with a single scale.

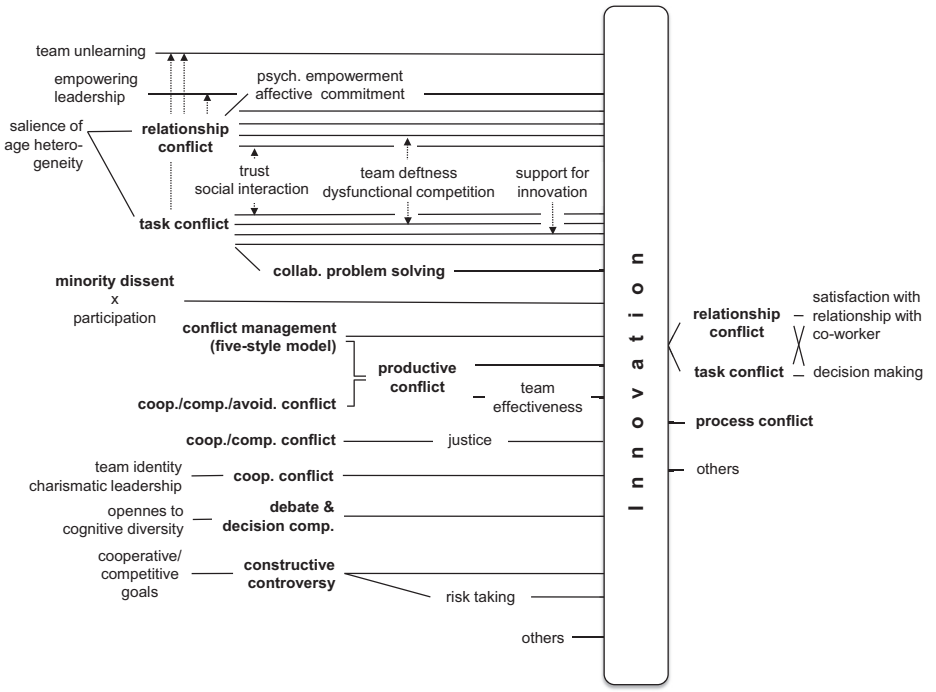
Three studies apply specific conflict management scales that emphasize the handling of intellectual conflicts in the context of the integration of different point of views. Two of them refer to a concept that is established by Johnson *et al.* (2006). They assess constructive controversy which is defined as "the open discussion of opposing perspectives for mutual benefit" (Tjosvold and Yu, 2007, p. 657). The authors of the third study (Mitchel *et al.*, 2009) analyze debate and decision comprehensiveness as a mode of conflict management. This concept was originally established by Simons *et al.* (1999, pp. 662-663). Simons and colleagues emphasized the process character of managing task-related issues by separating a debate phase from a decision-making phase. Debate, on the one hand, is defined as "an open discussion of task-related differences and the advocacy […] of differing approaches to the […] decision-making task". This definition refers to the constructive controversy approach mentioned above. Decision comprehensiveness, on the other hand, is "a process in which team members look at an issue with a wide lense, considering multiple approaches, multiple courses of action, and multiple decision criteria". While Simons *et al.* (1999) identified the two constructs as two sequential process steps with decision comprehensiveness succeeding debate, Mitchel *et al.* (2009) conceptualize both constructs as parallel processes mediating between an antecedent variable and team innovation.

Three studies examine the effects that result from the application of different conflict management modes on the conflicts itself, i.e. whether conflicts turn out to be productive or destructive. The study of Song *et al.* (2006) assesses both effects, whereas Chen *et al.* (2005a) as well as Dyer and Song (1998) limit their assessment to productive and constructive conflict, respectively.

3.3 The relationships between conflict and innovation – empirical results

Figure 1 provides an overview of the relationships between various conflict constructs and innovation examined in the quantitative studies. All conflict constructs are in bold print. The picture shows the direct, mediated and moderated relationships between the two constructs as well as other constructs that are researched. To keep it clearly presented, all constructs that represent innovation in its different forms studied are subsumed under the term innovation. Their aspects will be described and specified in the following section.

First, it becomes apparent that most of the studies address conflict in its different forms as determinants of innovation (left of innovation in Figure 1; only a few scrutinize conflict as a dependent variable of innovation (right of innovation in Figure 1). The conflict constructs can be classified into two major categories: types of conflict and conflict management approaches. Some constructs refer to the different research questions of the specific studies. They take the role of antecedent of the determinants –



Notes: Lines between the constructs symbolize a direct relationship between them, e.g. collaborative problem-solving to innovation. Mediating constructs are between two other constructs, e.g. team effectiveness mediates the relationship of productive conflict and innovation. Vertical arrows symbolize moderating effects, e.g. support for innovation moderates the relationship of task conflict and innovation. There is always one line between the constructs, even when two or more studies addressed this relationship. Interaction effects of constructs are symbolized by

Figure 1. Relationships between conflict constructs and innovation

as mediators and moderators of the conflict – innovation relationships. Some of them are studied as dependent variables of innovation.

3.3.1 Conflict as a determinant of innovation

3.3.1.1 Conflict types as determinants of innovation. Table II shows that many studies analyze the relationship between different types of conflicts and innovations, most of which refer to the classical types of task and relationship conflicts. Figure 1 provides an overview of the relationships of the two types of conflicts to innovations.

Six studies theorize a direct relationship between task conflicts as independent variables with innovation as the dependent variable. Most of them (De Clercq, Thongpapanl and Dimov, 2009; De Dreu, 2006; De Dreu and West, 2001; Li and Li, 2009; Lu *et al.*, 2011) provide evidence for the positive impact of task conflicts on innovation. De Dreu (2006) shows further that this relationship is in a curvilinear fashion, with a moderate level of task conflict promoting innovation. De Dreu and West (2001) found an interaction effect of minority dissent, a construct closely related to but not identical to task conflict, and high levels of participation to be positively related with innovation. Only Ries *et al.* (2010) could not confirm the hypothesized positive relationship between task conflict and innovation. Most provide evidence for the positive impact of task-related conflicts on innovative action, with the one exception mentioned.

Quite the contrary is seen regarding relationship conflicts. Three studies (De Dreu, 2006; Li and Li, 2009; Lu *et al.*, 2011) found the relationship between conflict and innovation as being non-significant. In fact, Ries *et al.* (2010) provide evidence for the negative influence of relationship conflict on innovation.

3.3.1.2 Mediators between types of conflict and innovation. Two studies identify the relationship between task or relationship conflict and innovation to be mediated. De Dreu's (2006) study, on the one hand, reveals collaborative problem-solving as at least partially mediating the relationship between task conflict and team innovation. The study of Chen *et al.* (2011), on the other hand, analyzes the mediating role of motivational states between relationship conflict and innovative behavior. Relationship conflict has negative effects on both variables. These, in turn, have positive impact on both individuals' innovative behavior and team innovation. These results reveal that relationship conflicts play a crucial role in leader–member relationships and point out their indirect negative influence on innovation.

3.3.1.3 Types of conflict as mediators. Furthermore, task and relationship conflicts themselves were studied as mediators. Ries *et al.* (2010) identify a negative correlation between relationship conflicts and innovative behavior in work groups. This study also identifies negative relationship of the salience of age heterogeneity of the team members and the groups' innovativeness, which is hypothesized to be mediated by both types of conflict, whereas only relationship is found to actually mediate this relationship.

3.3.1.4 Moderators of the relationship between conflict types and innovation. Finally, some studies analyze the relationship of conflict types and innovation with regard to moderating effects of different constructs. Li and Li (2009) conclude that the relationship between task conflict and innovative decision-making is moderated by two factors. An environment of dysfunctional competition (unfair market practices like violation of property rights) diminishes the positive effect of cognitive conflict and innovative decision-making, which is explained by the existence of divergent and inconsistent information about an unpredictable and heterogeneous market in which the abovementioned dysfunctional competition practices take place. The second factor –

deftness of teams, defined as team mutual confidence, trust and fluency of task execution – on the other hand, strengthens the impact of cognitive conflict on innovative decision-making. Lu *et al.* (2011) found the impact of task conflict on individual innovative behavior to be moderated by superiors' support of innovation.

3.3.1.5 Types of conflict as moderators. Conflict types also function as moderators as some studies reveal. Lee (2011) concludes that the innovation success of new product management teams depends on their ability to unlearn behavioral routines and that this relationship is stronger under the condition of higher task and lower relationship conflict. Chen *et al.* (2011) found relationship conflict to moderate the relationships of empowering leadership to both employees' psychological empowerment and affective commitment, which, in turn, foster their innovative behavior.

3.3.1.6 Conflict management approaches as determinants of innovation. Besides different types of conflicts as important determinants of innovation, the management of conflicts plays a crucial role in the success of innovation. This relationship has been addressed by several studies referring to different concepts of conflict management.

Studies using the five conflict-style model (integrating, accommodating, compromising, forcing and avoiding) identified both direct and mediated relationships between conflict management styles and innovation. A direct effect on innovation is found by two studies. The results of the study of Gobeli *et al.* (1998) indicate that integrating and compromising styles have positive effects on the innovation success, both on team level and organization level, while accommodating, avoiding and forcing have negative effects, although only the effect of forcing is significant. The positive effect of integrating and the negative effect of avoiding are also found by Chen *et al.* (2012).

The study of Paulsen *et al.* (2009) also proves the direct effect of conflict management and team innovation. Likewise, the studies of Mitchel *et al.* (2009) carve out the relevance of debate and demonstrate that decision comprehensiveness fosters team innovation, as shown with workplace teams of Australian and Irish industrial organizations. Moreover, studies on constructive controversy (e.g. Chen *et al.*, 2005b) provide empirical evidence for the direct positive influence on team innovation.

3.3.1.7 Mediators of the relationship between conflict management and innovation. Chen *et al.* (2005a) analyze productive conflict and team effectiveness as mediators between a cooperative conflict management approach and organizational innovation. They found that cooperative (contrary to competitive) conflict management fosters productive conflict, which, in turn, has a positive impact on team effectiveness. Team effectiveness, in turn, supports innovative activities of organizations toward the external environment and internal products and processes of their studied Chinese companies.

The study of Tjosvold *et al.* (2010) accounts for the importance of justice as a mediating variable between conflict management and innovation. They provide empirical evidence for the innovative potential of cooperative conflict management and just relationships for strategic partners, e.g. suppliers of customer organizations in China. Where the partnership is characterized by cooperative conflict management, the relationship also turns out to be just, be it procedurally, interactionally or distributively. Especially procedural justice has a positive influence on suppliers' innovativeness.

Tjosvold and Yu (2007) found risk-taking as a mediating construct between constructive controversy and team innovativeness. The authors see risk-taking as a specific aspect of innovative behavior.

Quite similar results to those found by Gobeli *et al.* (1998) are reported by Dyer and Song (1998) as well as Song *et al.* (2006). They, too, identify the conflict-style of forcing but also avoiding as having negative effects on constructive conflict as a mediating variable, which has, in turn, a positive impact on innovation success of the collaboration between different functional departments (Dyer and Song, 1998). Integrating, however, seems to support constructive conflict. The study of Song *et al.* (2006) reveals different effects of conflict management styles on constructive or destructive conflict in the context of product development between R&D and marketing. The authors identify integrating and accommodating as positively influencing constructive conflict as a mediating variable, on the one hand. On the other hand, forcing and avoiding are positively related with destructive conflict, while compromising is negatively related to destructive conflict. In turn, constructive conflict is positively – and destructive conflict is negatively – related to innovation performance of R&D and marketing collaborations within industrial companies. These two studies point out the significance of the effects of conflict management on conflicts itself, i.e. whether they develop constructive or destructive.

3.3.1.8 Conflict management approaches as mediators. Other studies scrutinize conflict management approaches and antecedent factors. The study of Paulsen *et al.* (2009) proves the mediating role of cooperative conflict management between team identity and charismatic leadership, on the one hand, and team innovation, on the other hand. Results indicate that the mediation function of cooperative conflict management explains more variance of team innovation than charismatic leadership and team identity. Charismatic leadership and team identity become more effective for innovation when they enable teams to manage conflicts constructively.

Mitchel *et al.* (2009) carve out the relevance of openness to cognitive diversity in decision-making processes. Openness to cognitive diversity is identified as a prerequisite for decision-making, which is characterized by debate and decision comprehensiveness. These, in turn, foster team innovation, as is shown with workplace teams of Australian and Irish industrial organizations. Studies on constructive controversy provide empirical evidence also for its mediated influence on team innovation (Tjosvold and Yu, 2007). Furthermore, Chen *et al.* (2005b) point out the supporting role of cooperative goal interdependence (Deutsch, 2006) as antecedents of constructive controversy.

Other independent variables examined are the types of company ownership. Heponiemi *et al.* (2011) found that not-for-profit companies seem to have a positive effect on innovative behavior, contrary to for-profit attributed to higher levels of stress in these companies hindering innovation. Suliman and Al-Shaikh (2007) reveal that higher-educated employees with higher emotional intelligence show less conflict (work–family, frustration, role conflict) and a higher readiness for innovation than lower-educated employees.

3.3.2 Conflict as an outcome of innovative action. Innovative activity is not only a result of conflict and its management but can also be the source of conflicts. Some of the more recent studies point to this fact by studying the innovation–conflict relationship and research the consequences of innovative behavior. So Janssen (2003) found that innovative behavior of teachers in schools triggers task and relationship conflicts with co-workers, i.e. other teachers, which, in turn, decreases the satisfaction with the relationship with the co-workers. The authors argue that innovation in this context is

something unfamiliar and can trigger resistance because change often means uncertainty and the turning away from routines and stability.

But even in organizations where innovation is part of the daily business, innovative behavior can lead to conflicts, as Shih and Susanto (2011) observed in manufacturing and pharmaceutical companies in Indonesia. They also found empirical evidence that innovative behavior can raise hackles and lead to conflict with co-workers. The existence of distributive fairness, however, lowers the positive correlation between innovative behavior and conflict. Distributive fairness rules seem to elicit positive cognitions and attitudes of employees toward the organization in general, and toward innovation and change specifically.

Not only individual innovative behavior but also structural conditions typically characterized by innovation can lead to conflicts. Ehie (2010) scrutinizes the effect of structural conditions on conflict types that effect decision performance on a management level. He found positive effects of cognitive and negative effects of affective conflicts on decision-making indicators (quality, understanding, commitment and affective acceptance). The strengths of these relations, however, depend on the structural conditions of the studied industrial companies, which are driven by either functional or innovative products. Especially the relationship between cognitive conflict and decision indicators increases when companies are driven by innovative products, which is explained by the assumption that cognitive conflicts enfold their significance in environments that are characterized more by non-routine tasks than by routine tasks.

Likewise, the study of Cheng *et al.* (2010) provides evidence for the fact that the innovation strategy has differential effects on conflicts in R&D teams. It appears process innovation is more associated with role conflict than product innovation. De Poel *et al.* (2012) reveal that a climate for change and innovation helps to reduce individual role conflict. But not only the general climate but also the level of maturity of the innovation development process is found to influence role conflict of R&D employees (Ply *et al.*, 2012). The more elaborate the work control mechanisms, the more transparent the work processes and the coordination mechanisms, which, in turn, lower role conflicts and role ambiguity.

3.4 Implications for future research derived in the studies

In almost all of the studies, the authors draw both theoretical and practical conclusions. The implications for further research can be classified by methodical and content-related implications.

3.4.1 Methodological implications. Most often, authors call for the replication of their methodical approach (Bouncken and Winkler, 2010; Chen *et al.*, 2011; Chen *et al.*, 2005b; Ehie, 2010; Janssen, 2003; Keaveney, 2008; Lee, 2011; Li and Li, 2009; Paulsen *et al.*, 2009; Shih and Susanto, 2011). They recommend validation in different contexts, like other companies, industries or countries to achieve or increase generalization of their results that have mostly been gained by applying a cross-sectional design.

To overcome the frequently discussed limitations of cross-sectional designs, like lack of proof of causality, e.g. some authors advise either longitudinal designs (De Clercq *et al.*, 2009; Mitchel *et al.*, 2009; Li and Li, 2009; Shih and Susanto, 2011; Song *et al.*, 2006) or experimental designs (Chen *et al.*, 2005a) or both (De Dreu, 2006; Janssen, 2003).

Due to the cross-sectional design and the application of questionnaires and the associated common method bias problem, authors recommend the expansion of the method repertoire

and suggest using more qualitative methods like interviews or observation (Mitchel *et al.*, 2009; Paulsen *et al.*, 2009). Furthermore, it is called for more objective data like archival data (Tjosvold *et al.*, 2010; Tjosvold and Yu, 2007) and more objective indicators, predominantly for innovation (Mitchel *et al.*, 2009; Paulsen *et al.*, 2009). Likewise, some authors recommend drawing on additional data sources like cooperation partners (Tjosvold *et al.*, 2010) from people outside the team (Paulsen *et al.*, 2009), supervisors (Janssen, 2003) or collaboration partners of other firms (De Clercq *et al.*, 2009).

3.4.2 Content-related implications. The content-related implications aim at clarifying the dynamics of conflict and conflict management and innovation, as shown in Table II. Most authors ask for more studies to shed more light on the dynamics of different types of conflict. The studies of De Dreu and West (2001) and Ehie (2010) raise the general question of the linearity of the conflict management–innovation relationship and hypothesize a curvilinear relationship between task conflict or minority dissent, response and team innovation.

De Dreu (2006) provides first insights and presents data that support this hypothesis. He further experiences a high complexity of the relationship of conflict, innovation and team performance, and recommends examining a broader set of dependent measures to tap into the different components of team performance, which is influenced by innovation and conflict. De Dreu and West (2001) call for in-depth studies to clarify the interplay between task conflict and minority dissent – which are related but not identical. Especially the interplay between different forms of minority dissent, opinion and social category-based minority dissent – and their isolated and combined influence in team innovation – are of high interest. Moreover, the effects of devil's advocacy and real (contrary to instructed) minority dissent have to be analyzed in future studies.

Ries *et al.* (2010) also ask for more clarification of the differential effects of task and relationship conflicts on group effectivity and propose the in-depth examination of further contingency variables like task complexity. Furthermore, they suppose factors that may moderate the relationship between the salience of age heterogeneity and both conflict types.

Likewise, De Clercq *et al.* (2009) assume that variables other than social capital may moderate the relationship between task and relationship conflicts and innovation. Chen *et al.* (2011) argue for a wider set of examined variables to gain more insight into the motivating and demotivating forces in teams. Lee (2011) raises the question of whether there are factors other than task and relationship conflicts that may moderate the relationship between team unlearning and innovation.

Another field of future research has opened up with regard to conflict handling behavior. Janssen (2003) and Ehie (2010) argue generally for the consideration of conflict behavior in addition to conflicts as such in further studies. Similarly, other authors recommend the in-depth examination of the relationship between conflict management styles and constructive and destructive conflict, including additional variables that are salient in different settings (Song *et al.*, 2006). These authors point out and clarify the discrete nature of constructive and destructive conflict. Likewise, Dyer and Song (1998) suggest analyzing several aspects of conflict dynamics, like overall innovation strategies of the organization, causes of conflict, factors leading to constructive conflict, conflict history and the consistency of conflict management behavior, including cognitive frames brought into specific conflict situations. Mitchel *et al.* (2009) suggest scrutinizing factors that may moderate the relationship between openness to cognitive diversity and debate and decision

comprehensiveness – for example, semantic misunderstandings between members of diverse teams due to their specialized background.

Finally, Janssen (2003) as well as Shih and Susanto (2011) point to the necessity for further studies to shed more light on the conflict-triggering side of innovation. Likewise, Janssen (2003) argues for the consideration of other contexts and their impact on generating conflict when employees show innovative behavior. Accordingly, he points to the cost-benefit issue of conflicts. Shih and Susanto (2011) also argue for the replication of their study and especially for the in-depth examination of the role of distributive justice as a potential moderator of the relationship between individual innovative behavior and the arising of conflicts with co-workers.

3.5 Managerial implications derived in the studies

Almost all studies come to conclusions derived from the empirical insights gained as to how to deal with conflicts. Different approaches can be identified, ranging from how to deal with different types of conflicts, over behavioral approaches and training to the recommendation of distinct methods. They also include aspects of team design as well as specific suggestions for managers.

3.5.1 How to address different types of conflicts. Because many studies addressed different types of conflicts, implications for conflict management refer in most cases to task and relationship conflicts. The results are differential and partially inconsistent. Two studies recommend keeping conflict generally on a low level (Dyer and Song, 1998; Gobeli *et al.*, 1998). Their measurement does not distinguish between task and relationship conflict and reveals that lower levels of conflict are functional for innovation. Other authors make this distinction and come to differentiated conclusions. For example, Chen *et al.* (2011) argue for low levels of relationship conflict in order not to diminish the positive effects of empowering leadership on affective commitment and employees' psychological feeling of empowerment, which, in turn, support innovative behavior.

Ehie (2010) and Lee (2011) recommend embracing task conflicts, which are found to foster innovation, while reducing relationship conflicts, which have negative effects on it. De Dreu (2006) advocates a moderate level of task conflict, given the inverted u-shaped relationship between task conflict and team performance. Ries *et al.* (2010) recommend keeping task conflicts low but only in cases of routine vs non-routine tasks. Generally, these results support prior research aimed at reasoning out the dysfunctionality of relationship conflict vs the functionality of task conflict. It is obvious that the differentiation between task and relationship conflict introduced by more recent studies reveals in-depth insights into the conflict dynamics compared to earlier studies that do not make this distinction.

3.5.2 Behavioral approaches and training. The studies discuss forms of conflict handling that can be classified as behavioral approaches. Some suggest behavior refers directly to conflict, others suggest behavior has a more general character. As such, De Dreu (2006) argues for generally managing conflicts to prevent negative effects on interpersonal relationships. De Clercq *et al.* (2009) suggest preventing task conflicts from turning into relationship conflicts through discovering and discussing the truly underlying task differences.

De Dreu and West (2001) advise, in a more general sense, fostering dissent in combination with participation to be successful in team innovation processes. Likewise, De Clercq *et al.* (2009) and De Poel *et al.* (2012) argue for the promotion of open and

constructive discussions of an expanded range of issues instead of blind confidence in others. Other recommendations are the frequent exchange of written and verbal communication among firms' personnel (Dyer and Song, 1998), the permission to "raise one's voice" (De Clercq *et al.*, 2009; Tjosvold *et al.*, 2010), the prevention of "group think" and the support of "friendly rivalry" between different groups of organizations (De Clercq *et al.*, 2009), as well as the prevention of misattributions on persons instead of task differences in case of conflicts (Keaveney, 2008).

The authors of several studies refer more specifically to conflict management styles and recommend a generally appropriate use of conflict management strategies (De Clercq *et al.*, 2009; Ries *et al.*, 2010). Tjosvold *et al.* (2010), Dyer and Song (1998) and Gobeli *et al.* (1998) argue for the development of cooperative conflict behavior, i.e. the frequent use of the integrative conflict management style instead of forcing and avoiding.

Accordingly, some authors recommend training in conflict skills. Some do this in a more general manner (Shih and Susanto, 2011; Tjosvold *et al.*, 2010). Others are more specific and suggest training employees in cooperative skills (Chen *et al.*, 2005a). Besides training in conflict skills, authors point out the need for general skills of employees and teams, like language training to enhance cohesion and team spirit of transnational innovation teams (Bouncken and Winkler, 2010), or training in team deftness, which many consider the basis for effective problem-solving, decision-making and developing new solutions (Li and Li, 2009).

3.5.3 The use of methods. The recommendations of a number of studies are more specific and emphasize the necessity of concrete methods. Ehie (2010) advises managers to develop objective methods to assess and manage conflicts. Dyer and Song (1998) argue for the formalization of communication processes to assure the quality of interaction and conflict management as a proactive tool for managers. Likewise, Ries *et al.* (2010) recommend the development of elaboration strategies for the management of task conflicts.

Authors like Keaveney (2008, pp. 661-663) are more specific and advise managers to use methods such as cognitive style indicators (e.g. MBTI, Myers and McCaulley, 1985), quality function deployment to incorporate the voice of customers into product design decisions (Mohr, 2000), or analytical target cascading to help coordinate marketing and engineering perspectives on design (Michalek *et al.*, 2005). The GAEO model (goals, assumptions, elements and operators) is also recommended, which provides guidelines about where teams should seek consensus and where teams should value diverse opinions (Cronin and Weingart, 2007); models for an interactive Web-based simulation designed are recommended to teach students (or employees) to deal with conflict (Elliott *et al.*, 2002). Mitchel *et al.* (2009) encourage team members to use interactions like dialectical inquiry or advocacy teams to increase debate and decision comprehensiveness in innovation teams. Likewise, Chen *et al.* (2005b) and Tjosvold and Yu (2007) advise managers to use the constructive controversy method to support cooperative conflict management, which is found to influence team innovation positively.

3.5.4 Structural and contextual conditions. Several studies conclude that teams need structural conditions that support conflict management. Most of them advise the implementation of shared goals operationalized as positive goal interdependence, common tasks, complementary roles and group reward systems (Chen *et al.*, 2005a, 2005b; De Dreu, 2006; Janssen, 2003; Mitchel *et al.*, 2009). Others emphasize the team composition with regard to age heterogeneity (Ries *et al.*, 2010) or team members' nationality (Bouncken and Winkler, 2010). Some authors recommend structural

elements like an idea-exchanging meeting style (De Clercq *et al.*, 2009) or open forums for the exchange of different thoughts (Dyer and Song, 1998). Others suggest carefully evaluating the physical proximity of different groups within an organization that are in relationship conflict with each other (De Clercq *et al.*, 2009). In a more general sense, some studies point to a supportive and cohesive team environment (Chen *et al.*, 2011) and a climate of openness to cognitive diversity (Heponiemi *et al.*, 2011; Mitchel *et al.*, 2009). Specific attention is directed to managers' roles. Studies point to the supportive moderating impact of a charismatic (Paulsen *et al.*, 2009) and a transformational and participative leadership style (Mitchel *et al.*, 2009; De Poel *et al.*, 2012), both encouraging openness toward cognitive divergence and fostering cooperative interactions, which, in turn, influence innovativeness positively.

4. Implications for further research derived from the literature review

The results shown in Table I indicate an increasing number of studies on the innovation–conflict relationship during the past years, raising expectations for more studies in the years ahead. The literature review at hand offers a wide range of new avenues for future studies in several directions. On the one hand, there is a need for the consolidation and expansion of the insights gained so far. On the other hand, a fundamentally new avenue opens up when expanding the perspective beyond the currently focused issues.

4.1 Implications toward a knowledge-oriented approach to innovation

With respect to the aforementioned avenues of consolidating and expansion of the hitherto gained insights, the wide range of possibilities raises the question of an overall research strategy or orientation. The widely used definition of innovation as the planned, effective introduction of change in organizations (Rank *et al.*, 2004; West and Farr, 1990) does not reveal much about how innovation takes place nor a core process of innovation. A more effective orientation for developing a research strategy can be derived from scrutinizing the constructs that have been studied so far. Overviews of the state of the art in creativity and innovation like those of Anderson and Costa (2010), Mumford (2012) or Anderson *et al.* (2004) reveal that knowledge is probably the most crucial factor in the innovation process. This can be shown on different levels of analysis. On the individual level, much research is about personal attributes like independence of judgment, openness to new ideas, tolerance to ambiguity, cognitive abilities like divergent and convergent thinking, expertise (Alencar, 2012), openness to experience (George and Zhou, 2001) deliberate abilities (Puccio and Gabra, 2012) and intelligence (Barron and Harrington, 2010). On the group level, much research is about group structures like team diversity (Van de Vegt and Janssen, 2010), heterogeneity (Paulus, 2000) and educational level of team members (Wallach, 1985); and aspects of team climate like minority influence (De Dreu and West (2001) and participation (West and Anderson, 1996). Furthermore, factors of team processes like reflexivity (West *et al.*, 1999), conflict management skills (Chen *et al.*, 2005a; Tjosvold and Yu, 2007), integration skills (Taggar, 2002) and decision-making styles (King *et al.*, 1992) are considered key for innovation.

All these constructs taken together point to knowledge – its generation from a variety of different points of view, its integration, materialization and implementation into practice through processes of decision-making – as the very heart, the "DNA" of the innovation process. The role of conflicts in this process is obvious, as different point of

views can easily be conflictual. Decisions which have to be made about the underlying problem, the alternative solutions and how to implement them bear a big potential for tensions and conflicts (Basadur, 1995; Bledow *et al.*, 2009), especially cognitive and task-related conflicts.

The strategy for studying conflict in innovation can easily be derived from these considerations. The studies reviewed here already reveal parts of such a strategy, e.g. the important role of task-related conflicts, and/or the importance of cooperative conflict management and constructive controversy. But an overall knowledge-oriented approach can help identify the core constructs to be addressed in further studies, allowing for a more systematic scrutiny of the field. The conflict–innovation research depicted in Figure 1 can be complemented by constructs (as antecedents, mediators, moderators or effects) that are connected to the generation, integration, materialization and implementation of knowledge as defining characteristics of a knowledge-oriented approach to innovation. For example, what personal characteristics are ideal for an effective management of conflicts that arise from different point of views? How is knowledge created through conflicts and how does it materialize as a part of the innovation? How do conflicts foster learning in teams in a manner that results in better decisions and innovations? What and in which way do conflict management and decision-making methods contribute to innovation?

4.2 Methodological implications

The knowledge-oriented approach described above implies studying conflicts in innovation in a more processual way than has been done so far. Previous studies used, in most cases, cross-sectional designs in the variance–theorical paradigm (Mohr, 1982). Recent studies like those of Poole *et al.* (2000), Poole (2004) argue for a processual approach and provide evidence for the fact that "innovation processes in organizations are iterative, non-linear […], disjunctive, cyclical, and often stressful to those involved either as initiators or being affected by their implementation" (Anderson *et al.*, 2004, p. 152). Quite similarly expressed, Van de Ven *et al.* (1999, p. 16) conclude that "the innovation journey is a nonlinear cycle of divergent and convergent activities that may repeat over time and at different organizational levels".

A process-theoretical approach (Mohr, 1982) in which the sequential progression of the innovation process is crucial, cross-sectional designs using questionnaires has its limitations. Even longitudinal studies, which are a series of analyzed measurements at multiple points of time, are likely to prove inadequate when digging deeply into the quality of innovation processes in today's rapidly evolving organizational climates. Thus, qualitative methods like observation, interviews and/or diary studies will probably more accurately capture the complexity of innovation processes. This way, the cyclic character of innovation and its entanglement with conflicts will be more adequately addressed.

This leads researchers required to enter the field of organizations to a much greater extent than had been the case up until today. Only then does a real step forward open up when looking at the whole picture resulting from assembling the studies. An implication has, therefore, developed directing us beyond the scope of research addressed up to now.

4.3 Expanding the research scope – addressing the "last mile" of conflict management research in innovation

Almost all studies come up with practical implications as presented in paragraph 3.5. For practitioners, a wide range of measurements of how to design the context, structures and processes is proposed in this vein. This offers a big potential for how to deal with conflicts in a better way in the future. But the way from practical implications derived in research papers to the writing desks and work benches of practitioners in organizations remains very far. On the one hand, it is difficult (impossible?) for researchers to find out whether their implications are realized in actual practice. On the other hand, it may be just as difficult for managers to transfer these seemingly practical implications into the work processes of their companies. This gap can be bridged by integrating the theoretical and practical implications, i.e. by addressing the "last mile" of conflict research in organizational innovation.

Addressing the last mile of conflict–innovation research means expanding the scope of research into the work processes of organizations, by developing, implementing and evaluating the conflict–innovation methods with regard to their work-place acceptance and effectiveness. This requires, on the one hand, a high interest of researchers in conducting intervention studies that are likely to require a higher effort and likely to be more time-consuming than usual. On the other hand, this "last-mile" calls for the willingness of managers to open their organizations to studies that scrutinize their work and innovation processes. Both parties, as well as other actors in the field, e.g. consultants and suppliers, can profit from this entanglement of research and practice. Researchers can gain direct insights into the immediate work processes (more than when using questionnaires only) and can take the opportunity to have a more direct and significant impact on shaping organizational life. Managers can profit from incorporating first-hand knowledge and researchers' expertise.

With regard to the different aspects of managerial implications presented in paragraph 3.5, researchers can assist the development of educational programs and trainings that are scientifically well-grounded and fulfill methodical and didactical standards. Much more, they can evaluate such programs and trainings with regard to their acceptance and effectiveness.

The "last mile" consequence is the bridging of the gap between theory and research, on the one hand, and practice and application, on the other hand, by providing methods and instruments which facilitate practitioners to transfer scientific knowledge into concrete behavioral and interactional guidance in real-life, innovation projects. Accordingly, the application of such methods can be evaluated by researchers, comprising both short-term and long-term criteria of effectivity and efficiency like product quality, innovation success, market acceptance, sustainability, etc. Especially experimental field studies which have been neglected so far open up excellent opportunities to scrutinize the causal effects of interventions. Similarly, scientific knowledge can be deployed not only to assess and evaluate but also to create additional structural and contextual conditions to establish optimal conditions for the innovation processes to continue to take place and flourish.

To realize such a last mile endeavor, both researchers and managers would have to establish at least mid-term relationships of applied science/scientific application. In such a collaboration, researchers and practitioners would be able develop a joint understanding of the state-of-affairs in organizations, their innovation projects and the

salient problems that innovation–conflict science can assist with. This would enable all parties to jointly create designs of how to approach the problems and how to evaluate the effects of applied methods and, finally, to re-adjust organizational arrangements. Such a strategic collaboration should also include other actors in the field, like consultants, organizational specialists, educators and higher education institutes.

Even though extant studies do not consider the last mile as a main research field, as this literature review reveals, there are examples which can be drawn on to illustrate a scenario of how to proceed.

4.4 Excursus: constructive controversy – an example for combining theory, research and practice in innovation research

Constructive controversy serves as our example, as it appears to be predestinated for addressing the last mile in conflict management research in organizational innovation in several regards:

- It addresses cognitive conflicts which are probably the most important conflicts in innovation.
- it incorporates the generation of the new by directing integration of different perspectives.
- It is theoretically well-grounded, empirically proven with initial indications of being supportive of innovation.
- It provides a practical procedure that can be implemented, applied and studied.

According to the founders of the concept, "constructive controversy exists when one person's ideas, information, conclusion, theories, and opinions are incompatible with those of another and the two seek to reach an agreement" (Johnson *et al.*, 2006). Constructive controversy refers to what Aristotle called a deliberate discourse that aims at synthesizing different point of views into a joint decision. It also refers to the Hegelian concept of thesis, antithesis and synthesis, which can be considered the prototype of dealing with conflicts, of the development of knowledge and of the generation of the new, or innovation, alike.

Beyond this definition, an entire research field exists that covers theory, research and practice. Constructive controversy has its roots mainly in Deutsch's social interdependence theory (Deutsch, 2006) but also in other theories like developmental psychology (Piaget, 1950), cognitive psychology (Berlyne, 1966), and organizational psychology (Follett, 1940). Up to now, research has been made in two main fields, the educational field (Johnson *et al.*, 2006) and the field of business organizations (Tjosvold, 1985). Several studies in the education field account for the positive impact of controversy on cognitive reasoning, creativity, learning and decision quality – aspects which have a direct relation to innovation. Recent studies in business organizations indicate that constructive controversy supports innovation both at the individual level (Chen *et al.*, 2005a) and at the team level (Tjosvold and Yu, 2007). Besides theory and research, the founders provide a practical procedure both for academic learning and organizational decision-making (Johnson *et al.*, 2006).

A recent literature review (Vollmer and Seyr, 2013) shows that controversy has been studied in many contexts. But it has not been studied as a method that is applied in the immediate work and innovation processes of organizations. Thus, several strategies

have been formulated that can be drawn on for purposes here. Vollmer and Seyr (2013) argue for studying controversy within organizational core processes like innovation or organizational learning. They suggest the application of a processual approach, i.e. to examine controversy processes over time. And they plead for the implementation of practical controversy procedure as a method supporting decision-making in real-life innovation projects, and for studying its acceptance and effectivity.

5. Conclusions

Innovation is increasingly relevant for organizations to survive in a rapidly changing world that constantly calls for new solutions for soaring complex problems that lack precedence. Innovation bears the potential for conflicts, as different knowledge and contrary ideas have to be integrated into new solutions. This and other studies show how conflict research has addressed this topic in various ways and have examined conditions, processes and results of conflicts in innovation. But there is still the need for consolidating empirical findings gained hitherto and for expanding the scope of research. To tie the efforts of future studies under a common knowledge-oriented research approach is expected to lead to a deeper understanding of the core process of innovation, which encompasses knowledge generation, integration, materialization and implementation and the role of conflicts in this process. In addition to the dominant variance-theoretical approach using questionnaires in cross-sectional designs, a process-oriented approach using qualitative methods such as observations helps digging deeper into the quality and dynamics of innovation processes. On the other hand, experimental studies help identify causal effects of conflicts and modes of conflict management on innovation. Striking is the fact that all the studies reviewed end with theoretical/research and managerial implications but have not yet ventured further into intervention studies. Addressing this "last mile" in conflict research bears an enormous potential for researchers and practitioners, offering essential insights into the immediate work processes, feedback to the effectiveness of methods as well as causal effects of the intervention. Finally, it will measurably strengthen the impact of science on the working world.

References

Alencar, E.M.L.S. de (2012), "Creativity in organizations: facilitators and inhibitors", in Mumford, M. (Ed.), *Handbook of Organizational Creativity*, Elsevier, Amsterdam, pp. 87-111.

Anderson, N. and Costa, A.C. (2010), *Innovation and Knowledge Management*, Sage, London.

Anderson, N., De Dreu, C.K.W. and Nijstad, B.A. (2004), "The routinization of innovation research: a constructively critical review of the state-of-the-art-science", *Journal of Organizational Behavior*, Vol. 25 No. 1, pp. 147-173.

Barron, F. and Harrington, D.M. (2010), "Creativity, intelligence, and personality", in Anderson, N. and Costa, A.C. (Eds), *Innovation and Knowledge Management*, Sage, London, pp. 3-40.

Basadur, M. (1995), *The Power of Innovation: How to make Innovation a Way of Life and put Creativity Solutions to Work*, Pitman Publishing, London.

Berlyne, D.E. (1966), "Notes on intrinsic motivation and intrinsic reward in relation to instruction", in Bruner, J. (Ed.), *Learning about Learning*, US Department of Health, Education and Welfare, Washington, DC, pp. 105-110.

Blake, R.R. and Mouton, J.S. (1984), *Solving Costly Organizational Conflicts: Achieving Intergroup Trust, Cooperation, and Teamwork*, Jossey-Bass Publishers, San Francisco, CA.

Bledow, R., Frese, M., Anderson, N., Erez, M. and Farr, J. (2009), "A dialectical perspective on innovation: conflicting demands, multiple pathways and ambidexterity", *Industrial and Organizational Psychology*, Vol. 2 No. 1, pp. 305-337.

Bouncken, R.B. and Winkler, V.A. (2010), "National and cultural diversity in transnational innovation teams", *Technology Analysis & Strategic Management*, Vol. 22 No. 2, pp. 133-151.

Chen, G., Liu, C.H. and Tjosvold, D. (2005a), "Conflict management for effective top management teams and innovation in China", *Journal of Management Studies*, Vol. 42 No. 1, pp. 277-300.

Chen, G., Sharma, P.N., Edinger, S.K., Shapiro, D.L. and Farh, J.L. (2011), "Motivating and demotivating forces in teams: cross-level influences of empowering leadership and relationship conflict", *Journal of Applied Psychology*, Vol. 96 No. 3, pp. 541-557.

Chen, X.H., Liu, X. and Wu, D.D. (2012), "Improving employees' job satisfaction and innovation performance using conflict management", *International Journal of Conflict Management*, Vol. 23 No. 2, pp. 151-172.

Chen, Y.F., Tjosvold, D. and Su, F. (2005b), "Goal interdependence for working across cultural boundaries: Chinese employees with foreign managers", *International Journal of Intercultural Relations*, Vol. 29 No. 1, pp. 429-447.

Cheng, C.F., Lai, M.K. and Wu, W.Y. (2010), "Exploring the impact of innovation strategy on R&D employees' job satisfaction: a mathematical model and empirical research", *Technovation*, Vol. 30 No. 1, pp. 459-470.

Cronin, M.A. and Weingart, L.R. (2007), "Representational gaps, information processing, and conflict in functionally diverse teams", *Academy of Management Review*, Vol. 32 No. 3, pp. 761-773.

De Clercq, D., Thongpapanl, N. and Dimov, D. (2009), "When good conflict gets better and bad conflict becomes worse: the role of social capital in the conflict–innovation relationship", *Journal of the Academy of Marketing Science*, Vol. 37 No. 1, pp. 283-297.

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*, Vol. 32 No. 1, pp. 83-107.

De Dreu, C.K.W. and West, M.A. (2001), "Minority dissent and team innovation: the importance of participation in decision making", *Journal of Applied Psychology*, Vol. 86 No. 1, pp. 1191-1201.

De Poel, F.M., Stoker, J.I. and Van der Zee, K.I. (2012), "Climate control? The relationship between leadership, climate for change, and work outcomes", *The International Journal of Human and Resource Management*, Vol. 23 No. 4, pp. 694-713.

Deutsch, M. (2006), "Cooperation and competition", in Deutsch, M., Coleman, P.T. and Marcus, E.C. (Eds), *The Handbook of Conflict Resolution: Theory and Practice*, Jossey-Bass, San Francisco, CA, pp. 23-42.

Dyer, B. and Song, M. (1998), "Innovation strategy and sanctioned conflict: a new edge in innovation?", *Journal of Product Innovation Management*, Vol. 15 No. 1, pp. 505-519.

Ehie, I.C. (2010), "The impact of conflict on manufactoring decisions and company performance", *International Journal of Production Economics*, Vol. 126 No. 1, pp. 145-157.

Elliott, M., Kaufman, S., Gardner, R. and Burgess, G. (2002), "Teaching conflict assessment and frame analysis through interactive web-based simulations", *The International Journal of Conflict Management*, Vol. 13 No. 4, pp. 320-340.

Flanagan, J.C. (1954), "The critical incident technique", *Psychological Bulletin*, Vol. 51 No. 1, pp. 327-358.

Follett, M.P. (1940), "Constructive conflict", in Metcalf, H.C. and Urwick, L. (Eds), *Dynamic Administration: The Collected Papers of Mary Parker Follett*, Harper, New York, NY, pp. 30-49.

George, J.M. and Zhou, J. (2001), "When openness to experience and conscientiousness are related to creative behavior: an interactional approach", *Journal of Applied Psychology*, Vol. 86 No. 1, pp. 513-524.

Gobeli, D.H., Koenig, H.F. and Bechinger, I. (1998), "Managing conflict in software development teams: a multilevel analysis", *Journal of Product Innovation Management*, Vol. 15 No. 5, pp. 423-435.

Heponiemi, T., Elovainio, M., Kouvonen, A., Noro, A., Finne-Soveri, H. and Sinervo, T. (2011), "Ownership type and team climate in eldery care facilities: the moderating effect of stress factors", *Journal of Advanced Nurcing*, Vol. 68 No. 3, pp. 647-657.

Janssen, O. (2003), "Innovative behaviour and job involvement at the price of conflict and less satisfactory relations with co-workers", *Journal of Occupational and Organizational Psychology*, Vol. 76 No. 1, pp. 347-364.

Jehn, K.A. (1995), "A multimethod examination of the benefits and detriments of intragroup conflict", *Administrative Science Quarterly*, Vol. 40 No. 1, pp. 256-282.

Jehn, K.A. (1997), "Affective and cognitive conflict in work groups: increasing performance through value-based intragroup conflict", in De Dreu, C.K.W. and Van de Vliert, E. (Eds), *Using Conflict in Organizations*, Sage, London, pp. 87-100.

Jehn, K.A. and Mannix, E. (2001), "The dynamic nature of conflict: a longitudinal study of intragroup conflict and group performance", *Academy of Management Journal*, Vol. 44 No. 1, pp. 238-251.

Johnson, D.W., Johnson, R.T. and Tjosvold, D. (2006), "Constructive controversy", in Deutsch, M., Coleman, P.T. and Marcus, E.C. (Eds), *The Handbook of Conflict Resolution. Theory and Practice*, Jossey-Bass, San Francisco, CA, pp. 69-91.

Keaveney, S.M. (2008), "The blame game: an attribution theory approach to marketer–engineer conflict in high-technology companies", *Industrial Marketing Management*, Vol. 37 No. 1, pp. 653-663.

King, N., Anderson, N. and West, M.A. (1992), "Organizational innovation: a case study of perceptions and processes", *Work and Stress*, Vol. 5 No. 1, pp. 331-339.

Lee, L.T.S. (2011), "The effects of challenge and hindrance stressors on unlearning and NPD success: the moderating role of team conflict", *African Journal of Business Management*, Vol. 5 No. 5, pp. 1843-1856.

Li, H. and Li, J. (2009), "Top management team conflict and entrepreneurial strategy making in China", *Asia Pacific Journal of Management Volume*, Vol. 26 No. 2, pp. 263-283.

Lu, L., Zhou, F. and Leung, K. (2011), "Effects of task and relationship conflicts on individual work behaviors", *International Journal of Conflict Management*, Vol. 22 No. 2, pp. 131-150.

Michalek, J.J., Feinberg, F.M. and Papalambros, P.Y. (2005), "Linking marketing and engineering product design decisions via analytical target cascading", *Journal of Product Innovation Management*, Vol. 22 No. 1, pp. 42-62.

Mitchel, R., Nicholas, S. and Boyle, B. (2009), "The role of openness to cognitive diversity and group processes in knowledge creation", *Small Group Research*, Vol. 40 No. 5, pp. 535-554.

Mohr, J. (2000), "The marketing of high-technology products and services: implications for curriculum content and design", *Journal of Marketing Education*, Vol. 22 No. 3, pp. 246-259.

Mohr, L. (1982), *Explaining Organizational Behavior*, Jossey-Bass, San Francisco, CA.

Mumford, M. (2012), *Handbook of Organizational Creativity*, Elsevier, Amsterdam.

Myers, I.B. and McCaulley, M.H. (1985), *Manual: A Guide to the Development and Use of the Myers–Briggs Type Indicator*, Consulting Psychologists Press, Palo Alto, CA.

Paletz, S.B.F. and Schunn, C.D. (2010), "A social-cognitive framework of multidisciplinary team innovation", *Topics in Cognitive Science*, Vol. 2 No. 1, pp. 73-95.

Paulsen, N., Maldonado, D., Callan, V.J. and Ayoko, O. (2009), "Charismatic leadership, change and innovation in an R&D organization", *Journal of Organizational Change Management*, Vol. 22 No. 5, pp. 511-523.

Paulus, P.B. (2000), "Groups, teams and creativity: the creative potential of idea-generating groups", *Applied Psychology: An International Review*, Vol. 49 No. 1, pp. 237-262.

Piaget, J. (1950), *The Psychology of Intelligence*, Harcourt, New York, NY.

Ply, J.K., Moore, J.E., Williams, C.K. and Thatcher, J.B. (2012), "IS employee attitudes and perceptions at varying levels of software process maturity", *MIS Quarterly*, Vol. 36 No. 2, pp. 601-624.

Poole, M.S. (2004), "Central issues in the study of change and innovation", in Poole, M.S. and Van de Ven, A.H. (Eds), *Handbook of Organizational Change and Innovation*, Oxford University Press, New York, NY, pp. 3-31.

Poole, M.S., Van de Ven, A.H., Dooley, K. and Holmes, M.E. (2000), *Organizational Change and Innovation Processes: Theory and Methods for Research*, Oxford University Press, New York, NY.

Posthuma, R.A. (2011), "Conflict management and performance outcomes", *International Journal of Conflict Management*, Vol. 22 No. 2, pp. 108-110.

Puccio, G.J. and Gabra, J.F. (2012), "Idea generation and idea evaluation: cognitive skills and deliberate practices", in Mumford, M (Ed), *Handbook of Organizational Creativity*, Elsevier, Amsterdam, pp. 189-215.

Rahim, M.A. (1983), *Rahim Organizational Conflict Inventory-II, Forms A, B, C, & D*, Consulting Psychologists Press, Palo Alto, CA.

Rank, J., Pace, V.L. and Frese, M. (2004), "Three avenues for future research on creativity, innovation, and initiative", *Applied Psychology: An International Review*, Vol. 53 No. 1, pp. 518-528.

Ries, B.C., Diestel, S., Wegge, J. and Schmidt, K.H. (2010), "Die rolle von alterssalienz und konflikten in teams als mediatoren der beziehung zwischen altersheterogenität und gruppeneffektivität", *Zeitschrift für Arbeits- und Organisationspsychologie*, Vol. 54 No. 3, pp. 117-130.

Shih, H.A. and Susanto, E. (2011), "Is innovative behavior really good for the firm? Innovative work behavior, conflict with coworkers and turnover intention: moderating roles of perceived distributive justice", *International Journal of Conflict Management*, Vol. 22 No. 2, pp. 111-130.

Simons, T., Pelled, L.H. and Smith, K.A. (1999), "Making use of difference: diversity, debate, and decision comprehensiveness in top management teams", *The Academy of Management Journal*, Vol. 42 No. 6, pp. 662-673.

Song, M., Dyer, B. and Thieme, R.J. (2006), "Conflict management and innovation performance: an integrated contingency perspective", *Journal of the Academy of Marketing Science*, Vol. 34 No. 3, pp. 341-356.

Suliman, A.M. and Al-Shaikh, F.N. (2007), "Emotional intelligence at work: links to conflict and innovation", *Employee Relations*, Vol. 29 No. 2, pp. 208-220.

Taggar, S. (2002), "Individual creativity and group ability to utilize individual creative resources: a multilevel model", *Academy of Management Journal*, Vol. 45 No. 1, pp. 315-330.

Thomas, K.W. (1992), "Conflict and conflict management", in Dunnette, M.D. and Hough, L.M. (Eds), *Handbook of Industrial and Organizational Psychology*, Consulting Psychologists Press, Palo Alto, CA, pp. 651-717.

Tjosvold, D. (1985), "Implications of controversy research for management", *Journal of Management*, Vol. 11 No. 1, pp. 19-35.

Tjosvold, D., Wong, A.S.H. and Wan, P.M.K. (2010), "Conflict management for justice, innovation, and strategic advantage in organizational relationships", *Journal of Applied Social Psychology*, Vol. 40 No. 3, pp. 636-665.

Tjosvold, D. and Yu, Z.Y. (2007), "Group risk-taking: the constructive role of controversy in China", *Group and Organization Management*, Vol. 32 No. 1, pp. 653-674.

Utterback, J.M. and Abernathy, W.J. (1975), "A dynamic model of process and product innovation", *Omega*, Vol. 3 No. 6, pp. 639-656.

Van de Vegt, G.S. and Janssen, O. (2010), "Joint impact of interdependence and group diversity on innovation", *Journal of Management*, Vol. 29 No. 5, pp. 729-751.

Van de Ven, A.H., Polley, D.E., Garud, R. and Venkataraman, S. (1999), *The Innovation Journey*, University Press, Oxford.

Vollmer, A. and Seyr, S. (2013), "Constructive controversy research in the business organizational context – A literature review", *International Journal of Conflict Management*, Vol. 24 No. 4, pp. 399-420.

Wallach, M.A. (1985), "Creativity testing and giftedness", in Horowitz, F.D. and O'Brien, M. (Eds), *The Gifted and Talented: Developmental Perspectives*, American Psychological Association, Washington, DC, pp. 99-123.

West, M.A. (2002), "Sparkling fountains or stagnant ponds: an integrative model of creativity and innovation implementation in groups", *Applied Psychology: An International Journal*, Vol. 51 No. 1, pp. 355-424.

West, M.A. and Anderson, N. (1996), "Innovation in top management teams", *Journal of Applied Psychology*, Vol. 81 No. 1, pp. 680-693.

West, M.A. and Farr, J.L. (1990), "Innovation at work", in West, M.A. and Farr, J.L. (Eds), *Innovation and Creativity at Work: Psychological and Organizational Strategies*, Wiley, Chichester, pp. 309-333.

West, M.A., Patterson, M.G. and Dawson, J.F. (1999), "A path to profit? Teamwork at the top", *Centrepiece*, Vol. 4 No. 1, pp. 6-11.

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