

JEANINE PIETERNEL PORCK

No Team is an Island

An Integrative View of Strategic Consensus
between Groups



NO TEAM IS AN ISLAND

**AN INTEGRATIVE VIEW OF STRATEGIC CONSENSUS
BETWEEN GROUPS**

NO TEAM IS AN ISLAND

AN INTEGRATIVE VIEW OF STRATEGIC CONSENSUS BETWEEN GROUPS

Een team is geen eiland

Een multi-theoretisch perspectief op strategische consensus tussen groepen

Thesis

to obtain the degree of Doctor from the
Erasmus Universiteit Rotterdam by command of the
rector magnificus

Prof.dr. H.A.P. Pols

and in accordance with the decision of the Doctorate Board.

The public defense shall be held on
Monday December 16th 2013 at 13:30 hours

by

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Erasmus Research Institute of Management – ERIM

The joint research institute of the Rotterdam School of Management (RSM)
and the Erasmus School of Economics (ESE) at the Erasmus University Rotterdam
Internet: <http://www.irim.eur.nl>

ERIM Electronic Series Portal: <http://hdl.handle.net/1765/1>

ERIM PhD Series in Research in Management, 299

ERIM reference number: EPS-2013- 299 - ORG

ISBN 978-90-5892-344-8

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Design: B&T Ontwerp en advies www.b-en-t.nl

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ACKNOWLEDGEMENTS

No man is an island entire of itself; every man is a piece of the continent, a part of the main. John Donne (1572-1631)

The principal reason for my interest in teamwork and intergroup relations is my belief that no man is an island entire of itself. We are all interconnected and need each other in order to flourish, grow and succeed. The actions and words of other people shape, stimulate and motivate us. I have taken and learned many things from other people, those who touched and affected my life along the way. My reference list acknowledges those whose ideas I have built upon. Here it is my privilege to thank the people who have contributed to this dissertation and my growth as researcher in obvious and less obvious ways.

I would first like to express my gratitude to my supervisors Prof. dr. Patrick Groenen and Prof. dr. Daan van Knippenberg. Patrick, I really appreciate your concern and involvement throughout the whole process. I could trust on your reassurance that the empirics were sound and solid. Daan, something you told me in my first year stuck with me (it is still a post-it on my computer screen): “It is more stupid not to write, than it is to write something stupid.” Your positive energy and extensive feedback challenged me to think critically about everything I wrote and helped me lift my papers to a higher level. Thank you both for sharing your expertise and experience while at the same time providing me with the academic freedom to explore my ideas.

The past 4 year I spend many hours in Rotterdam and many people there have contributed to this project, directly or from a distance. Marco, thank you for offering three PhD’s the possibility to collect field data in some very interesting companies and showing us the consultancy value of our research endeavors. Murat and Nufer, thank you for the insightful collaborations and discussions and for introducing me to Turkish cuisine. Thanks to Eurac for financing this PhD position. My favorite roomie, Anne Opschoor, you often brightened my day and lifted my spirits with your strong coffee, nice music and enthusiastic attitude. Our many conversations offered a welcome distraction. My favorite neighbor, Rianne Legerstee, it was great to share our research successes and struggles and love for chocolate. My favorite conference buddy, Birgul Arslan, I am very happy that our paths crossed on my first management conference and look forward to many more. After you warm welcome in Istanbul I hope to return the favor soon. EPAR and PNN, especially Marijn, Geert-Jan, Jacqueline, Frederik, Alexander, Suzanne, Linda, Malou and Tom, it was great to organize so many events for PhD candidates together. Last but not least, I gratefully thank members of the ERIM management and staff; Tineke, Miho, Marisa, Natalija, and Olga and Anneke, Ursula, Carien, Marianne and Marjon at the Econometrics Institute.

Many people have been there from the start, far before I even started thinking about this research endeavor. I am happy that all of you were there. My thanks go out to all of you and some specifically.

First of all, I would like to thank my family. Dear Mom and Dad, you have always given me the opportunity to find my way, to follow my interests, intuition and ambition. You are the proof that logic and creativity are complementary. I cherish that you were always there, to cheer me on, to give advice, to offer support and always with lots of love. You inspire and encourage me to get everything out of life! Dear Huub, we have chosen different fields of study, as we have often chosen differently. But in the end we share one great interest; people! Thank you for your down-to-earth reflections and brotherly advice.

Dear friends, you fuel my engine! Sjoerdje, Suus and Chrissy, thanks for your friendship, encouragement, good advice and good fun; let's keep up our wasabi-Wednesdays! Ems and EJ, thanks for the many spontaneous plans both in Den Haag and Utrecht. I look forward to our bbq's on Scheveningen beach in about 5 to 10 years! LOF, we still are a great team. You showed me that there are many ways that lead to Rome and that Finland, Friesland and Duitsland are lots of fun too! Fizzies, in the masculine world of Delft a group of girls like us was almost a necessity. I am happy that our friendship continues to sparkle! Girls of number 40, both in Delft and The Hague, you have been and still are great! Thank you for lots of fun, crazy outfits and lots to talk about!

Dear Maria, Roeland, Robert, Rianne, Leanne and Arjan, thank you for welcoming me into your family. I have fond memories of the long Sinterklaas evenings, the sporty weekends and great conversations over dinner and look forward to adding many more!

And I saved my love till last. Dear Marten, without you telling me "everything would be ok" I would have 'disappeared' in this project. With your intense drive, ambition and humor you make me smile, everyday! Thank you for being in my team. With you by my side every city and every island will feel like home. I can't wait to share the rest of my life with you!

Jeanine Porck

Utrecht,

July 2013

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Chapter 1

INTRODUCTION

The front cover of this dissertation depicts an archipelago, a cluster of island in the sea. In this picture the islands are isolated entities, separated by water, without links that connect them with each other. These unconnected islands are a metaphor for a problem many modern-day organizations face. In fact, every organization studied as part of this dissertation research mentioned this particular issue: our teams operate as separate islands. This dissertation is an important step towards the development of more understanding of how groups can integrate their strategic efforts to operate as parts of a bigger whole, because ‘no team is an island’.

Teams form the backbone of modern-day organizations. Often organizations implement a strategy in order to guide these teams and to ensure they coordinate and align their efforts. Performing collaborative efforts in line with the strategy can be challenging. Employees are human beings, driven by their own believes and routines operating in an organization characterized by informal networks and political processes. To deal with these challenges and improve coordination and cooperation within teams, the value of having a shared understanding of the strategy, strategic consensus, is long recognized. But teams do not operate in a vacuum; they need other teams for knowledge, resources or services. Effective coordination and cooperation in an organization thus also requires that teams are aligned with each other; there needs to be *strategic consensus between teams*. Although the need for this consensus is clear, it has hardly been studied. The aim of this thesis is to uncover what processes drive strategic consensus between groups, as well as how this intergroup agreement influences cooperation between groups. Thereby this dissertation advances research on strategy and organizational behavior with more extensive and sustained understanding of this important intergroup phenomenon. Additionally it offers important implications for managers that want to build bridges between their teams in order to improve the performance of their organizations.

Building on previous research

Groups – teams, work groups, departments – are the building blocks of organizations. Organizations need to ensure that groups coordinate and align their efforts (Joshi, 2006; Marks, DeChurch, Mathieu, Panzer, & Alonso, 2005; Richter, West, van Dick, & Dawson, 2006; van Knippenberg, 2003). Because organizational behavior is increasingly strategy-driven, coordinating activities and resources to ensure that organizational groups perform their collaborative tasks can be challenging (Ancona & Caldwell, 1992; Beer & Eisenstat, 2000; Marrone, 2010). Groups operate in a world of informal structures, political coalitions and consensus building where their cognitive biases are deeply embedded in routines, subgroup norms and their knowledge structures (Powell, Lovallo, & Fox, 2011). The behaviors most important for strategy implementation are not part of routine behavior, and cannot be exactly prescribed (Colvin & Boswell, 2007). Groups should thus develop a shared understanding, to resolve upcoming issues in a way that is consistent with the strategy (Amason, 1996). Not surprisingly then, a substantial body of research has accumulated on strategic consensus, the shared understanding of organizational strategy, driven by the idea that strategic consensus enhances organizational performance by improving coordination and cooperation within the organization (e.g., Bourgeois, 1980; Dess, 1987; Dooley, Fryxell, & Judge, 2000; González-Benito, Aguinis, Boyd, & Suárez-González, 2012; Kellermanns, Walter, Floyd, Lechner, & Shaw, 2011; Markoczy, 2001; Priem, Harrison, & Muir, 1995).

What has attracted far less attention is the fact that each organizational group functions in a strategy-driven context of interdependent relationships with other groups (Kramer, 1991; van Knippenberg, 2003). Groups need other groups to provide them with knowledge, products, or services, and rely on them to accommodate group needs. Even when groups function relatively independently as far as task performance is concerned, they may be interdependent for important organizational outcomes (Kramer, 1991). Effective synchronization of efforts across groups is essential for collective goal attainment (DeChurch & Marks, 2006; Edmondson, 2003), accomplishment of the organization's task (Keller & Loewenstein, 2011; Kramer, 1991; Lawrence & Lorsch, 1967) and implementation of the strategy (Dooley et al., 2000; Hambrick & Cannella Jr, 1989). For an organization to perform well, groups thus need to coordinate their efforts and interests

not only *within* their group but also *between* groups (Joshi, 2006; Ketokivi & Castañer, 2004; Marks et al., 2005; Richter, Scully, & West, 2005; van Knippenberg, 2003).

Groups that share similar views are more likely to understand one another's perspectives, to communicate more easily, to integrate distributed knowledge, and to coordinate more effectively (Cannon-Bowers, Salas, & Converse, 1993; Cronin & Weingart, 2007; Kellermanns, Walter, Lechner, & Floyd, 2005). This highlights the importance for groups to also develop a shared understanding with other groups in the organization, in order to act independently, but in a way that is consistent with the actions of other groups. We define such *strategic consensus between groups* as the degree of shared understanding of strategic priorities between two groups (cf. Kellermanns et al., 2011). Only by unraveling this strategic consensus between groups can the process of coordination and cooperation in pursuit of strategic organizational objectives be fully understood (Kellermanns et al., 2005; Markoczy, 2001; Marrone, 2010; Wooldridge & Floyd, 1989).

A number of scholars have noted the importance of studying strategic consensus between interdependent groups in addition to within-group consensus (Kellermanns et al., 2005; Kellermanns et al., 2011; Ketokivi & Castañer, 2004; Markoczy, 2001; Wooldridge & Floyd, 1989), but very few have studied the actual phenomenon. Valuable exceptions like the explorative study by St John and Rue (1991), who investigated consensus between marketing and manufacturing groups, and the illustrative case study of organizational goal coherence between a management team and cross-functional operational team by de Haas et al. (2000), do not provide a guiding conceptual framework for efforts in this area of research. While productive relations between groups are not self-evident, poor coordination of strategic efforts is identified as one of the main silent strategy killers (Beer & Eisenstat, 2000). Problematic alignment between groups even makes headlines; examples are the inadequate exchange of information between departments within the police (Schenk, 2006), and hospitals where doctors and nurses do not communicate or cooperate (Haakman, 2012; van den Elsen, 2009). Moreover, managers are finding it a difficult task to build cooperative relationships and to create conditions that foster cooperation (Smith, Carroll, & Ashford, 1995). Management scholars are frequently urged to address "real" problems facing "real" managers (cf. Hambrick, 1994). How to manage

strategic consensus between groups and how to ensure this alignment improves intergroup cooperation; is such a problem. Consequently, this dissertation strengthens the development of both the strategic management and organizational behavior fields, as well as offering valuable insights to managerial practice.

To develop our, to date limited, understanding of how teams can integrate their strategic efforts, this dissertation aims to advance understanding of the antecedents, contingencies, and outcomes of strategic consensus between groups in the domain of strategy implementation. The studies in this dissertation are designed to address these issues using a multi-theoretical, multi-level approach to offer an integrative view of strategic consensus between groups.

An integrative view of strategic consensus between groups

This dissertation comprises four empirical chapters and concludes with a general discussion which elaborates on the dissertation's implications for theory, research and practice. The four studies laid out in this dissertation offer unique theoretical and managerial insights on cognition, social identification, networks and cooperation. Since the research into strategic consensus between groups is so limited, this dissertation focuses on the most obvious and important perspectives. The first study addresses the need for developing a more comprehensive, integrative conceptualization of strategic consensus within and between groups, and thereby opened a window for a finer grained assessment of strategic consensus. The choice for social identification as a perspective in the second study is driven by the fact that intergroup relations are very much an issue of social identification; they occur because people are grouped in teams and organizations and see themselves and others in terms of these groupings. Because employees and their groups operate in a network of interdependent, informal relationships with other groups, the choice for a network perspective in the third study was guided by an interest in how these relationships shape the sharedness of understanding of strategic objectives among groups. Complementing these two perspectives, the fourth study addresses how shared understanding of what you aim for in the organization among groups has a role in the cooperation required to achieve these organizational aims. It demonstrates that strategic consensus between groups is indeed a requisite for the coordination and alignment of

collaborative strategic efforts. Given the complexity of intergroup phenomena in organizations, like strategic consensus between groups, any single perspective is likely to raise as many questions as it answers. Certainly the present thesis does not bring closure to the topic, nor was it intended to do so. This dissertation hopefully achieved the more modest goals of providing a more integrative view of intergroup consensus, for conceptualizing some of the necessary insights into antecedents, contingencies, and outcomes of strategic consensus between groups in the strategy implementation of organizations.

Dissertation overview

For the four empirical chapters in this dissertation extensive data collection was undertaken at three firms in different industry sectors and more than 170 teams were analyzed. Even though these chapters share an underlying focus on the factors that foster and hinder intergroup consensus and intergroup cooperation, they were devised as separate research papers which may be read independently of each other¹. The empirical chapters represent research efforts that I undertook together with my supervisors and members of my research team. To reflect their contributions, I will, in the following chapters, refer to the authors with “we” instead of “I”.

Comprehensive conceptualization of strategic consensus

Strategic consensus, which refers to ‘the shared understanding of strategic priorities among managers at the top, middle, and/or operating levels of the organization’ (Kellermanns et al., 2005), has long been recognized as an important concept in the literature pertaining to strategy formation and implementation processes (Finkelstein & Hambrick, 1996; Markoczy, 2001). Chapter 2 addresses the need for developing a more comprehensive conceptualization of strategic consensus. Research on strategic consensus focuses primarily on the degree of agreement within in a team regarding organizational strategy (Kellermanns et al., 2005; Kellermanns et al., 2011; Markoczy, 2001) and does not include other important elements, such as the content of the agreement, between-group consensus, or tests of the significance of differences in consensus (e.g., for evaluating

¹ Accordingly, there is a certain amount of overlap between the chapters.

effectiveness of strategic interventions) (e.g., Hodgkinson & Johnson, 1994; Kellermanns et al., 2005; Markoczy, 2001; Wooldridge & Floyd, 1989). In this chapter we propose a new analytical approach, Strategic Consensus Mapping, which provides a comprehensive analysis of strategic consensus within and between groups and includes intuitive and easy-to-grasp visualizations. This approach equips researchers with the necessary tools for integrative theory building in strategic consensus as well as in the broader managerial and organizational cognition domain. We illustrate the use of the proposed methods for a multidimensional, multilevel, and longitudinal analysis with a case example.

Antecedents of strategic consensus between groups

Chapter 3 is a field-study that examines the relationship between groups' identifications and strategic consensus between groups. Research shows that intergroup relations are very much an issue of identity – it is group identity that often gets in the way of smooth intergroup collaboration – and social identity theory has established itself as the primary theory of intergroup relations (e.g., Hogg, van Knippenberg, & Rast, 2012; Tajfel & Turner, 1986). Identification is likely to have an important influence on strategic consensus because it shapes individuals' goal preferences in terms of the interests of a grouping the individual identifies strongly with (Albert, Ashforth, & Dutton, 2000; Hogg & Terry, 2000; Hornsey & Hogg, 2000). Although the positive effects of group identification on group outcomes have been studied extensively, one of this study's strengths is proving that higher group identification in a group can actually disrupt intergroup relations. We find support for our prediction that in an organizational dyad the group with the strongest group identification –due to its strong in-group focus– limits achieving a high degree of strategic consensus with other groups. On the other hand, groups that identify highly with the organization, value the organizational interests more and our study shows that organizational identification thereby also improves intergroup relations in the organizational context. We find support that in an organizational dyad, the extent to which the degree of strategic consensus is fostered by organizational identification, is determined by the group with the lowest organizational identification. That is, one group's high organizational identification cannot compensate for another group's lower organizational identification. Additionally, we find that dyads with higher

average intergroup anxiety have lower between-group consensus. The main contribution this study is that it advances research on strategic consensus by developing a social identity perspective on between-group consensus. The study also breaks new ground for the social identity analysis of organizational behavior (Ashforth & Mael, 1989; Hogg & Terry, 2000) in which – despite its intergroup origins – research on intergroup issues is sparse (Richter et al., 2006; van Knippenberg, 2003).

The social identity perspective does not offer the only valuable perspective on intergroup consensus. Chapter 4 considers the role of intra-firm networks in strategic consensus between groups. Although it seems clear that intra-organization networks influence the coordination between groups through the availability of information and other resources throughout the organization (Kogut & Zander, 1992), little theory exists about their effects on strategic alignment between groups. For between-group strategic consensus in organizations the most relevant network characteristic is centrality, the extent to which groups have many ties to other groups (Kilduff & Brass, 2010; Sparrowe, Liden, Wayne, & Kraimer, 2001; A. Zaheer, Gözübüyük, & Milanov, 2010), as this determines their ability to access external information and knowledge. By occupying a central position in the organizational network, a group is likely to access desired strategic resources (Tsai, 2001). This field study examines the relationship between both group and member centrality and strategic consensus between groups. Our results from an organization-wide employee survey support our predictions that centrality has a positive impact on intergroup goal achievement processes and that in a dyad the centrality of each group is a determining factor for the degree of consensus between the groups. More interestingly, we find that the most central individuals may be a key strategic source at the heart of strategic alignment among groups in the organization. The most central members can use their knowledge, credibility and influence (Ibarra, 1993; Sparrowe *et al.*, 2001; Tsai, 2001) to make their groups recognize that they complement and supplement efforts of other groups. This paper demonstrates that the flexible exchange structure of a network can go beyond the hierarchical structure created by the organization in shaping the sharedness of understanding of strategic objectives among groups, that is so important for the effective coordination and cooperation between groups in organizations.

The studies in chapter 3 and 4 also address an important methodological challenge in the study of between-group consensus, namely techniques that enable the analysis of intergroup consensus. The lack of such techniques has been identified as standing in the way of development of the field (Kellermanns et al., 2005). By adapting a well-established technique from social network analysis to the study of intergroup consensus (MRQAP, see Borgatti, Everett, & Freeman, 2002; Dekker, Krackhardt, & Snijders, 2007; Krackhardt, 1988), we were able to study between-group consensus for multiple specific dyads of groups. MRQAP deals with the interdependency of observations inherent in such research questions. We thereby address the fact that each group is a member of and forms interdependent relations in multiple dyads, rather than a more global assessment (e.g., Ketokivi & Castañer, 2004) or by singling out one specific dyadic relationship (e.g., DeChurch & Marks, 2006; Richter et al., 2006).

Contingencies and outcomes of Strategic consensus between groups

Chapter 5 deals with the intergroup cooperation of management teams. The importance of cooperation for organizations is widely recognized (Ancona & Caldwell, 1990; Lawrence & Lorsch, 1967; Smith et al., 1995; Tjosvold, 1984; Tjosvold, 1988a); but how to get interdependent teams to cooperate? Despite the clear importance of cooperation between groups for organizations, the conditions that foster it are not very well understood. Because groups that share similar views are more likely to understand one another's perspectives, to communicate more easily, to integrate distributed knowledge, and to coordinate more effectively (Cannon-Bowers et al., 1993; Cronin and Weingart, 2007; Kellermanns et al., 2005), this shared understanding of the strategy allows groups to act independently, but in a way that is consistent with the actions of other groups. We therefore argue that higher strategic consensus between groups is associated with a higher degree of intergroup cooperation in a dyad of groups. For intergroup cooperation teams also need to invest into establishing links with other groups. Boundary spanning concerns a team's efforts to establish and manage links with other groups within the organization in order to assist their group in meeting its overall objectives (Ancona & Caldwell, 1990; Ancona & Caldwell, 1992; Marrone, Tesluk, & Carson, 2007; Marrone, 2010). However its effects have so far mostly been studied for assisting the own group in meeting its

overall objectives. We argue that boundary spanning, because it goes beyond mere moments of contact, can also improve intergroup cooperation. Additionally we hypothesize that the effect of strategic consensus between groups on intergroup cooperation is moderated by the degree to which teams display boundary spanning behavior. Results of a field study of the top 370 managers and their interdependent teams in a large government task organization support the hypothesized main effects and interaction. Dyads with higher degrees of strategic consensus had better intergroup cooperation when they displayed more boundary spanning behavior, then when they did not span boundaries. This paper demonstrates that due to its other-focused nature, boundary spanning helps groups to realize the potential of shared strategic understanding for intergroup cooperation. Boundary spanning behavior by members of management teams thus not only facilitates information exchange but also engenders an integration of different perspectives and installs more understanding of the interdependence between groups that characterizes organizations.

Chapter 2

STRATEGIC CONSENSUS MAPPING: A NEW METHOD FOR TESTING AND VISUALIZING STRATEGIC CONSENSUS WITHIN AND BETWEEN TEAMS²

Strategic consensus, which refers to ‘the shared understanding of strategic priorities among managers at the top, middle, and/or operating levels of the organization’ (Kellermanns et al., 2005), has long been recognized as an important concept in the literature pertaining to strategy formation and implementation processes (Finkelstein & Hambrick, 1996; Markoczy, 2001). It continues to attract the attention of scholars seeking to develop a deeper understanding of the concept (González-Benito et al., 2012). Nevertheless, the dominant focus in strategic consensus research is the degree of within-group consensus (González-Benito et al., 2012; Kellermanns et al., 2005; Kellermanns, Floyd, Pearson, & Spencer, 2008). Several scholars have highlighted the need to broaden this perspective and extend the focus to determining the strategic objectives on which individuals agree, identifying which individuals in a team are in agreement or disagreement with respect to these objectives, and studying the consensus among interdependent organizational units (e.g., Hodgkinson & Johnson, 1994; Kellermanns et al., 2005; Markoczy, 2001). We contend that a lack of appropriate methods for distinguishing the multiple dimensions of strategic consensus at various levels and time periods is an obstacle to a comprehensive analysis and integrative theory building in the strategic consensus domain.

To address this important methodological issue, this paper presents Strategic Consensus Mapping (SCM), a set of complementary procedures for probing multiple dimensions of strategic consensus and testing the cross-sectional and longitudinal

² A modified version of this chapter has been accepted for publication in *Strategic Management Journal* (see Tarakci, Ates, Porck, van Knippenberg, Groenen, & de Haas, in press).

differences within and between groups. This paper makes a number of contributions. First, SCM offers researchers the opportunity to study strategic consensus in an integrative manner that (i) allows for the quantification of multiple dimensions of consensus, (ii) enables the analysis of consensus at different levels, and (iii) visualizes consensus in an intuitive and clear fashion. Second, SCM answers the calls within the consensus literature for techniques that can facilitate the analysis of consensus between groups (Kellermanns et al., 2005). SCM offers a way to bridge the gap between individual cognition and collective behaviors (Powell et al., 2011) at both group levels and between-group levels by combining different dimensions and levels of consensus using coherent methods. Researchers can thereby gain the unique opportunity to explain which mechanisms form consensus, when this consensus occurs, and why certain behaviors and outcomes arise at both individual and collective levels (Powell et al., 2011). Third, SCM makes it possible to test the significance of differences in consensus both over time and in cross sections of groups. The ability to test such changes in consensus is particularly important not only from the perspective of theory development but also for managerial practice, because strategic interventions aimed at enhancing consensus are widely practiced in business but are seldom (if ever) quantitatively evaluated for their effectiveness (Hodgkinson, Whittington, Johnson, & Schwarz, 2006; Hodgkinson & Healey, 2008b). Last but not least, in managerial and organizational cognition research, several scholars have suggested that the tools available today for investigating cognition must be refined to facilitate deeper analyses (Hodgkinson, 2002; Kaplan, 2011; Walsh, 1995). Thereby, SCM not only advances the theory on strategic consensus, but it also contributes to the broader field of managerial and organizational cognition.

Strategic Consensus: a Multifaceted Concept Within Strategic Cognition Research

Floyd and Wooldridge (1992a) state, ‘Successful [strategy] execution means managers acting on a common set of strategic priorities,’ and this requires consensus regarding those priorities. A higher *degree* of strategic consensus within a group may facilitate the communication and coordination of actions (Kellermanns et al., 2008), create synergies (Cannon-Bowers et al., 1993), and improve group and organizational performance (Kellermanns et al., 2011). Although it has been noted that high levels of consensus can

hamper certain processes, such as change and innovation (Priem, 1990), this paper examines not whether or when strategic consensus has positive effects, but how strategic consensus can be comprehensively studied in a manner that enables integrative theory building while generating helpful implications for managerial practice. We anticipate that the study of the consequences of strategic consensus can benefit from a more integrative approach to strategic consensus.

To date, the most frequently investigated facet of strategic consensus has been the degree of within-group consensus (Kellermanns et al., 2005; Kellermanns et al., 2011; Markoczy, 2001). Although we do not dispute the importance of this research, we contend that focusing solely on the degree of consensus within groups is not sufficient for integrative theory building, but instead a multidimensional understanding of strategic consensus is required. The degree of consensus, what the consensus concerns (i.e., the content of the consensus), where it is located in the organization (i.e., the locus of the consensus), and who and how many people participate in it (i.e., the scope of the consensus) should all be determinants of a comprehensive strategic consensus theory (Markoczy, 2001). In addition, strategic consensus should be assessed at multiple levels of analysis—not only within organizational groups but also between groups and for the organization as a whole. Organizations can be characterized as networks of interdependent groups (e.g., Kramer, 1991), and a strong alignment between these groups is needed to eliminate the pursuit of subunit goals and to achieve organizational objectives (Kellermanns et al., 2005; Ketokivi & Castañer, 2004). To fully comprehend how individuals and groups combine their understanding and to determine which antecedents and outcomes are associated with these processes, as Powell and colleagues (2011) argue, it is necessary to link both individual- and group-level cognition, to make comparisons between groups, and to distinguish the overall alignment in an organization. Finally, a longitudinal assessment of changes in consensus within and between groups over time is essential because it reveals when strategy implementation benefits the most from strategic consensus (Kilduff, Angelmar, & Mehra, 2000), provides further insights into the mechanisms of the consensus formation process (Markoczy, 2001), and evaluates the effectiveness of interventions used to foster strategic consensus (Hodgkinson et al., 2006; Hodgkinson & Healey, 2008b). It is for these reasons that scholars have been seeking a

comprehensive assessment of consensus (e.g., Hodgkinson & Johnson, 1994; Kellermanns et al., 2005; Markoczy, 2001; Wooldridge & Floyd, 1989).

Thus, SCM has much to offer for the further development of strategic consensus theory because researchers can use it to assess the multidimensional, multilevel, and longitudinal aspects of strategic consensus. First, SCM scales individual understandings of strategies for both within-group and between-group levels. Second, SCM identifies within-group similarities and differences in strategic understanding both by identifying where consensus exists and by indicating its content. Following this process, a multilevel mapping of the locus and scope of strategic consensus can be generated. Third, SCM uses a complementary set of methods based on the same raw data, so the output of one method serves as the input for another method. Therefore, the distinction between within- and between-group consensus is not confounded by differences in measurement.

Scholars have previously developed techniques to study consensus and various types of cognitive structures at the individual, team, organizational, and industry levels both in strategic consensus field and in the larger body of managerial and organizational cognition research, in which consensus is rooted. Most of these measures were developed specifically for certain theoretical frameworks or contexts, and they can offer valuable insights. We reviewed the broader body of work on managerial and organizational cognition to assess the extent to which various methods can be used for comprehensive assessments of consensus. This review helped us to build on and target our method within the larger managerial and organizational cognition domain. As we outline below, our overview supports our conclusion that prior studies have not provided a method for simultaneous multidimensional, multilevel, and longitudinal analyses of consensus.

In our review, we considered methods presented in review articles by Hodgkinson and Healey (2008a); Mohammed, Klimoski, and Rentsch (2000); and Walsh (1995). We also reviewed more recent articles about these methods. We included methods that effectively perform multilevel, multidimensional, and/or longitudinal analysis of cognition, and we used a representative article for each method that demonstrates some form of shared cognition at a particular collective level. Our review is not limited to current uses of these methods, as we considered their potential for broader applications to multiple levels and dimensions. Table 1 summarizes this assessment and indicates whether a method is

multidimensional with respect to its ability to simultaneously capture the degree, content, locus, and scope of cognition. The table also shows whether a method allows for analysis at multiple levels to indicate its ability to link individual-level cognition with cognition at the within-group, between-group, and/or (inter)organizational levels. A method enables longitudinal analysis when it can detect changes in cognition over time, and it enables significance testing when it allows statistical testing of both longitudinal changes and cross-sectional differences in cognition. In addition to its ability to test cross-sectional and longitudinal differences, each method's depth of visual representation is also assessed in Table 1. Finally, a method allows for joint-space representation when it can visualize individual and collective cognition together with the content of cognition and offers a more thorough, content-based understanding of consensus among group members.

To analyze different types of cognitive beliefs and structures, researchers have already successfully used a variety of quantitative and qualitative methods to elicit, measure, and compare the cognitive frameworks of managers, groups, and organizations. Despite the wide range of available techniques, Table 1 confirms our observation that an integrative approach has not yet been developed in the larger domain of managerial and organizational cognition. The existing methods primarily capture the degree and the content dimensions of consensus across a limited number of organizational levels. A detailed analysis of consensus via in-depth visualization, longitudinal investigation, and significance testing is barely provided. Table 1 indicates that causal mapping has advantages over previous methods in that it captures multiple dimensions of consensus and allows for pairwise testing of cross-sectional and longitudinal differences in consensus. SCM, however, moves beyond causal mapping by systematically analyzing consensus between groups and facilitating the in-depth visualization of consensus both within and between groups.

Table 1: Comparison of methods in managerial and organizational cognition research

Example	Elicitation	Methods		Dimensions			Analysis Level			Longitudinal	Significance Testing	Joint-Space
		Measurement	Analysis	Degree	Content	Locus	Scope	Individual	Group			
Team mental models												
Edwards <i>et al.</i> (2006)	Pairwise similarity ratings	Closeness (C) index	Pathfinder	✓				✓	✓		✓	
Mathieu <i>et al.</i> (2000)	Pairwise similarity ratings	QAP correlations	Ucinet	✓				✓	✓		✓	
Work unit similarities												
Blackburn and Cummings (1982)	Pairwise similarity ratings	Mean similarity ratings	MDS	✓	✓			✓				
Belief structures												
Walsh, Henderson, and Deighton (1988)	Card sorting	Average squared Euclidean distance	MDS	✓	✓†			✓				
Competitor cognition												
Hodgkinson (1997; 2005)	Repertory grid	Euclidean distances	MDS	✓	✓				✓	✓	✓	✓
Daniels, de Chematony, and Johnson (1995); Daniels, Johnson, and de Chematony (2002)	Card-sorting, repertory grid, rating of maps' similarity	Mean/standard deviation of similarity ratings	Hierarchical cluster analysis, PCA	✓	✓				✓	✓		✓
Strategic groups												
DeSarbo, Gewal, and Wang (2009)	Financial measures		MDS	✓†	✓					✓	✓	✓
Causal maps												
Carley (1997)	Open-ended questions	Sum of overlapping concepts	Text-based causal mapping	✓	✓	✓	✓	✓	✓		✓	
Markoczy (2001); Clarkson and Hodgkinson (2005)	Pairwise comparisons, causal maps	Average/standard deviation of pairwise distances	Interactive causal mapping	✓	✓	✓	✓	✓	✓		✓	✓
Strategic consensus												
Bowman and Ambrosini (1997)	Rating	Standard deviation	PCA	✓	✓			✓	✓			
Strategic Consensus Mapping	Ranking/ rating	α (within group), r (between group)	PCA, MDS, permutation testing	✓	✓	✓	✓	✓	✓	✓	✓†	✓

† The method is compatible for such extensions in multiple levels and dimensions, although it is not presented in the related study.

Although we recognize that some methods may be better for particular purposes, the proliferation of methods has made it harder to accumulate knowledge (Kellermanns et al., 2011; Resick, Murase, Bedwell, Sanz, Jiménez, & DeChurch, 2010) and to develop comprehensive theories (Kellermanns et al., 2005; Mohammed et al., 2000; Mohammed et al., 2010). For instance, Mohammed and colleagues (2000) argue that ‘confusion over how to measure group-level cognitive structures has hindered empirical work on team mental models.’ Hence, SCM addresses the much-needed consolidation of methods and makes it possible for researchers in strategic consensus and in subfields of managerial and organizational cognition to build integrative theory with a systematic assessment of cognition, as we explain in a later section.

Strategic Consensus Mapping

SCM relies on data that quantify how individuals (i.e., members of work groups, teams, business units, organizations, or industries) assess strategic priorities—for example, by rating or rank ordering (potential) strategic objectives presented in a survey (the assessment of strategic consensus typically found in strategic management research, see Kellermanns et al., 2011). SCM consists of a set of methodological procedures that aim to capture the facets of strategic consensus that are discussed in the previous sections. These procedures are introduced here in the order in which they should be executed. First, the vector model for unfolding (VMU) is employed to measure the degree of within-group strategic consensus and to visualize its content. Second, from the results of this VMU, two new measures are derived to operationalize the degree of within- and between-group consensus. Third, these quantified measures of within- and between-group consensus are used to visualize the between-group consensus using multidimensional scaling (MDS). Finally, the statistical significance of the observed differences in within- and/or between-group strategic consensus, both cross sectional and longitudinal, is assessed using permutation tests.

Visualizing the Degree and the Content of Within-Group Strategic Consensus

To obtain both a visual mapping of the content and a measure of the degree of strategic consensus, SCM employs a vector model for unfolding (see, for example, Borg & Groenen, 2005). This approach is the same as that used in principal component analysis (PCA) with the transposed data matrix, which places the respondents in the columns (as variables) and the strategy items (i.e., strategic goals) in the rows (as cases). This procedure provides a joint-space presentation that jointly plots the strategy items in relation to the preferences of respondents regarding these items for all members of a team. In multivariate analysis, the VMU is a widely used statistical dimension reduction technique that summarizes a data set using one or more uncorrelated underlying latent variables to account for a maximum amount of the variance among the respondents. Below, we explain the specifications of the VMU in greater detail and demonstrate some of its features using an example.

Let \mathbf{H} be the data matrix with m rows (strategy items) and n columns (respondents).

\mathbf{H} must be standardized so that all individuals have equal weight in the VMU. Consequently, the VMU in p dimensions is equivalent to minimizing the sum of the squared errors $\|\mathbf{E}\|^2$ for \mathbf{H} and the low-dimensional representation $\mathbf{X}\mathbf{A}'$; that is,

$$L_{VMU}(\mathbf{X}, \mathbf{A}) = \|\mathbf{H} - \mathbf{X}\mathbf{A}'\|^2 = \sum_{ij} e_{ij}^2,$$

where \mathbf{X} is an $m \times p$ matrix of the object scores for the m rows of the first p components and \mathbf{A} is an $n \times p$ matrix of component loadings. \mathbf{X} is standardized to be orthogonal and has a column variance of 1, and the component loading matrix \mathbf{A} contains the correlations of the n respondents with p components \mathbf{X} . That is, the VMU reduces the dimensionality of the data to p dimensions, the object scores in \mathbf{X} contain the coordinates for each strategy item in these p dimensions, and the component loadings in \mathbf{A} are the correlations between the object scores for each strategy item and the respondents' answers.

The VMU facilitates the identification of a p -dimensional space that contains (i) a configuration of m objects that represents the strategy items (the content of the strategy, which is shown as object points on a biplot) and (ii) a p -dimensional configuration of n vectors that represents the respondents in the group such that the projections of all object points on each vector correspond to the individual preferences of each respondent regarding the strategy items in the data set. In two-dimensional space, the results of the VMU can be depicted using a biplot in which the rows of \mathbf{X} (the object scores of the strategy items) are represented as points and the rows of \mathbf{A} (the component loadings of the respondents) are represented as vectors (Gower & Hand, 1996).

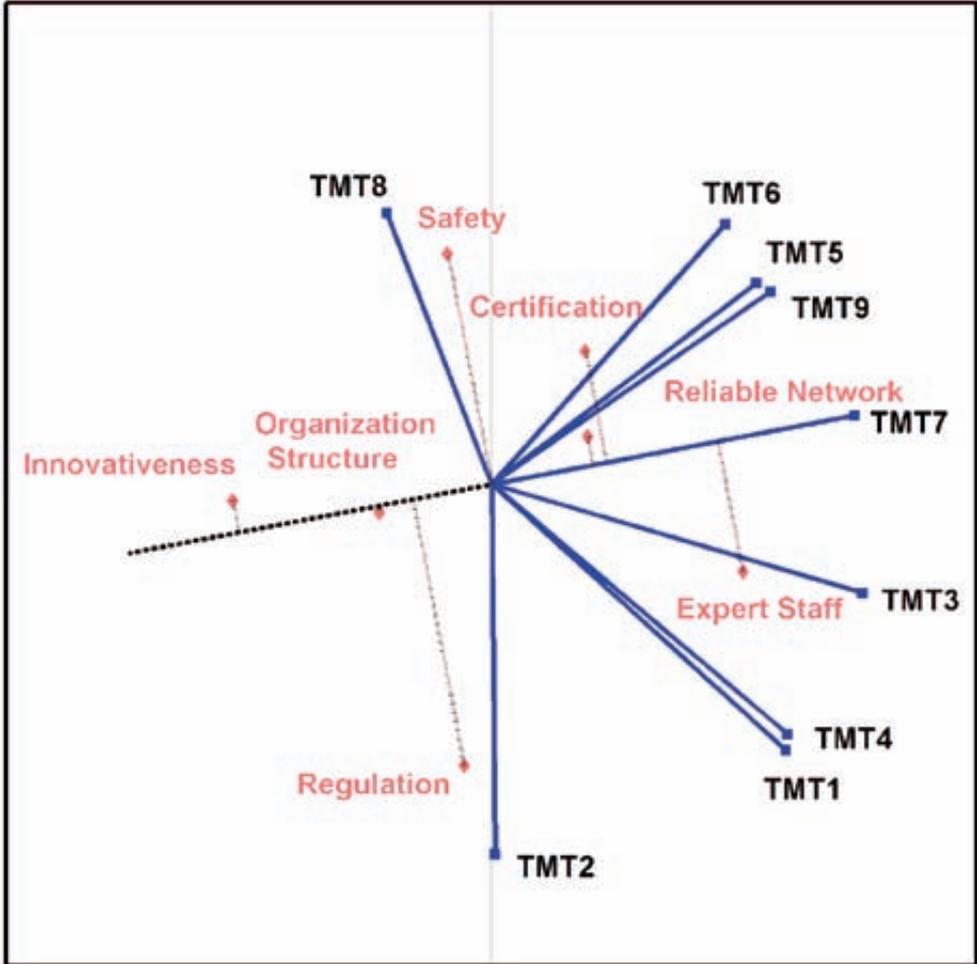


Figure 1: Example of a VMU biplot

Each vector represents a TMT member. The projections of the strategy items for respondent TMT7 are illustrated. A higher positive (negative) projection of an object point onto the component vector that represents a respondent indicates higher (lower) prioritization.

Figure 1 shows several visual features that are associated with the resulting biplot representation of the VMU solution. (The raw data matrix for this example is presented in Table 3 in the Appendix.) Figure 1 presents the VMU solution of a top management team (TMT) where each respondent is a TMT member. First, the cosine of the angle between two respondents is an approximation of their pairwise correlation (Linting, Meulman,

Groenen, & van der Koojj, 2007; Rodgers & Nicewander, 1988). This interpretation is based on the eighth way of interpreting correlations proposed by Rodgers and Nicewander (1988), who argue that this approach is the easiest way to interpret the magnitude of correlations and add that ‘this inside-out space that allows [a correlation] to be represented as the cosine of an angle is relatively neglected as an interpretational tool.’ Respondents with small angles between their vectors have a similar opinion of the strategy items in question. For example, in Figure 1, the respondent TMT1’s goal prioritization is similar to that of TMT4 but is very different from TMT8.

Second, the spread of all the vectors in a biplot demonstrates the degree of within-group strategic consensus. When the vectors are grouped in a tight cluster, there is a high degree of within-group strategic consensus. By contrast, a wide distribution of vectors of the respondents in opposing directions indicates a low degree of within-group consensus.

Third, the VMU biplot both provides a comparison of individuals and indicates their goals. The orthogonal projection of a strategy item onto a respondent’s vector indicates the respondent’s ranking for that particular strategy item. The farther an item is projected onto the vector, the higher the respondent prioritizes the item, whereas the respondent does not consider items that are projected in the opposite direction as high priorities. The projections of the strategy items onto the vector for respondent TMT7 are shown with a dashed line. We can see that TMT7 considers *Expert Staff* the most important because its projection is farthest on the vector that represents TMT7. *Expert Staff* is followed by *Certification* and *Reliable Network*. Because *Innovativeness* embodies the farthest projection in the opposite direction, it can be inferred that TMT7 valued that strategy item the least. In this manner, within-group strategic consensus is visualized so that it captures the content and locus (within-group) facets of the multifaceted definition of consensus proposed by Markoczy (2001).

Fourth, the VMU enables quantification of the opinions of groups, so consensus among groups is easier to determine. The dimensions in the regular VMU are chosen to maximize the reconstructed variance, which is orthogonal to higher dimensions. However, the total variance that is explained by the two dimensions does not change with the rotation of these two dimensions such that this freedom of rotation can be used to ensure that the average (vector) of component loadings coincides with the first dimension. As a result, the

first dimension can be interpreted as the ‘prototypical group’ member who best represents the entire group’s opinion. Therefore, the projections of strategy items onto the first axis represent the overall view of the group based on this prototypical group member. In Figure 1, when we make projections of the strategic goals onto the first dimension to attain the overall view of the group, we observe that the prototypical group member prioritizes *Expert Staff* the highest, followed by *Certification* and *Reliable Networks*, whereas *Innovativeness* has the lowest priority. In addition, the number of people who are close to the prototypical group member represents the scope of within-group consensus.

Finally, the length of a vector indicates how well a respondent is represented, where a length of 1 indicates a perfect fit (Gower & Hand, 1996). Short vectors indicate that the respondent is not well represented, so they should be interpreted cautiously because for that particular vector low variance is accounted for (Linting et al., 2007). Accounting for low variance must be interpreted as an indication of diverse opinions in a group and, thus, low consensus. The first two dimensions of the VMU solution are generally adequate to explain a large portion of the variance if the number of variables and the number of respondents are not very high. In the example in Figure 1, all of the respondents fit well into two dimensions because nearly all of the respondents have vectors with a length that is close to 1. Indeed, 79.5 percent of the variance in this example is explained by the first two dimensions.

Quantifying the Degree of Within-Group Strategic Consensus

In this section, we present a new measure for assessing the degree of strategic consensus within a group. A new α measure of the degree of within-group strategic consensus is defined by the length of the average component loading vectors of the unrotated VMU solution; that is,

$$\alpha = \sqrt{\sum_{p=1}^2 \left(m^{-1} \sum_i a_{ip} \right)^2},$$

where α_{ip} is the p^{th} component loading for respondent i ($i = 1, \dots, n$). Note that this vector coincides with the first dimension after the rotation, thus complementing our visualization

of the content and degree of consensus.

α takes values between 0 and 1. If all of the members of the group have similar views regarding the strategy items—and so their vectors are close together in a tight group—then the α measure will be close to 1. However, if the vectors are spread out, such as a set of rays evenly distributed on a circle, then the average component loadings will be close to zero, and the α measure will be low. In Figure 1, the α value is 0.55, which indicates a moderate degree of within-group strategic consensus.

Quantifying the Degree of Between-Group Strategic Consensus

When a firm wants to strategically align people in the organization, developing a consensus regarding the strategic priorities in each group is important, but ensuring a shared understanding of strategy across groups is also essential. Kellermanns and colleagues (2005) suggest the use of a correlation-based approach to measure consensus across groups, especially when managers from several levels are studied. Therefore, we propose a correlational measure of the degree of between-group consensus that is derived from the within-group VMU object scores of the strategy items. Because the first axis can be interpreted as the prototypical member of the group who represents the aggregate measure of the entire group's overall opinion, the correlation between the prototypical members of two groups captures the between-group consensus for these two groups.

The measure that we propose, $r(A, B)$, is operationalized as the correlation of the object scores of the strategy items on the first principal component for two groups, A and B . Clearly, an $r(A, B)$ of 1 indicates perfect overlap of the two groups regarding the strategy items; $r(A, B) \approx 0$ represents no strategic consensus between the two groups, and $r(A, B) \approx -1$ reveals two opposite notions of the strategy in the two groups.

This measure can also be used to measure the degree of overall strategic alignment in a given organization when all the groups in the organization have been surveyed. An aggregated index of the degree of between-group strategic consensus for all possible pairs of groups in the organization, r_{overall} value, can be operationalized as the average sum of the squared r -measures for all pairs. Therefore, r_{overall} indicates the overall degree of strategic consensus among all the groups in a given organization. The r_{overall} index can also be used to compare the strategic alignment between different organizations.

Visualizing the Degree and Locus of Between-Group Strategic Consensus

In addition to our within-group consensus visualization, we propose a visualization technique for between-group strategic consensus as well. The between-group visualization is a map that represents all the groups in the organization in a two-dimensional space according to their respective levels of between-group consensus. The visualization demonstrates which groups are located close together and share a strategic understanding, thus enabling us to determine the locus of consensus across the groups.

To obtain a mapping for between-group consensus, classical multidimensional scaling (MDS) is used. The main objective of MDS is to represent given measures of dissimilarity for all pairs of objects as distances between pairs of points in a low-dimensional space such that the distances correspond as closely as possible to the proximities (Torgerson, 1952). MDS and similar methods have been widely used in the analysis and comparison of intra- and intergroup cognitive representations in strategic management (see, e.g., Hodgkinson, 1997; Hodgkinson, 2005, for applications of three-way MDS, and; Markoczy & Goldberg, 1995, for two-way MDS applications). For example, Hodgkinson (2005) used a one-mode (stimuli \times stimuli), three-way (stimuli \times dimensions \times participants) Procrustean Individual Differences Scaling approach to investigate the extent and locus of strategic consensus regarding actors' mental models of competition in a study of residential real estate agents' perspectives on competitor definitions. SCM, however, uses the simpler two-way (stimuli \times participants) approach. This enables more straightforward comparisons across teams because it displays strategic goals along with the team members, so the prototypical team member for each team can be determined, and this forms the basis of SCM's MDS analysis to compare the various teams. Regarding our use of classical MDS, note that when only a few groups are involved, the results of classical and other forms of MDS (such as least-squares MDS, which minimizes stress) are very similar. If several groups are being analyzed (e.g., in an industry-wide application), then we suggest first performing a classical MDS and then using it as the initial configuration for a least-squares MDS (e.g., using the SMACOF algorithm in SPSS Proxscal, see Borg & Groenen, 2005).

As a measure of the dissimilarity between two groups, we transform r measures by subtracting from 1 (see Borg & Groenen, 2005). Geometrically, this measure of dissimilarity is effective because it is equal to the squared Euclidean distances between the

end points of the vectors of the prototypical managers. Alternatively, other dissimilarity measures, such as city-block and Minkowski measures, can be used. MDS finds an optimal representation of the between-group r measures using distance in two-dimensional space. Each group is represented as a point, and the distances between the points represent the between-group consensus. Groups that more similarly value the strategy items are thus grouped closer together on the MDS map, whereas groups with opposing views are placed farther away from one another.

To offer a broader perspective on strategic consensus across organizational groups in our particular case, we add certain features to the between-group consensus maps. First, each group is not represented by a single point in the two-dimensional space, but rather, each group is represented by a shaded bubble whose size represents the current degree of within-group consensus (i.e., the α measure). To provide perspective, we use an outer ring for the bubble, and the size of this outer ring indicates the potential maximum size of the bubble, if the group ever achieves perfect consensus (i.e., $\alpha = 1$). Second, our graphical representations place the TMT in the center of the MDS plots. However, the TMT is only used as an example, as depending on the primary research question, other groups or stakeholders can be used as a reference group. Third, to make the mappings more comparable, this example uses ten rings encircling the TMT that represent the correlational distance to the TMT ranging from 0.9 to 0.

Assessing the Statistical Significance of Differences in Strategic Consensus

To test changes in strategic consensus over time (e.g., before and after a strategic intervention) or differences in consensus between groups, we must determine the statistical significance of the difference in the degree of consensus. To conduct significance tests of such differences, the respective α_{diff} or r_{diff} values must be defined. For instance, if we are interested in determining whether there has been a significant change in the within-group consensus of a group over time, then the null hypothesis is $\alpha_{diff} = 0$, where $\alpha_{diff} = \alpha_{post} - \alpha_{pre}$. Similarly, if we are interested in determining whether group A exhibits greater within-group consensus than group B, then the null hypothesis becomes $\alpha_{diff} \leq 0$, where $\alpha_{diff} = \alpha_A - \alpha_B$, and the alternative hypothesis is $\alpha_{diff} > 0$.

To our knowledge, the only study that proposes a method for comparing consensus across groups is that of Pasisz and Hurtz (2009), who suggest that a series of F tests can be

used to compare within-group agreement across two or more groups. However, their procedure is parametric and thus may be sensitive to deviations from normal distribution (Markowski & Markowski, 1990). Our methods are not constrained by such assumptions because the VMU method is a nonparametric technique without a statistical error model. Because the within- and between-group consensus measures are functions of the VMU results, they do not entail any distributional assumptions. This is also true of the distributions of α_{diff} or r_{diff} , for which no standard statistical theory is available. Therefore, the use of the permutation test as a nonparametric method of hypothesis testing is more appropriate given our method. Moreover, Hodgkinson (1998) warns against the conditional dependency problem of observations associated with significance tests of MDS-related outputs and distances derived from proximities. However, because in our analyses the α and r statistics are derived from pairs of VMU solutions rather than from MDS, conditional dependency is not an issue. Nevertheless, our use of permutation tests is consistent with the work of Jones (1983), who recommends using nonparametric tests to mitigate conditional dependency problems.

The permutation test yields the distribution of any test statistic for two groups under the null hypothesis that there is no difference between the two groups by rearranging the labels of the observed data (Good, 2000). The permutation test compares the α_{diff} and r_{diff} values of the true groups with the α_{diff} and r_{diff} values that are obtained from a large number of data sets (e.g., $N = 9,999$) in which the grouping information is destroyed and individuals are randomly assigned to one of the groups (Hesterberg, Moore, Monaghan, Clipson, & Epstein, 2005). To ensure that the group size remains constant, the array indicating the number of individuals is randomly permuted, and new random group memberships are assigned for each permutation data set. To determine the significance, the p-values of the observed α_{diff} and r_{diff} are determined by their percentiles with respect to the permutation distribution. If the null hypothesis of no difference is rejected, then the observed α_{diff} or r_{diff} is significant at the level of the p-value.

Using Strategic Consensus Mapping to Facilitate Strategic Reflection: a Case Example

To illustrate SCM, our case example uses data from a large Western European firm in

the service industry. The company was composed of a top management team (TMT) and nine functional departments, each of which had several sub-departments at the time of data collection. The company's TMT included the managing director and the heads of the nine functional departments. The department heads directed teams of four to ten managers each, who in turn each supervised at least one sub-department. To assess the strategic alignment of the organizational units, we focus on the TMT as well as the management teams making up the company's nine departments. In the subsequent departmental analyses, the TMT members (i.e., the department heads) are also included in their respective departments.

Instead of generic strategic goal statements, this case uses strategic goals provided to us by the TMT that are specific to our selected company. These goal statements outline the organization's strategic priorities, using a definition common to strategic consensus research (Kellermanns et al., 2005; Kellermanns et al., 2011). In this case, we presented these strategic goals to 72 top and middle managers in the organization with the following instructions: 'Please rank the following strategic goals of your company from most important to least important in order of their importance to you.' Because the strategic priorities in the current paper are those from the TMT, researcher interference in eliciting strategic goals is limited. We received 64 responses—a response rate of 89 percent. Of those 64 responses, 63 percent of the respondents were male, and 56 percent of this group had master's degrees (the rest have bachelor's or comparable college degrees). The average work experience of the respondents was 18.6 years, and they had been in their current positions at the time of the survey an average of 3.37 years.

In order to preserve the confidentiality of the respondents, we re-label the department names of this illustrative case study, and we conceal the respondents' names. Furthermore, we present only shortened versions of the TMT's seven strategic priorities of the company: *Innovativeness, Regulation, Reliable Network, Safety, Expert Staff, Organization Structure, and Certification*.

For this illustrative case study, we present the firm-wide results first, followed by the results for the respective levels of the organization (i.e., the team and individual levels). Presenting the results in this way provides a clearer picture of the organization and enables more efficient interpretation of the between- and within-group consensuses as well as the overall, firm-level alignment.

Locus and Degree of Between-Group Strategic Consensus

Figure 2 shows the MDS plot of all the organizational units in the firm. (The correlation matrix used to generate Figure 2 is presented in Table 4 in the Appendix.) The distances between the bubbles represent the degree of consensus between the organizational units; the smaller the distance, the greater the consensus between the groups (i.e., the closer the value to $r = 1$). For this example, we place the TMT at the center to make it easier to determine if it is the locus of the consensus.

Figure 2 shows that the Sales, Strategy, and IT departments are all relatively close to the TMT, which indicates that they have a high level of consensus with the TMT's given strategic priorities. The Operations and Business Development departments are much farther away from the TMT, which indicates that they have a low level of between-group consensus with the TMT.

The bubbles in Figure 2 also represent the degree of within-group consensus for each department, and the rings around the bubbles indicate the potential size of a bubble if the group ever achieves perfect consensus regarding their ranking of the strategic priorities (i.e., $\alpha = 1$). For example, the Sales, Communication, and IT departments ($\alpha = 0.81, 0.79,$ and 0.73 , respectively) have large bubbles, indicating a high level of within-group consensus. However, the Operations, TMT, and Finance departments ($\alpha = 0.53, 0.54,$ and 0.56 , respectively) have relatively small bubbles, indicating a low level of within-group consensus.

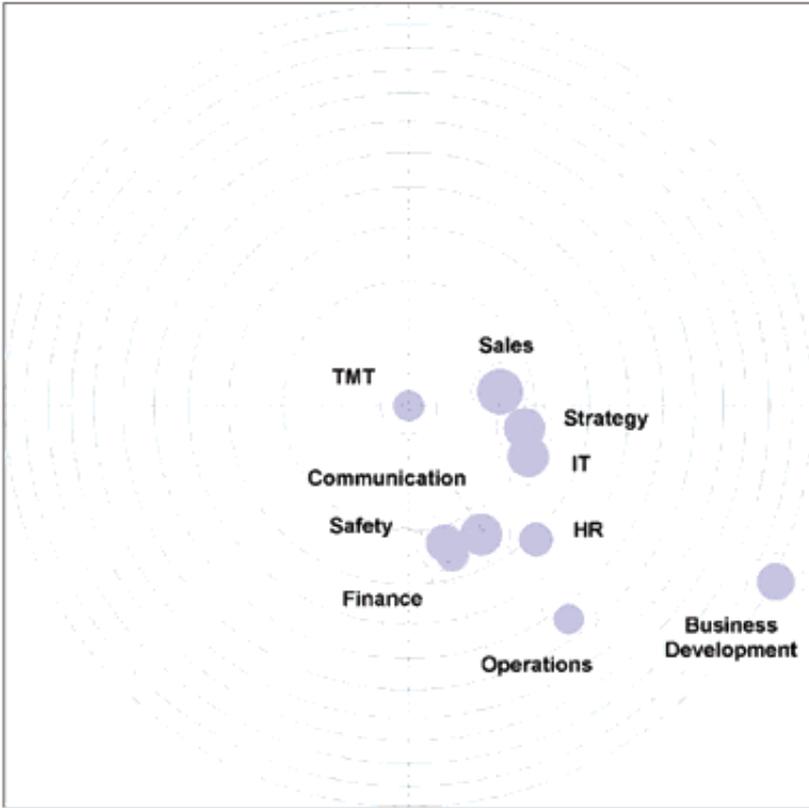


Figure 2: MDS solution depicting the locus and degree of between-group consensus

The distances between the centers of the bubbles represent the degree of between-group consensus; shorter distances represent greater between-group consensus. The size of a bubble, with respect to the outer ring, indicates the degree of within-group consensus. The outer rings indicate the potential size of the bubble when a group achieves perfect consensus ($\alpha = 1$). The rings encircling the TMT represent the correlations between the groups and the TMT.

The degree of within-group consensus must be interpreted in conjunction with the departments' distance from the group positioned at the center of plot representing consensus between the groups. The combined degree and distance indicate the locus of consensus in the organization. If the organizational units that have high degrees of within-group consensus are all clustered far away from the central group, then the locus of consensus in the organization cannot be the group currently fixed in the center of the figure, in this case study, the TMT. Similarly, the number of groups that are close to the locus indicates the scope of consensus within the organization. Figure 2 shows that the

TMT has a relatively low degree of within-group consensus and that the locus of consensus is decidedly not the TMT’s view of strategic priorities, evidenced by the high degrees of within-group consensus of the departments clustered far away from the TMT. Figure 2 shows that in this case, each department has uniquely ranked the strategic goals for the organization and that these views, particularly those of Business Development and Operations, differ from the TMT views.

Content and Degree of Within-Group Strategic Consensus

To determine the disparate views causing the shift of locus in this case study, we have to examine each management team more closely. The VMU step provides the biplots for each team such that we can observe each team member’s view of the strategic priorities (See Figure 1 for the biplot of the TMT). Figure 3 shows the biplots of two departments: Sales, which is close to the TMT, and Operations, which is far away from the TMT.

Note that to investigate the stability of the VMU procedure’s results—that is, to determine whether slight changes in the data can lead to drastically different representations—we use the bootstrap method (Efron & Tibshirani, 1997) for resampling. In our case study, the results of this procedure do not reveal any violations of the stability criteria.

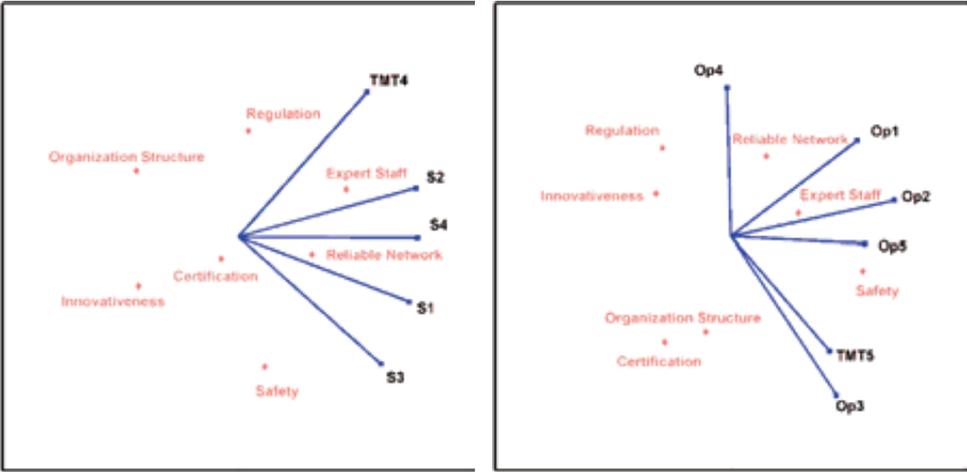


Figure 3: VMU biplots representing the degree and content of strategic consensus within the Sales (left) and Operations (right) departments

Because the projections of the strategy items onto the horizontal axis correspond to the views of the prototypical group member, we can identify, on an item-by-item basis, which particular strategic issues account for any divergence in viewpoints within the group. For example, based on the projections of the strategy items onto the first axis in Figure 1, *Expert Staff*, *Certification*, and *Reliable Network* are the top three strategic priorities for the TMT. Figure 3 shows that the Operations department rank *Safety* as the most important, while they rank *Certification*, *Innovativeness*, and *Regulation* as the least-important strategic priorities. This difference in responses pertaining to the consensus content generates a low degree of between-group consensus between the Operations department and the TMT, as shown by the distance between these groups in Figure 2. In contrast, the Sales department views *Expert Staff* and *Reliable Network* as the most important strategic priorities and regards *Innovativeness* and *Organization Structure* as the least-important strategic priorities; these views are similar to those of the TMT, placing the Sales department close to the TMT and yielding a high level of between-group consensus in Figure 2.

When we examine the individual Sales and Operations managers in Figure 3, we observe that the respondent vectors for the Sales department are a tighter cluster than those for the Operations department; this observation shows that the degree of within-group consensus in the Sales ($\alpha = 0.81$) is greater than that of the Operations ($\alpha = 0.53$). Consequently, we conclude that the members of the Sales department have more consensus regarding the relative importance of the strategic priorities than the members of the Operations department.

In Figure 3, the large spread of the vectors in the Operations department results from differences in the department members' individual preferences. For instance, person Op4 prioritizes *Regulation*, *Reliable Network*, and *Innovativeness* as the most important strategic priorities, whereas respondent Op3 considers these three strategic priorities to be the least important, considering *Safety*, *Organization Structure*, and *Certification* to be the most important. However, some team members, such as Op3 and TMT5, have similar views because the angle between their vectors is small. Finally, TMT5's and Op5's vectors are slightly shorter than the others that all have lengths of approximately 1. This observation indicates that preferences of TMT5 and Op5 are less adequately represented in

the biplot compared to the preferences of the other department members. Indeed, two dimensions account for 66 percent of the variance in the Operations department, which indicates that the preferences of some members are not perfectly represented in these dimensions. In Figure 3, the members of the Sales department exhibit a greater shared understanding regarding strategic priorities, and all members are represented adequately in the biplot, with lengths close to 1; 90 percent of the variance is accounted for in the biplot.

Assessing the Statistical Significance of Differences in Between-Group Strategic Consensus

Both the biplot and the α measures indicate that the Sales department has a greater degree of within-group strategic consensus than the Operations department. However, we do not know whether this difference is statistically significant. We use permutation testing to determine whether the degree of within-group consensus of the Sales department is significantly different than the Operations department—that is, H_0 equals $\alpha_{diff} = 0$. After 9,999 permutations, the difference of $\alpha_{diff} = 0.83 - 0.53 = 0.28$ is statistically significant at the 98th percentile (i.e., $p = 0.02$). Therefore, the null hypothesis, which states that there is no difference between the Sales and Operations departments with regard to their within-group strategic consensus, can be rejected at the 5 percent level.

Additional evidence of the validity of our α measure can be obtained by comparing our results with those obtained using other common consensus measures, such as standard deviations, squared Euclidean distances, and correlations (see Kellermanns et al., 2011). Table 2 shows that the results remain qualitatively the same.

Table 2: Permutation tests used to compare the within-group consensus between the Sales and Operations departments in Figure 3

Measures	Sales	Operations	Difference	<i>p</i> -value
α	0.81	0.53	0.29	0.020
Standard deviations	-1.22	-1.81	0.59	0.009
Squared Euclidean distance	-23.60	-47.07	23.47	0.024
Correlations	0.58	0.16	0.42	0.024

A permutation test can also be used to test whether two groups have different levels

of correlation with the TMT. For example, in our illustrative case study, the results show that the difference observed between the TMT and the Sales and Operations departments [$r_{\text{diff}} = r(\text{TMT}, \text{Sales}) - r(\text{TMT}, \text{Operations})$] is significant at the 10 percent level ($p = 0.08$). We can conclude, therefore, that there is some (albeit not strong) evidence that the Sales department does indeed have a higher degree of consensus with the TMT than does the Operations department. Figure 2 also suggests that the Sales department is more aligned with the TMT than the Operations department.

Assessing the Effectiveness of the Strategic Intervention

When we presented these findings to the TMT, it was apparent that our illustrations made it easier for the managers to understand the results. The TMT members were especially surprised to see the low within-group consensus of their own team, the TMT, regarding strategic priorities ($\alpha = 0.55$). Consequently, the TMT decided to arrange a semi-structured half-day strategic intervention. This intervention was intended to enhance the team members' shared understanding of the firm's strategic priorities.

We reevaluated the TMT members' priorities after the intervention to determine the intervention's effectiveness. Clearly, more rigorous research designs, such as a two-group pretest/posttest design that compares an intervention's outcomes with those of a control group (e.g., Cook & Campbell, 1979), are required to comprehensively assess the effectiveness of strategic interventions. Nevertheless, for illustrative purposes, we now demonstrate how SCM can be used to measure the effectiveness of strategic interventions.

The measurements taken after the intervention show that the degree of the TMT's within-group consensus is higher ($\alpha_{\text{pre}} = 0.55$; $\alpha_{\text{post}} = 0.81$). Thus, the next step is to test whether this increase is statistically higher. The results show that α_{post} is significantly higher than α_{pre} at the 5 percent level ($p = 0.04$).

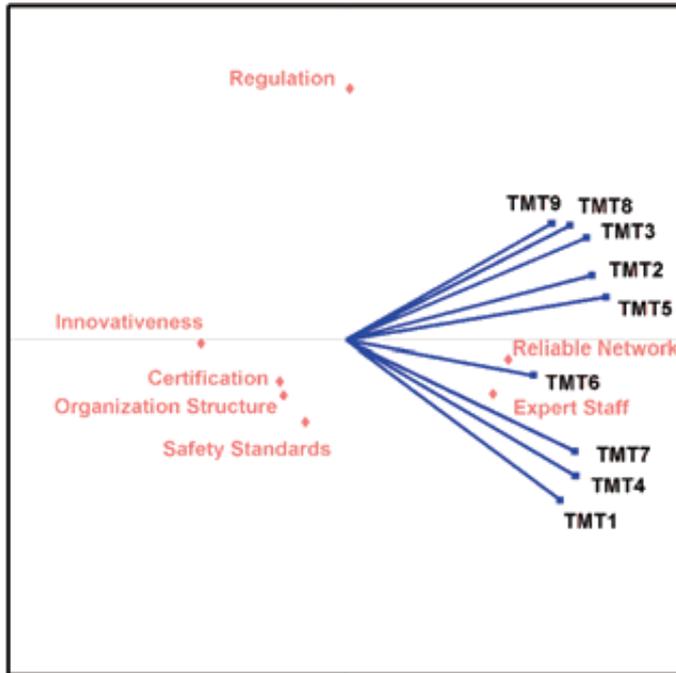


Figure 4: VMU biplot for the TMT after the strategic intervention

Figure 4 also presents the consensus content, which can be compared to Figure 1. We see that there is greater consensus regarding the high importance placed on *Reliable Network* and *Expert Staff*, and the TMT members have a high degree on consensus regarding the low priority of *Innovativeness*. Despite the need to apply more rigorous designs, these results show that this particular strategic intervention is effective in increasing the degree of consensus within the TMT regarding the desired content.

Discussion

In this paper, we present a set of complementary techniques for mapping strategic consensus. SCM enables the quantification of the degree of consensus within and between a given set of groups as well as the visual representation of the content of consensus within groups. This method also makes it possible to test whether longitudinal or cross-sectional differences in the degrees of within- and between-group consensus are statistically significant. We illustrate the use of SCM drawing on data gathered during the course of a strategic intervention.

SCM's core contribution is the enhanced potential it provides strategic management researchers to conduct more fine-tuned and extended analyses of strategic consensus within and between groups and, consequently, to develop overarching theories. The method complements earlier conceptual arguments regarding the multifaceted nature of strategic consensus (Hodgkinson & Johnson, 1994; Kellermanns et al., 2005; Markoczy, 2001; Wooldridge & Floyd, 1989) by providing the methodological tools that are necessary for rigorous empirical studies in this area. This multifaceted view prevents biases such as assuming that a high level of within-group consensus also indicates agreement on the same content or solely looking at the consensus at higher echelons when, in reality, the real locus of consensus is at the middle and lower levels. In addition, SCM's longitudinal assessment of consensus makes it possible to detect changes in consensus over time, providing further insight into the mechanisms of the consensus-formation process (Markoczy, 2001) and the effectiveness of strategic-consensus-fostering interventions (Hodgkinson et al., 2006; Hodgkinson & Healey, 2008b). Thus, future research can derive visualizations of consensus and statistical tests of differences in consensus in an integrative approach. Because the measurements of within- and between-group consensus with SCM rely on the same raw input, they are thus not confounded by the specifics of their measurement. Therefore, with the tools to operationalize the different facets of strategic consensus at multiple levels over time, SCM can further our understanding of the role of strategic consensus in the strategy process.

Clearly, SCM is intended for studying strategic consensus. However, the method may be used also to study managerial and organizational cognition, which also calls for an integrative approach (Hodgkinson, 1997; Hodgkinson, 2002; Kaplan, 2011; Mohammed et al., 2000; Walsh, 1995). In this regard, SCM has a great deal to offer researchers on managerial and organizational cognition because SCM makes it possible to multi-dimensionally and longitudinally compare both individuals and groups. For example, research on intergroup relationships in organizations (van Knippenberg, 2003) may benefit from the use of SCM to visually display a shared understanding across interdependent organizational groups in areas other than strategic priorities. Likewise, in an inter-organizational context, SCM can help researchers to identify and visualize strategic groups, and the within-group consensus measure may provide a proxy for the degree of

strategic group identity, which refers to the mutual understanding among the members of an intra-industry group regarding the central, enduring, and distinctive characteristics of the group (Peteraf & Shanley, 1997). SCM's contribution to these streams of cognition research lies in its ability to assess cognition simultaneously at different analytical levels by decomposing different dimensions of cognition and testing longitudinal and cross-sectional differences in cognition.

We do note that ordinal data must be treated cautiously when applying SCM. In such cases, 'ordinary' VMU could be replaced by categorical principal component analysis (CatPCA) in the transposed data matrix. The two techniques provide similar outputs, and the overall differences between CatPCA and PCA are negligible; however, CatPCA is the more appropriate technique to use with ordinal data (Linting et al., 2007). In addition, the two fundamental tools that are used in SCM—VMU and MDS—are based on the idea of representing multivariate data in lower dimensions. By their nature, these procedures involve searching for low-dimensional representations that show only the most important information rather than all the information. Representing only the most important information eliminates noise and unimportant relationships from the representation. However, these processes may not provide important information that is visible only in higher dimensions. This issue may be particularly relevant to VMU solutions that are obtained for many strategy items or groups with many members. A large number of strategy items are unlikely in strategic consensus research; however, there may be a large number of group members when large organizations with many organizational units are studied. In these cases, the two-dimensional MDS solution, which indicates the between-group similarities, becomes more of a compromise as the number of groups grows. However, poorly fitting groups can be easily detected when the MDS diagnostics are applied. The between-group measures and their significance can provide valuable support for an MDS map in these cases. Other options would be to apply more conventional MDS techniques to explore higher dimensional models to derive separate subgroup models or to rely on other established techniques, such as similarity tree analysis and hierarchical clustering (see Hodgkinson, 2005).

Managerial Implications

This paper has important implications for both practitioners considering the use of

strategy workshops and those investigating consensus in their companies and/or groups. Companies invest significant resources in strategic interventions; however, the effectiveness of these interventions is seldom, if ever, assessed (Hodgkinson & Healey, 2008b). SCM can be used to evaluate whether a particular strategic intervention has been effective, and the results can reveal where, as well as regarding which issues, a lack of strategic consensus exists within an organization. Thus, SCM can provide the starting point for an intervention that is intended to increase consensus.

In the analysis of strategic consensus in organizations, between-group visualization provides an intuitive, clear means of determining the strategic alignment of teams. Firms can then take the appropriate actions to achieve a desired level of alignment. Similarly, within-group visualizations can help firms identify the strategic content on which the members of a group agree or disagree. Top managers can then use this information to better communicate strategies to employees via newsletters or workshops. The ability to identify these issues enables organizations to generate policies that increase strategic consensus in a more targeted, cost-effective, and productive manner.

Conclusion

Strategic consensus has become a prominent concept in the strategy process and strategy implementation research. The Strategic Consensus Mapping technique proposed here is closely aligned with the conceptual analysis of strategic consensus and can help researchers break new ground through more fine-grained and extended analyses of the multifaceted and multilevel nature of strategic consensus. This paper extends a clear invitation to strategic management researchers to apply this new approach in the study of strategic consensus.

Appendix

Table 3: Data matrix of the VMU biplot reported in Figure 1 (higher numbers indicate higher prioritization)

<i>Strategic Priority</i>	<i>Respondent</i>								
	TMT1	TMT2	TMT3	TMT4	TMT5	TMT6	TMT7	TMT8	TMT9
Safety	1	2	3	2	5	6	4	7	5
Certification	4	1	4	3	6	5	5	2	7
Expert Staff	7	6	7	7	7	4	7	3	6
Regulation	6	7	5	6	1	2	3	1	2
Reliable Network	5	3	6	5	3	7	6	6	3
Organizational Structure	3	5	2	4	4	3	1	4	4
Innovativeness	2	4	1	1	2	1	2	5	1

Table 4: Correlations between the departments used for the MDS solution in Figure 2

	1	2	3	4	5	6	7	8	9	10
1. TMT	1.00									
2. Strategy	0.72	1.00								
3. HR	0.71	0.78	1.00							
4. Sales	0.86	0.96	0.81	1.00						
5. Operations	0.41	0.74	0.84	0.62	1.00					
6. Finance	0.74	0.82	0.88	0.80	0.82	1.00				
7. IT	0.79	0.91	0.95	0.94	0.76	0.85	1.00			
8. Business Development	-0.03	0.33	0.58	0.27	0.60	0.30	0.46	1.00		
9. Communication	0.77	0.88	0.95	0.87	0.87	0.96	0.94	0.40	1.00	
10. Safety	0.86	0.71	0.87	0.78	0.72	0.90	0.81	0.31	0.91	1.00

Chapter 3

STRATEGIC CONSENSUS BETWEEN GROUPS: A SOCIAL IDENTITY PERSPECTIVE

Organizations need to ensure that work groups coordinate and align their efforts (Joshi, 2006; Marks et al., 2005; Richter et al., 2006; van Knippenberg, 2003). Because organizational behavior is increasingly strategy-driven, coordinating activities and resources to ensure that organizational groups perform their collaborative tasks can be challenging (Ancona & Caldwell, 1992; Marrone, 2010). Indeed, poor coordination of strategic efforts is identified as one of the silent strategy killers (Beer & Eisenstat, 2000). Not surprisingly then, a substantial body of research has accumulated on strategic consensus, the shared understanding of organizational strategy, driven by the idea that strategic consensus enhances organizational performance by improving coordination and cooperation within the organization (e.g., Bourgeois, 1980; Dess, 1987; Dooley et al., 2000; González-Benito et al., 2012; Kellermanns et al., 2011; Markoczy, 2001; Priem et al., 1995). However, research has paid little attention to consensus between groups and rather focused on consensus within groups. This is surprising given that effective synchronization of efforts across groups is essential for collective goal attainment (DeChurch & Marks, 2006; Edmondson, 2003). Indeed, the process of coordination and cooperation in pursuit of strategic objectives cannot be fully understood without studying strategic consensus between groups (Kellermanns et al., 2005; Markoczy, 2001; Marrone, 2010; Wooldridge & Floyd, 1989).

To this end, we propose a social identity perspective on between-group consensus. Research shows that intergroup relations are very much an issue of identity – it is group identity that often gets in the way of smooth intergroup collaboration – and social identity theory has established itself as the primary theory of intergroup relations (e.g., Hogg et al., 2012; Tajfel & Turner, 1986). Our development of a social identity perspective on between-group strategic consensus suggests that social identification processes may

stimulate as well as impair between-group consensus. Those who identify strongly with their work group can be expected to favor its members, goals, and interests over others and direct their behaviors primarily towards the group (Albert et al., 2000; Hogg & Terry, 2000; Hornsey & Hogg, 2000). This may lead to self-serving interpretations of the organizational strategy (Meyer, 2006). Therefore, groups with higher group identification are likely to have less between-group strategic consensus with other work groups, and we argue that in a dyad of groups the group with the strongest group identification is the limiting factor for the degree of between-group consensus. *Organizational* identification, in contrast, is conducive to a shared sense of purpose with other groups (Ashforth & Mael, 1989; Kramer, 1991; van Knippenberg, 2003) and higher motivation to coordinate with other groups (cf. Gaertner, Dovidio, Anastasio, Bachman, & Rust, 1993; Hogg et al., 2012). Organizational identification can thus be expected to foster between-group strategic consensus. More specifically, we propose that the group with the weakest organizational identification in a dyad of groups is the predicting factor for the degree of between-group consensus.

Research in social identity and intergroup relations also identifies *intergroup anxiety* as an important influence (Kramer, 1991). Intergroup anxiety invites negative and avoidant attitudes towards other groups (Hewstone, Rubin, & Willis, 2002; Stephan, Stephan, & Gudykunst, 1999) and ineffectiveness in intergroup communication (Hubbert, Gudykunst, & Guerrero, 1999). Low intergroup anxiety in contrast is associated with more positive attitudes towards and perceived similarity between groups (Hubbert et al., 1999; Riek, Mania, Gaertner, McDonald, & Lamoreaux, 2010). We argue that because groups that are low in intergroup anxiety believe that it is safe to coordinate and integrate activities and resources with other groups, they are more likely to develop shared understanding of the strategy with other groups. Because this influence of intergroup anxiety derives from the joint contribution of groups to intergroup encounters, it is the mean (average) intergroup anxiety in the dyad that is expected to drive this influence.

In view of its standing in intergroup relations research, the social identity perspective has the potential to develop into a broader-ranging framework for the study of between-group consensus, and the main contribution of our study is to advance research on strategic consensus by developing a social identity perspective on between-group consensus.

Because of its behavioral origins, the social identity perspective should also help bridge the gap between group cognition and organizational strategy by bringing realistic assumptions about human behavior to strategic management research (Powell et al., 2011). In developing our empirical analysis, we also address an important methodological challenge in the study of between-group consensus that has been identified as standing in the way of development of the field (Kellermanns et al., 2005) by adapting a well-established technique from social network analysis to the study of intergroup consensus. As a side-effect, our study also breaks new ground for the social identity analysis of organizational behavior (Ashforth & Mael, 1989; Hogg & Terry, 2000) in which – despite its intergroup origins – research on intergroup issues is sparse (Richter et al., 2006; van Knippenberg, 2003).

Theoretical Background and Hypotheses

Organizational groups function in a strategy-driven context of interdependent relationships with other groups. The very nature of organizations requires members to coordinate their efforts and interests not only within but also between groups to achieve organizational goals (Brett & Rognes, 1986; Kramer, 1991; Mintzberg & Waters, 1985; van Knippenberg, 2003). Organizational groups – teams, work groups, departments – need other groups to provide them with knowledge, products, or services, and rely on them to accommodate group needs. Even when groups function relatively independently as far as task performance is concerned, they may compete for resources within the organization or be interdependent for important organizational outcomes (Kramer, 1991). This interdependence requires groups to coordinate their strategic efforts and to operate as parts of a bigger whole for the organization at large to perform well (Joshi, 2006; Ketokivi & Castañer, 2004; Marks et al., 2005; Richter et al., 2005).

The behaviors most important for strategy implementation³ are not part of routine behavior, and cannot be exactly prescribed (Colvin & Boswell, 2007). Groups should therefore rely on their understanding of organizational strategy to resolve upcoming issues

³ Note that we do not focus on strategy formulation, where in the process of sensemaking and sensegiving (Gioia & Chittipeddi, 1991a) scepticism and dissensus may be good and premature consensus bad (Floyd & Wooldridge, 1992a), but rather focus on the shared understanding of an established strategy as an important element in strategy implementation.

in a way that is consistent with the strategy (Amason, 1996). Group members have a tendency to focus on the more proximal goals of their own group instead, however – goals that may not be aligned with organizational strategy (Kramer, 1991). This presents a fundamental difficulty for strategy implementation, where consensus should converge on a set of organizational priorities and on the organizational arrangements that support them (Floyd & Wooldridge, 1992a). Lack of strategic consensus may thus hinder the integrative effort required for strategy implementation (Huy, 2011; Ketokivi & Castañer, 2004).

Strategic Consensus Between Groups

In contrasting between-group consensus and within-group consensus, it is important to be clear about their difference at the conceptual level (cf. Kellermanns et al., 2011). Within-group strategic consensus is the degree of shared understanding of strategic priorities among the members of one group. Between-group strategic consensus is the degree of shared understanding of strategic priorities between two groups. Within-group consensus thus refers to the variance within one single group, due to a spread of opinions in the group around the group's average opinion, whereas between-group consensus refers to the variance due to different opinions of the people in two groups (a dyad of groups) around the dyad's average opinion.

Strategic consensus has been recognized as one of the most important concepts in strategy implementation (González-Benito et al., 2012; Markoczy, 2001). Strategic consensus improves strategy implementation (Noble, 1999; Rapert, Velliquette, & Garretson, 2002), and is associated positively with group (Mathieu, Maynard, Rapp, & Gilson, 2008) and organizational performance (Kellermanns et al., 2011). Strategic consensus facilitates within-group communication (Kellermanns et al., 2008; Mathieu et al., 2008), within-group coordination of actions, and within-group creation of synergies (Cannon-Bowers et al., 1993). Poor coordination of strategic efforts, in contrast, is one the major obstacles to strategy implementation (Beer & Eisenstat, 2000). Underscoring the importance of strategic consensus in this respect, Floyd and Wooldridge (1992a) even wondered in what sense a strategy is really implemented without strategic consensus at the top, middle, and lower levels.

Yet, our understanding of strategic consensus is incomplete. Strategic consensus has mostly been studied at the top of the organization and almost exclusively at the within-

group level. We know little of how the groups at the middle and lower levels, that should put strategy into practice, respond to organizational strategy (Gioia & Chittipeddi, 1991a) or about what fosters consensus between groups. Even though middle and lower level groups cannot effectively coordinate their strategic efforts and cannot take actions that are congruent with the organizational priorities unless they perceive organizational objectives similarly (Floyd & Wooldridge, 1992a; Ketokivi & Castañer, 2004). From that perspective, it is surprising that strategic consensus between groups, and including groups below the top, has received so little attention. A number of scholars have noted the importance of studying strategic consensus between interdependent groups in addition to within-group consensus (Kellermanns et al., 2005; Kellermanns et al., 2011; Ketokivi & Castañer, 2004; Markoczy, 2001; Wooldridge & Floyd, 1989), but very few have studied the actual phenomenon. Moreover, valuable exceptions like the explorative study by St John and Rue (1991), who investigated consensus between marketing and manufacturing groups, and the illustrative case study of organizational goal coherence between a management team and cross-functional operational team by de Haas et al. (2000), do not provide a guiding conceptual framework for efforts in this area of research.

Identification and Strategic Consensus

Challenges in intergroup collaboration often involve issues of social identity. Social identity theory has accordingly established itself as the primary conceptual lens to understand intergroup relations in organizations (Hogg et al., 2012). Social identity theory centers around the fact that to a greater or lesser extent group memberships are self-defining: people perceive themselves in part in terms of their membership of social groups – their social identity (Tajfel, 1978; Tajfel & Turner, 1986; Turner, 1985). *Social identification* captures the extent to which a given group or organizational membership is part of an individual's identity. Stronger identification implies a greater psychological merging of self and group (i.e., a sense of “we”, Ashforth & Mael, 1989).

We propose that social identification has an important influence on strategic consensus because identification shapes goal preferences in terms of the interests of the group. The more an individual identifies with a group, the more the individual incorporates the group's norms, values, and aims as the own (Ashforth & Mael, 1989; De Cremer, van Knippenberg, van Dijk, & Van Leeuwen, 2008; Hogg & Terry, 2000; Turner, Hogg,

Oakes, Reicher, & Wetherell, 1987). An important motivational consequence of identification is an internalized motivation to contribute to the group's goals and successes (Ashforth & Mael, 1989; van Knippenberg & Schie, 2000). Social identifications may thus shape the extent to which individuals share a focus on organizational strategy.

The most relevant identifications here are group and organizational identification – the two primary foci of social identification in organizations (cf. Albert & Whetten, 1985; Ashforth & Mael, 1989; van Knippenberg & Schie, 2000), and the ones most closely tied to the issue of between-group shared understanding of organizational strategy. Group identification may be expected to focus attention on work group goals and interests, whereas organizational identification may be expected to focus attention on organizational goals and interests (Kramer, 1991; van Knippenberg, 2003). Importantly, because social identifications may be shared to a considerable extent at the work group level, the influence identifications exert on attention to group or organizational goals may be an important factor in strategic consensus.

At root, social identification is an individual level construct – it reflects individual self-definition. However, considerable similarity in levels of identification among the members of a work group is likely. Over time, psychological states like identification may converge in a work group (Chen, Mathieu, & Bliese, 2004; Klein & Kozlowski, 2000; Morgeson & Hofmann, 1999). In group interaction, group members may share their perceptions of and feelings about their group and organization and through a process of mutual sensemaking create convergence over time in how they conceive of their relationships with the group and with the organization. Such a process that would lead to group-level similarity in group and organizational identification is also likely to be fuelled by the fact that several of the more important influences on social identification are likely to be shared at the work group level, such as perceived group prestige (Mael & Ashforth, 1992), perceived group distinctiveness (Dutton, Dukerich, & Harquail, 1994), and the perceived treatment of the group and its members (e.g., respect received, Tyler & Blader, 2000). Collective consideration of such factors may invite converging levels of group and organizational identification at the group level. Clearly, some of these influences may also be shared at the organizational level, but at the organizational level the opportunities for collaborative sensemaking that lie at the basis of such emergent group states is

substantially smaller than at the group level, and the likely level at which both group and organizational identifications converge thus is the work group much more than the organization. In the current analysis, we therefore consider the influence of group and organizational identifications on strategic consensus from the perspective of psychological states that are shared at the group level (we will also substantiate this conceptualization empirically).

For the study of strategic consensus, the question then becomes how the levels of identification in the different groups in the dyad should be treated to come to a dyad-level predictor of consensus. Multilevel theory and research in organizational behavior has established the importance of carefully considering which way of aggregating lower-level observations is most appropriate conceptually in predicting higher-level outcomes from lower-level predictors – the default option of simply averaging lower-level scores is not necessarily the most appropriate aggregation model conceptually (Chen et al., 2004; Klein & Kozlowski, 2000). In developing our predictions about the influence of group and organizational identification on between-group strategic consensus, we thus carefully consider the most appropriate aggregation model.

Group Identification and Strategic Consensus Between Groups

An important problem in strategy implementation is that organizational members tend to focus on the goals of their own group rather than on those of the organization (Ketokivi & Castañer, 2004). This can be understood from the perspective of group identification. The work group is the most proximal and tangible group membership in organizations and typically elicits stronger identification than the organization as a whole (Riketta & van Dick, 2005; van Knippenberg & Schie, 2000). This has an impact on between-group strategic consensus because group identification leads group members to prioritize the goals and interest of the own group (Ashforth & Mael, 1989; van Knippenberg, 2000). It can also lead group members to see opposition between the own group and other groups (Tajfel & Turner, 1986), thus further reducing attention to strategic objectives that groups should share, and reducing the willingness to cooperate and coordinate with other groups. The stronger group members identify with their group, the stronger the focus on the group's own goals will be, because they will both favor and direct their attitudes and behavior towards the group's goals and interests. Accordingly, group identification will

detract from between-group consensus by focusing attention on group goals that may not be aligned with organizational strategy and away from organizational objectives that should be part of collaborative efforts with other groups.

To understand this influence of group identification on between-group consensus at the dyadic level, we need to consider how the group identification of each group in the dyad would affect between-group consensus – the appropriate aggregation model. In this respect, it is important to realize that it only takes one group to focus on the own goals at the expense of more overarching organizational objectives that should be shared by both groups to result in lower levels of between-group consensus. That is, even when the one group in a dyad is keenly aware of shared interests and strategic priorities, higher levels of consensus will not be reached if the other group focuses its attention on other priorities. One group's high group identification diverts attention away from a shared understanding of organizational strategy, and the other group's lower group identification cannot compensate for this. In effect then, for any dyad of groups, the level of group identification of the group with the stronger group identification in the dyad is going to be more predictive of the level of between-group strategic consensus – and negatively so. Put differently, the appropriate composition model to capture the influence of group identification within a dyad of groups is the level of group identification of the group with the highest identification within the dyad – the dyad maximum (cf. Barrick, Stewart, Neubert, & Mount, 1998)⁴.

Hypothesis 1: The maximum level of group identification in a dyad is negatively related to between-group strategic consensus.

Organizational Identification and Strategic Consensus Between Groups

Just as group identification focuses attention on group norms, values, and goals, organizational identification focuses attention on organizational norms, values, and goals (Ashforth & Mael, 1989; van Knippenberg, 2000). Organizational identification may thus foster strategic consensus by inspiring attention to and internalization of the organization's strategic objectives. Organizational identification is also conducive to intergroup relations

⁴ As pointed out by Barrick et al. (1998), because mean, minimum, and maximum inevitably are related (i.e., all other things being equal, higher means go hand in hand with higher minimum and maximum), analysis of mean scores or minimum/maximum scores can give similar results (which is true in our case), but this does not detract from the importance of identifying the conceptually most appropriate aggregation model.

because it leads group members to recognize other groups as “playing on the same team”, and thus motivating a willingness to cooperate with other groups within the organization (Gaertner et al., 1993). In other words, higher organizational identification makes groups more aware of the fact that their group does not operate in a vacuum, but as part of a larger whole in which different groups complement and supplement each other’s efforts. This heightened awareness of shared goals and the need to coordinate and cooperate will have a positive effect on between-group consensus.

Again, the question then is how this influence should be understood in a dyad of groups. In a sense complementing the analysis for group identification, we propose that the issue with organizational identification is that one group’s organizational identification can drive the group’s understanding of strategic objectives, but it cannot compensate for another group’s lower organizational identification and associated diverging understanding. That is, within a dyad of groups, the organizational identification of the group with the lower level of organizational identification in the dyad is the predicting factor for between-group consensus. The appropriate composition model to capture the influence of organizational identification within a dyad of groups thus is the minimum level of organizational identification within the dyad.

Hypothesis 2: The minimum level of organizational identification in a dyad is positively related to between-group strategic consensus.

Intergroup Anxiety, Identification and Between-Group Strategic Consensus

Social identity theory describes how a categorization into groups in and of itself can invite group members to favor the own group and be apprehensive of other groups (Tajfel & Turner, 1986). This apprehensiveness is captured by the concept of intergroup anxiety. Intergroup anxiety is the ambiguous feeling of discomfort and anxiety when (anticipating) interacting with members of other groups (Allport, 1954; Islam & Hewstone, 1993; Pettigrew, 1998; Stephan et al., 1999). Intergroup anxiety can reduce the willingness to cooperate with other groups from a motivation to avoid the anxious state associated with intergroup contact. In other words, intergroup anxiety reduces the motivation for intergroup interaction. This makes intergroup anxiety an important and additional factor to consider from a social identity perspective (Kramer, 1991), because as a barrier to high-quality intergroup contact it may be associated with lower between-group consensus.

The concept of intergroup anxiety has its roots in the theory of intergroup contact (Allport, 1954). Central to research concerned with the so-called “contact hypothesis” (Allport, 1954; Pettigrew, 1998) is the idea that intergroup anxiety can be reduced by contact between members of different groups. Intergroup anxiety is caused mainly by the expectation of negative experiences during contact with other groups (Islam & Hewstone, 1993; Stephan et al., 1999). In line with other studies (e.g., Islam & Hewstone, 1993), we argue that intergroup anxiety is a group level construct that characterizes the group as a unit, because group members are subject to many of the same contextual factors and shared experiences that may shape intergroup anxiety (e.g., status differences between groups, Islam & Hewstone, 1993).

The exchange of inputs and processes for the attainment of collectively held goals can be enabled by effective synchronization of efforts across groups (DeChurch & Marks, 2006; Edmondson, 2003). Where identification deals with people’s motivations to adopt certain goal preferences, synchronize efforts, and create a shared understanding with those in the same entity, intergroup anxiety deals with motivations to have contact with other groups. While contact is not a prerequisite for shared understanding, a reoccurring process of contact and communication can facilitate the creation of shared understanding. In addition, the collaborative exchange of information between groups can be helpful in making groups more aware of the strategy-driven context of interdependent relationships with other organizational groups. Given the findings for intergroup anxiety in intergroup contact research (e.g., Hewstone et al., 2002; Islam & Hewstone, 1993; Riek et al., 2010; Stephan et al., 1999), we argue that lower intergroup anxiety is better for consensus between groups, because lower intergroup anxiety will be associated with more frequent and more open-minded intergroup contact and information exchange as well as a greater openness to coordination and cooperation with the other group.

The influence of intergroup anxiety is understood to flow from its impact on the frequency and quality of intergroup contact. Intergroup anxiety is not static, however, but also shaped by intergroup contact as much as it is an influence on intergroup contact (Pettigrew, 1998). Therefore, intergroup anxiety is an influence where the one group’s lower anxiety at least to a certain extent can compensate for higher anxiety of the other group. In that sense, the influence of intergroup anxiety is one that unfolds in intergroup

interaction as a function of both groups' collective level of intergroup anxiety. Therefore the average (mean) level of intergroup anxiety in the dyad is the more appropriate composition model to capture its influence on strategic consensus between groups.

Hypothesis 3: The mean level of intergroup anxiety in a dyad is negatively related to between-group strategic consensus.

Methods

Organizational Context

To test our hypotheses, we examined a large technical service company from Western Europe, Din (a pseudonym). Din offers a good context for our study because the company was in the top-down strategy implementation phase and recognized the need for alignment around strategy in that phase. Three years before our study Din started preparations for being cut loose from their mother-organization subject to government regulation. They had formulated their own strategy and adapted the organizational structure to address becoming a stand-alone company. During this process the company received a new name and logo and more responsibilities, including new personnel to deal with these new tasks. But the top management also focused on retaining most of the existing incentive and control systems, competencies and team compositions from the mother company. One and a half years before our study Din had finalized the strategy formulation process, and started the strategy implementation phase.

Our study started after an invitation from the top management that wanted to ensure that groups were strategically aligned before the actual split from the mother-organization, scheduled half a year after the start of our study. The CEO of Din indicated that this insight was required because the organization depended: "on the successful cooperation between departments and units". Din assigned their employees into work groups divided over different functional areas (e.g., sales, finance, etc.). We received permission to additionally measure employees group and organizational identification and intergroup anxiety.

Data collection

The data were collected with the relevant firm records, including HR data and an organogram displaying the hierarchical structure of the organization, and with a web-based survey. In this survey we asked employees about their primary work group and the

organization and to evaluate the organization's strategic priorities, which were defined by the top management team (TMT) of the company specifically for their organization.

We launched the survey with an e-mail to all employees that was signed by the CEO and included an explanation of the importance of the survey, and a personalized link to the survey website. Two reminders and a final announcement of closure of the survey were sent in order to increase the response rate. In all of our communications as well as on the welcome page of the survey we highlighted the anonymity and confidentiality of individual responses.

The survey was sent to all 109 work groups in the organization and the TMT (891 respondents in total). The response rate was 74%. We separated the TMT from the sample and discarded 21 work groups which had a response rate lower than 50% (thus underrepresenting the group), or had less than three respondents that answered the survey. Our final sample consisted of 88 work groups, ranging in size from 3 to 15 members with an average of 6.46 persons per group. The mean age of the participants was 46 (SD = 11.2); 79% were male; they had an average work experience of 22.7 years (SD = 12.2); and 49.2% had a Bachelor degree or higher.

These 88 work groups constitute $(88(88-1)/2 =)$ 3828 dyads for the analysis of between-group strategic consensus. Because teams form relationships with multiple teams in the organization, we study strategic consensus in all potential dyads of groups, rather than asking groups about their intergroup relations only with respect to one specific other group (e.g., DeChurch & Marks, 2006; Richter et al., 2006) or asking managers to assess the overall cross-functional cooperation (e.g., Ketokivi & Castañer, 2004).

Data Analysis

It is important to note that the unit of analysis in this study is the relationship between pairs of organizational groups, so that all the variables concern dyadic relations that form a matrix of observations with the organizational groups as row and column entities. To study such dyadic relationships between all groups in the organization, we used the Multiple Regression Quadratic Assignment Procedure (MRQAP, see Borgatti et al., 2002; Dekker et al., 2007; Krackhardt, 1988). MRQAP was developed for and is normally applied to the study of network data. The application of MRQAP to the study of intergroup relations is new and holds a key position in our study of consensus between groups. The method

enables the analysis of relational data and its results with respect to parameter estimates, can be interpreted in a fashion similar to a traditional (multiple) regression analysis (Dekker et al., 2007). The inference obtained by Ordinary Least Square (OLS) techniques is not appropriate here because relational data are systematically interdependent (Dekker et al., 2007). That is, the rows and columns of the matrix correspond to the groups and the cells in the matrix correspond to the relations between pairs of groups (the dyadic variable). Due to this structure the observations of the dyadic variables are auto-correlated and not independent. MRQAP provides a better alternative than OLS as it allows direct comparison of matrix-level data (Tsai, 2002) and corrects the autocorrelation problem (Krackhardt, 1988).

Measures

All measures in this study rely on established scales from the literature which are employed with five-point Likert-type scales, unless noted otherwise.

Degree of between-group strategic consensus. There is surprisingly little research on the measurement of the degree of consensus between groups, in part, we contend, because appropriate methods to address this issue have hardly been developed. To the best of our knowledge the only measure reported in the literature is the mean over strategic items of the absolute differences between two groups of within-group item means (St John & Rue, 1991). Although this measure is easy to interpret, it has the disadvantage that it does not take differences in the number of members per group into account. For organizations with varying group sizes, this measure will overemphasize the small groups. A second disadvantage is that it is not based on the average standard deviation notion that is widely accepted as a within-group consensus measure and thus cannot be easily interpreted as an extension of within-group consensus. To overcome such limitations we propose a between group consensus measure.

Because the standard deviation measurement of the degree of strategic consensus is most often used in prior work (for an overview of all measures see Kellermanns et al., 2005) and is an easily understood measure of within-group agreement (Iaquinto & Fredrickson, 1997) it seems the most suitable measurement to serve as 'base' for a measure of the degree of between-group consensus. Our measure expands this within-group consensus measure, based on within-group variance, and builds on the within- and

between-group variance available in two-group analysis of variance (ANOVA).

To measure between-group consensus, we asked respondents to rate the organization's 7 strategic priorities in terms of importance. Now, consider the two-group ANOVA. There, the observed sum-of-squares (SS_{tot}) can be decomposed in sum-of-squares of the treatment (SST; that is, the two groups in our case) and the sum of within-group sum-of-squared error (SSE). For strategic item j , the between group sum-of-squares for groups p and q is defined by

$$SST_j(p, q) = n_p(\bar{x}_{pj} - \bar{x}_{jpq})^2 + n_q(\bar{x}_{qj} - \bar{x}_{jpq})^2,$$

where \bar{x}_{jp} and \bar{x}_{jq} are the group means of groups p and q on strategic item j , n_p and n_q indicate group sizes, $\bar{x}_{jpq} = \frac{n_p\bar{x}_{pj} + n_q\bar{x}_{qj}}{n_p + n_q}$ is the overall mean value of the observations in groups p and q on strategic item j . To obtain a between-group strategic consensus measure that remains close to the widely accepted standard deviation notion of within-group consensus measure, we use the root mean square for treatments (RMST), rather than the SST_j directly. This leads us to the new measure of between-group strategic consensus (BGSC) for m strategy items for two groups p and q that is defined by

$$BGSC(p, q) = -m^{-1} \sum_{j=1}^m \sqrt{\frac{SST_j(p, q)}{n_p + n_q}},$$

where the minus sign is added so that a large negative BGSC indicates little between-group consensus. Between-group strategic consensus for each dyad was determined with this measure to construct a square ($n \times n$) symmetric matrix for the dependent variable.

Group identification in the dyad. The organization identified for all organizational members their primary group, that is, the group with which an individual most frequently interacts and in terms of which other members of the organization interact with him or her (Kramer, 1991). Group identification was measured by five items of the adapted identification measure from Mael and Ashforth (1992) as done by van Knippenberg and van Schie (2000). The scale had good reliability ($\alpha = 0.80$). Sample items include 'When someone criticizes my work group, it feels like a personal insult' and 'When I talk about

this work group, I usually say “we” rather than “they”’. Principal components analysis on the items extracted a single factor.

In this study, group identification is conceptualized as a group-level variable. To confirm aggregation to group level, we calculated the interrater agreement index. We used the a_{wg} agreement index instead of the r_{wg} because unlike r_{wg} , a_{wg} does not rely on any specification of the null distribution and eliminates sample size and scale dependency problems (Brown & Hauenstein, 2005). The mean a_{wg} value for group identification (0.65) was above the 0.60 cutoff point (Brown & Hauenstein, 2005) and confirmed aggregation to the group level. Consistent with our theoretical discussion, group identification was subsequently aggregated to the dyadic level by selecting the highest of the group identification scores of the two groups in each dyad.

Organizational Identification in the dyad. Organizational identification was measured by the same five items of the identification measure from Mael and Ashforth (1992) as used for group identification, but this time with the organization rather than the work group as target (cf. van Knippenberg & Schie, 2000). This scale had satisfactory reliability ($\alpha = 0.75$). Sample items include ‘When someone criticizes (name of organization), it feels like a personal insult’ and ‘When I talk about (name of organization), I usually say “we” rather than “they”’. Principal component analysis resulted in a single factor. The mean a_{wg} value for organizational identification (0.72) confirmed aggregation to the group level. To subsequently aggregate to the dyadic level, we selecting the lowest identification score of the two groups in each dyad.

Intergroup anxiety in the dyad. The measure of intergroup anxiety was a modified version of the intergroup anxiety scale developed by Stephan, Diaz, and Duran (2000). The measure consisted of eight items that asked participants how they would feel when interacting with individuals from other groups than their own group on a response scale ranging from not at all to extremely, in terms of adjectives as “confident”, “uncomfortable”, and “accepted”. Principal component analysis showed a two-component solution, with low loading of three items. After excluding these items, the remaining five items loaded on a single factor and they formed a reliable scale ($\alpha = 0.76$). The mean a_{wg} value for intergroup anxiety (0.68) confirmed aggregation to group level, which was subsequently aggregated to the dyadic level by averaging the two groups’ intergroup

anxiety scores.

We established the discriminant and convergent validity of the group identification, organizational identification, and intergroup anxiety with Confirmatory Factor Analysis. First, each of the scales was set to load on their respective latent factor and correlations between factors were allowed. This model with three latent factors provided a satisfactory fit to the data, $\chi^2_{87} = 440.54$, $p < 0.001$, SRMSR = 0.055, RMSEA = 0.08, GFI = 0.91. The factor loading of each item was significant at .001 level indicating the convergent validity. Furthermore, chi-square difference tests indicated that this model was a better fit than the alternative models where the following constructs were combined: organizational identification and group identification, $\Delta\chi^2(2) = 211.24$, $p < 0.001$; organizational identification and intergroup anxiety, $\Delta\chi^2(2) = 512.73$, $p < 0.001$; group identification and intergroup anxiety, $\Delta\chi^2(2) = 627.26$, $p < 0.001$; and all the three variables as a single factor, $\Delta\chi^2(3) = 807.46$, $p < 0.001$, indicating the discriminating validity for those variables.

Control variables

To rule out possible alternative explanations, we controlled for the degree of within-group strategic consensus in the dyad, dyadic strategic congruence with the TMT, type of dyad, and a strategic link between work groups.

Degree of within-group strategic consensus in the dyad. There is not necessarily a positive relation between within-group strategic consensus and between-group strategic consensus. On the one hand, two groups may have high within-group consensus, but because they agree on a different strategic prioritization their between-group consensus is low. On the other hand two groups can have low within-group consensus, but what they on average agree on is the same, therefore they can have high between group-consensus. Even though within-group and between-group consensus thus can be independent, we deemed it important to establish that between-group consensus in our study did not simply reflect average within-group consensus, and we added within-group consensus as a control.

The degree of strategic consensus within a group was measured by taking the standard deviation of the ratings of the list of the strategic priorities (e.g., Bourgeois, 1980; Iaquinto & Fredrickson, 1997; Priem et al., 1995; West Jr & Schwenk, 1996). For each strategic priority the standard deviation is determined within a group and those deviations are added

up. The within-group strategic consensus (WGSC) for group p is then defined by the averaged within-group standard deviations times minus one (to ensure a higher score refers to higher consensus).

Because within-group strategic consensus originates at the group level it was translated to the relational level. We calculated the weighted average within-group consensus between all pairs of groups. We used the weighted average because we want to treat the specific views held by different individuals on an equal basis and therefore differences in group size need to be taken into account. Using the ratings of the list of m strategic priorities, the weighted average Within Group Strategic Consensus-score of groups p and q (AWGSC) is calculated by,

$$AWGSC(p, q) = m^{-1} \sum_{j=0}^m \frac{n_p \bar{x}_{pj} + n_q \bar{x}_{qj}}{n_p + n_q},$$

where \bar{x}_{pj} is the mean average standard deviations score of group p on strategic item j and n_p is the number of group members in group p . Within group strategic consensus for each dyad was determined with this measure to construct a square ($n \times n$) symmetric matrix.

Dyadic strategic congruence with the TMT. In practice it is relatively likely that when a group has high within-group consensus, this consensus is on the strategic priorities as formulated and communicated by the TMT (i.e., rather than on more idiosyncratic group objectives even when this of course is also possible and does happen). Thus, when to groups have high within-group consensus, it is more likely to be on the strategy advocated by the TMT than on some other strategy. The net result could be that a dyad of groups with high-within group consensus also has high between-group consensus not as a result of the intergroup relations processes studied here, but because they both happen to be aligned with the TMT. To establish the intergroup origins of the relationships tested in the current study, we therefore controlled for strategic congruence with the TMT.

For each work group their congruence with the TMT was calculated by taking the square root of the sum of the squared differences between the average strategic priority ratings of the TMT and the work group. Then we multiplied it by minus one (Colbert, Kristof-Brown, Bradley, & Barrick, 2008), so a high score indicates high degrees of

similarity between the TMT and the work group on their views on the strategy items. By averaging the two groups' congruence scores, a dyadic measure for congruence with the TMT was obtained⁵.

Type of dyad. In the organizational structure of Din a distinction can be made between managerial and operational teams and previous research highlighted the fact that operational and managerial teams may have different understanding of the strategy (Kellermanns *et al.*, 2011). Moreover, operational and managerial teams can be expected to differ in their level of participation on strategic projects. Given this distinction there are three types of dyads that can occur in this organization; a management team with a management team (MT-MT dyad), an operational team with an operational team (OP-OP dyad) and a management team with an operational team (MT-OP dyad). The HR data of the organization allowed us to determine for each dyad what type of dyad it was. To control for the possibility that the type of dyad exerted influence, we included two dummy-coded variables that took the MT-MT dyad as 'benchmark'. Dummy 'at least one operational team in dyad' was coded 1 for the MT-OP and OP-OP dyads and 0 otherwise (the MT-MT dyad). Dummy 'only operational teams in dyad' was coded 1 for the OP-OP dyad and 0 otherwise (the MT-MT and MT-OP dyad).

Strategic link. If there is a "strategic link" between groups, that is a link between these groups that enforces contact and communication between groups, intergroup anxiety might have less influence on between-group consensus because the organizational structure to some degree already imposes intergroup contact. We operationalized the existence of a strategic link, based on three types of link: a hierarchical link; a communication link; a dependence link⁶.

A formal hierarchical structure is one way to coordinate the complex system of multiple teams within an organization. Analysis of hierarchical structure as a coordination mechanism has played an important role in organizational research (Tsai, 2002). The organogram of the organization allowed us to determine for each dyad whether there was a hierarchical link between the groups, that is, a link between these groups created by the

⁵ We chose to look at dyadic congruence as this compares the average opinions of the work groups and the TMT. In our analysis, using the BGSC score rather than the congruence score gave comparable results.

⁶ We looked at the three types of links combined, inspired by Tsai's (2000; 2002) strategic relatedness measure. Using the three types of links as separate controls yields comparable results.

organizational structure, such as through a shared group manager or a boundary spanning group member.

To establish a communication link, respondents were asked: “Please indicate the names of your colleagues with whom you most often discuss what is going on in the organization?” (Burt, 1992; Ibarra, 1993). Respondents were also told that they could choose both colleagues from within their team and outside of their team. To establish a dependence link we asked the respondents: “Please indicate the names of your colleagues on whom you most depend for materials, resources, information, etc. to be able to do your work properly?” (Burt, 1992; Ibarra, 1993). For both questions a list of all the employees was provided in the questionnaire, allowing respondents to simply select their answers from the list. Finally we aggregated the results, where for communication links and dependence links between teams the i, j^{th} cell was coded 1 if one of the team members in team i indicated a tie with one of the members of team j , or vice versa.

We created a symmetric 88×88 matrix of the strategic link relationships, that is, when two groups have a strategic link this was coded as 1 and when groups did not have a strategic link this was coded as 0. Thus, two groups have a strategic link if they have one or more of the three possible links.

Results

Table 5 reports means, standard deviations, and QAP correlations for the key variables used in this research. We observe that there are significant correlations between our constructs on the hypothesized directions. Table 6 shows the results of QAP multiple regression analyses, where all the continuous independent variables were centered to increase the interpretability. The coefficients presented in the table are standardized regression coefficients. The first model, Model 1, only includes the control variables. Model 1 shows that all controls together have a significant explanatory power on between-group strategic consensus ($R^2 = 0.18$; $p < 0.001$).

Table 5: Descriptive Statistics and QAP Correlations

Variables	Mean	s.d.	1	2	3	4	5	6	7	8
1. At least one operational team in dyad	0.30	0.46								
2. Only operational teams in dyad	0.06	0.24	0.26***							
3. Strategic link between teams	0.18	0.39	-0.09*	-0.04 [†]						
4. Average Within-Group Strategic Consensus	-0.65	0.09	-0.11*	-0.18*	-0.03					
5. Average Strategic Congruence with TMT	-1.48	0.34	-0.11*	-0.19*	0.05*	0.33***				
6. Maximum Group Identification	3.69	0.19	-0.16**	-0.33**	0.01	0.19*	0.22**			
7. Minimum Organizational Identification	3.59	0.22	-0.21***	-0.26***	0.06**	0.30**	0.29**	0.32***		
8. Average Anxiety	3.61	0.19	-0.28***	-0.49***	0.07**	0.17 [†]	0.14 [†]	0.41***	0.36***	
9. Between-Group Strategic Consensus	-0.17	0.07	0.05	0.12 [†]	0.05*	0.05	0.38***	-0.16*	0.10 [†]	-0.23***

$N(\text{groups}) = 88$; $n(\text{dyadic relations}) = 3828$; [†] $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The results of Model 1 suggest that the types of dyads statistically differ slightly from each other in their relation to between-group strategic consensus. Dyads with at least one operational team (the MT-OP and OP-OP dyads) have higher between-group consensus compared to dyads composed only of management teams ($\beta = 0.04$; $p < 0.05$). A dyad composed only of operational teams has higher between-group consensus compared to dyads composed of one or more management teams (the MT-MT and MT-OP dyads) ($\beta = 0.17$; $p < 0.01$). Model 1 also shows a small but significant positive relationship between strategic link and between-group strategic consensus ($\beta = 0.04$; $p < 0.05$). Model 1 further suggests that the degree of within-group strategic consensus has no significant effect on between-group strategic consensus, whereas dyads with higher strategic alignment with the TMT had significantly more between-group strategic consensus ($\beta = 0.43$; $p < 0.001$).

Table 6: Results of QAP Regression for Between Group Strategic Consensus⁷

Variable	Model 1	Model 2
	β	β
At least one operational team in dyad	0.04*	0.01
Only operational teams in dyad	0.17**	0.04
Strategic link between teams	0.04*	0.04*
Average Within-Group Strategic Consensus	-0.05	-0.05
Average Strategic Congruence with TMT	0.43***	0.43***
Maximum Group Identification		-0.19**
Minimum Organizational Identification		0.14*
Average Intergroup Anxiety		-0.23**
Adjusted R^2	0.18***	0.26***

Entries are standardized regression coefficients (significance) derived by the MRQAP double Dekker semi-partialling method at 2,000 permutation; † $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

⁷ Please note that it is common not to report standard errors with QAP-regression results (e.g., Allatta & Singh, 2011; Borgatti & Cross, 2003; Polzer, Crisp, Jarvenpaa, & Kim, 2006; Tsai, 2002; S. Zaheer & Zaheer, 2001).

In Model 2, we simultaneously add all the direct effects and find that the variance accounted for significantly improves ($\Delta R^2 = 0.08$; $p < 0.001$). This confirms Hypothesis 1, a higher maximum level of group identification in a dyad is negatively associated with its degree of between-group strategic consensus ($\beta = -0.19$; $p < 0.01$). The results of Model 2 also confirm Hypothesis 2, a higher minimum level of organizational identification in a dyad is positively associated with its degree of between-group strategic consensus ($\beta = 0.14$; $p < 0.05$). Furthermore the results confirm Hypothesis 3, dyads with a higher degree of intergroup anxiety had significantly lower between-group strategic consensus ($\beta = -0.23$; $p < 0.01$).

Additional Analyses

The statistical analyses above demonstrated the direct relationships of group identification, organizational identification, and intergroup anxiety with consensus between groups, taking possible alternative explanations into account as control variables. A particularly important control variable is the strategic link between groups. Our results showed that strategically linked groups have slightly higher between-group consensus and we want to ensure that the effects of our main constructs on between-group consensus do not depend on whether there is a strategic link between the groups. Therefore, we performed additional analyses to investigate the interaction effects of strategic link with group and organizational identification, and intergroup anxiety. We ran additional MRQAP-regressions, with groups with a strategic link as the comparison group (thus recoding those groups with 0 and the non-linked groups with 1) and entering interaction terms of strategic link with the independent variables one by one (Aiken & West, 1991). We did this because, when doing regression analysis we center variables so that each regression coefficient represents the regression of the dependent variable on the specific variable at the value of 0 on all other variables. That is, all terms, except the highest order interaction(s), are conditional effects that are interpreted at the value of 0 for the variables not involved in the term (Aiken & West, 1991). Thus, giving existence of a strategic link the value 0 means that the regression coefficient of the interaction can be considered as the effect of the independent variable (in that interaction) on BGSC for groups that are not linked. The results show that these interactions are not statistically significant; indicating that the influence of group identification, organizational identification, and intergroup

anxiety on strategic consensus between groups is not contingent on whether there is a strategic link between the groups.

Discussion

We developed an analysis of between-group strategic consensus that sees this consensus as subject to social identity dynamics. The support for our predictions that between-group consensus in dyads of groups is determined by the maximum level of group identification (Hypothesis 1), the minimum level of organizational identification (Hypothesis 2), and the average level of intergroup anxiety (Hypothesis 3) in the dyad speaks to the viability and promise of a social identity perspective on between-group strategic consensus. The social identity perspective on consensus is new both to consensus research and to the intergroup relations field. In developing this social identity analysis, we thus break new conceptual ground for research in strategic consensus, social identification, and intergroup relations.

Theoretical Implications

The importance of between-group strategic consensus in the strategy implementation process has been recognized by scholars in the field, but a broad-ranging conceptual framework for the study of between-group consensus was by and large missing. The current study thus advances research on strategic consensus between groups by demonstrating the promise of a social identity perspective. Importantly, the social identity perspective is not only clearly supported in the current study, but also allows for further developments that can build on the rich and well-developed tradition in social identity theory and research inside and outside the organizational domain (Ashforth & Mael, 1989; Hogg & Terry, 2000; Hogg, 2003b). It goes beyond the scope of the current study to exhaustively discuss the potential of the social identity perspective, but by way of example we do suggest two directions for future research that illustrate the potential of the social identity perspective on between-group strategic consensus.

Theoretical developments in social identity research for instance suggest that whereas it may be true that group identification generally is detrimental to between-group consensus (i.e., as per the present findings), there may be situations in which group identity is seen as securely embedded within the overarching organizational identity and strong

group identification does not invite negative attitudes towards other groups (Hornsey & Hogg, 2000). Further developing the social identity perspective to also incorporate such contingencies may be important, because it may be easier to create the circumstances in which strong group identification is not a threat to between-group consensus than to shift strong group identification to organizational identification (cf. Hogg et al., 2012). Put differently, future research may determine when an emphasis on organizational identity is a viable way to manage between-group consensus, and when a focus on creating the circumstances in which group identification is not a threat to between-group consensus is the more viable approach.

Social identity research also has a well-developed perspective on the determinants of social identifications (e.g., Ashforth & Mael, 1989; Hogg, 2003a). This work provides valuable angles to determine ways in which between-group consensus could be managed by managing group and organizational identifications. The proof of the pudding is in the eating, of course, and future research should yield the evidence for the viability of this approach. This notion does point to the fact that the social identity perspective does not suggest that social identifications should be taken as a given, however; social identifications are open to management, and accordingly a social identity perspective on between-group consensus can also be a perspective on managing between-group consensus.

Findings for intergroup anxiety also speak to the promise of a focus on creating favorable conditions for intergroup contact (cf. Pettigrew & Tropp, 2006). Here too, we see clear potential for the development of actionable knowledge from the social identity perspective; intergroup anxiety is not a given, but a malleable state that should be subject to managerial intervention. Again, these are implications for future research to flesh out, but research in intergroup contact suggests a number of factors that render it more likely that more positive intergroup relations develop from intergroup contact (also see Gaertner et al., 1993).

Our study also makes some important methodological advances in strategic consensus research. Specifically, to study between-group consensus for multiple specific dyads of groups rather than in a more global assessment (e.g., Ketokivi & Castañer, 2004) or by singling out one specific dyadic relationship (e.g., DeChurch & Marks, 2006; Richter et al.,

2006), researchers need to deal with the interdependency of observations inherent in the research question – each group is a member of multiple dyads. By adapting a well-established technique from social network analysis to our study of intergroup consensus, we were able to answer the calls in the consensus literature to develop techniques that enable the analysis of consensus between groups (Kellermanns et al., 2005).

Managerial Implications

Given the emphasis organizations normally put on teams by organizing people in groups – engaging in team building activities, setting group goals, etc. – it is important that organizations recognize that this focus on groups also brings along a risk of dysfunctional relationships among groups. Our findings show there is also an important downside to creating strong group identifications. Our results suggest that employees' group identification lowers their groups' shared understanding of the strategy with other groups. Identification with the organization has a positive effect on groups' shared understanding of the strategy with other groups and thus may be more helpful to organizations. In order to shift groups' attention from the group to the organization it helps to set cooperative goals that emphasize the need to coordinate and cooperate with other groups (Gaertner, Mann, Dovidio, Murrell, & Pomare, 1990) and explain how the group goals tie in with the overall mission of the organization (van Knippenberg, 2003).

Our results also show that the intergroup anxiety is negatively related to between-group strategic consensus. Proven methods to lower intergroup anxiety deal with increasing intergroup contact, either through frequent intergroup meetings, job rotation programs, overlapping group memberships or boundary spanning activities. If some of the group members belong to or boundary-span with two or more groups, they are likely to further information exchange between these groups. As groups get to know each other through these exchanges, the accuracy of predictions of and explanations for others' behaviors increases, which in turn lowers anxiety (Hubbert et al., 1999; Stephan et al., 1999).

Lastly, our study has important managerial implications for the success of the strategy implementation. Given the importance of collaborative processes in the 'group of groups' that is the organization, organizations can signal to their employees that intergroup coordination and collaboration is valued. This can be done by emphasizing collaborative

skills in human resource management and personal development planning and in regularly monitoring of both intergroup and intra-group collaboration processes. Also, to promote intergroup activities, organizations can consider rewarding at the intergroup level, such as rewarding all groups involved in a certain project, production process or service, rather than at the group level (van Knippenberg, 2003).

Limitations and Future Directions

Despite the valuable theoretical and managerial implications of this study, its results need to be handled with some caution, as this study is cross-sectional and relies on a single organization, which allows neither for testing directionality of the results, nor for generalizing the findings to other organizations. Field-experimental research will be necessary to test for causality and longitudinal studies are necessary to study how consensus between groups develops over time. Our understanding of the role of between-group strategic consensus would also greatly benefit from multi-organization studies to establish the generalizability of our findings.

We focused on how strongly consensus is held between groups and therefore developed a measure that was close to the often used measure of the degree of within-group strategic consensus. Future studies might also gain from looking at the other facets of consensus, such as who in the organization participates in it (the locus), and by how many members it is shared (the scope) (Markoczy, 2001; Wooldridge & Floyd, 1990). By breaking down consensus that way, a thorough understanding of between-group consensus can be achieved.

Research has shown that strategic awareness (Hambrick, 1981) and strategic understanding (Wooldridge & Floyd, 1990) diminish as the team hierarchical distance increases, which implies that consensus on the organization's strategic priorities should be lower for lower level (operational) teams than for higher level (managerial) teams. Also, one could expect that managers have more involvement in the strategy process than people in operational teams and also have the clearest understanding of what goals are important to the organization (Colbert et al., 2008). Managers are part of a management team and, at the same time, manage an operational team. Thus they function as linking-pin between these teams (e.g., Richter et al., 2006). Besides, in their operational teams, managers' strategic role is to communicate and clarify the underlying logic of the strategic priorities

to their subordinates (Colbert et al., 2008; Floyd & Wooldridge, 1992b; Wooldridge, Schmid, & Floyd, 2008). Our findings however do not show that management teams have more strategic consensus with other management teams than other teams in the organization. This finding is consistent with Greer, Caruso, and Jehn's (2011) group power perspective that as a group's hierarchical level increases, more competition and process conflict emerges. This higher competition and process conflict in groups that are higher in power and hierarchical level could also explain why these groups have lower between-group consensus. Therefore, it would be valuable if future research would empirically unravel how power impacts managers' social identity and role in shaping strategic consensus between groups.

Finally, it is also worth noting that our focus on between-group consensus builds on the proposition that strategic consensus is important in the strategy implementation process and thus ultimately in organizational performance (e.g., Bourgeois, 1980; Dess, 1987; Dooley et al., 2000; Homburg et al., 1999; Markoczy, 2001; Priem et al., 1995). We did not establish such linkages empirically in the present study, however, and it would be valuable when future research developing the social identity perspective would include broader measures of strategy implementation as well as organizational performance. Given the promising results of the social identity perspective on strategic consensus between groups, extending the current approach to the investigation of the effect of between-group consensus on intergroup and organizational performance should hold great promise.

Conclusion

Adopting a social identity perspective, we shed light on how intra-group factors can influence intergroup consensus. Our results demonstrate that strong group identification, which is often associated with positive group and organizational outcomes, can be detrimental to a shared understanding of strategic priorities. In contrast, higher organizational identification and lower intergroup anxiety can foster between-group consensus. As it seems realistic that consensus between groups, rather than within groups, improves the coordination and cooperation in organizations required for organizational performance, there is much more to explore with regard to strategic consensus between groups and intergroup relations. Our approach and results provide support for the value of the social identity perspective for development of a more comprehensive understanding of

intergroup consensus. The current study may thus provide strong foundations for the further development of a social identity perspective on between-group strategic consensus and strategy implementation.

Chapter 4

STRATEGIC CONSENSUS BETWEEN GROUPS: A NETWORK PERSPECTIVE

Activities of organizational groups are increasingly strategy driven and complex (Cohen, Mohrman, & Mohrman, 1999). Groups handle subtasks of the organization's overall aim and often these subtasks are interdependent (Richter et al., 2005; Van Der Vegt, Emans, & Van De Vliert, 2000; Wageman, 1995). Think for instance of the marketing and production department; they need to coordinate their effort in order to launch a new product. But marketing also has to coordinate with sales and logistics, while production is dependent on sales and logistics too. Therefore, strong shared understanding among the members of groups is required for them to carry out these strategy-driven, complex and interdependent tasks (Kellermans et al., 2005). Not surprisingly, a substantial body of empirical and theoretical research has accumulated on within-group strategic consensus, the shared understanding of organizational strategy, driven by the idea that strategic consensus enhances organizational performance by improving coordination and cooperation within the organization (e.g., Bourgeois, 1980; Dess, 1987; Dooley et al., 2000; González-Benito et al., 2012; Homburg et al., 1999; Markoczy, 2001; Priem et al., 1995). But organizational groups function in a network of groups that needs to coordinate their efforts (Joshi, 2006; Marks et al., 2005; Richter et al., 2006; van Knippenberg, 2003) and coordinating and integrating activities and resources to ensure that sets of groups perform their collaborative tasks can be challenging (Ancona & Caldwell, 1992; Marrone, 2010). It seems that the process of coordination and cooperation in pursuit of the organization's strategic objectives cannot be fully understood by only studying within-group strategic consensus and ignoring the consensus between groups that can be expected to foster coordination and cooperation in the 'group of groups' that is the organization. Especially since previous studies have shown that effective synchronization of efforts across groups enables the exchange of inputs and processes for the attainment of

collectively held goals (DeChurch & Marks, 2006; Edmondson, 2003), the determinants of consensus between groups deserve a greater deal of direct empirical attention (Kellermanns et al., 2005; Markoczy, 2001; Marrone, 2010; Wooldridge & Floyd, 1989). Since a meta-analysis by Balkundi and Harrison (2006) highlighted the benefits of a multilevel approach for network research, we look both at how team member and team-level network characteristics influence the consensus relationship between groups.

Although it seems clear that inter-organization networks influence the availability of information and other resources throughout the organization (e.g., Borgatti & Cross, 2003; Gulati, Nohria, & Zaheer, 2000; Hansen, 2002; Soda & Zaheer, 2012; Tsai, 2001), little theory exists about their effects on shared strategic understanding between groups. This study examines strategic consensus between groups and shows how it is affected by the organizational network. The reason to adopt this network perspective is that the pattern of informal connections among individuals and groups, the network structure, determines the flow of interpersonal resources and thereby the extent to which individuals and teams can effectively synchronize their knowledge, resources and efforts (Kogut & Zander, 1992; Tsai & Ghoshal, 1998). From the perspective of between-group strategic consensus in organizations the most relevant network characteristic is centrality, the extent to which groups have many ties to other groups (Kilduff & Brass, 2010; Reinholt, Pedersen, & Foss, 2011; Sparrowe et al., 2001; A. Zaheer et al., 2010), because the more central an individual or group is, the more opportunities they have to facilitate or constrain the flow of resources and knowledge.

Centrality brings about an important dynamic, because network centrality may either trigger or disrupt cooperative intergroup relations. On the one hand being central gives the actor in a network more access to resources and more knowledge sharing opportunities (e.g., Reinholt et al., 2011; Tsai, 2001), but on the other hand having a large numbers of direct ties creates larger demands as they can be laborious to maintain (Burt, 1997). However, because relationships between team members start with a task-based backdrop and context (Balkundi & Harrison, 2006), we expect that informal relationships facilitating goal achievement will be much stronger than those hindering it. We argue that central teams, through their many ties, not only have a larger amount and diversity of knowledge sharing opportunities (Hansen, 2002; Ibarra, 1993; Sparrowe et al., 2001), but are also

more likely to be aware of the organizational objectives and of the fact that their group does not operate in a vacuum, but as part of a larger whole. Therefore we hypothesize that dyads of groups are more likely to achieve high levels of between-group consensus when the centrality of the groups in the dyad is high.

In addition to the role of team centrality we study member's centrality, especially that of the most central group member. Central individuals, because of their more numerous connections to others, have more knowledge exchange opportunities (Gulati et al., 2000; Sparrowe et al., 2001), and a broader span of influence (Burt, 1992; Ibarra, 1993). Consequently, they are seen as attractive, credible knowledge sharing partners by others (Marx, Lechner, & Floyd, 2006; Sparrowe et al., 2001; Tsai, 2001). Since they are more likely to be aware of the organizational objectives, they can act as a pacemaker for heightening attention to the 'bigger organizational picture' within their group. Even when other members of the group are less central, the most central member of the group can compensate for this and with his or her knowledge, influence and credibility heighten the whole group's awareness of collective goals. Thus we hypothesize that, considering the highest central members of each group in a dyad, it is the average centrality of these most central members in the dyad that predicts between-group strategic consensus.

The main contribution of our study is to advance research on strategic consensus by developing and testing a network perspective on between-group consensus. Our findings confirm our argument that, due to the task-based backdrop and context of ties between organizational actors, centrality has a positive impact on intergroup goal achievement processes, as the knowledge sharing opportunities provided by central network positions heighten groups' shared understanding of joint objectives. In addition, our study is the first to demonstrate that the most central members is very important in this respect, as they can use their knowledge, credibility and influence (Ibarra, 1993; Marx et al., 2006; Sparrowe et al., 2001; Tsai, 2001) to make their groups recognize that they complement and supplement efforts of other groups. Our study also makes contributions beyond the field of strategic consensus. Research on intergroup issues in organizations is sparse (Richter et al., 2006; van Knippenberg, 2003), thus by developing the current network perspective on intergroup strategic consensus, we also advance the understanding of intergroup relations in organizations more generally.

Theoretical Background and Hypotheses

Strategic Consensus Between Groups

Strategic consensus, –the shared understanding of strategic priorities (Kellermanns et al., 2005) –, has been recognized as one of the most important concepts in the strategy formation and strategy implementation process (González-Benito et al., 2012; Markoczy, 2001). For groups the formation of strategic consensus is proven to facilitate within-group communication (Kellermanns et al., 2008; Mathieu et al., 2008), within-group coordination of actions, and within-group creation of synergies (Cannon-Bowers et al., 1993). Besides, higher strategic consensus is argued to improve strategy implementation (Noble, 1999; Rapert et al., 2002) and to be associated positively with group (Mathieu et al., 2008) and organizational performance (Kellermanns et al., 2011).

In line with suggestions by Kellermanns and colleagues (2011), we make a clear distinction between within-group and between-group strategic consensus. Within-group strategic consensus is the degree of shared understanding of strategic priorities among the members of one group (intra-group), and between-group consensus is the degree of shared understanding of strategic priorities between a pair of groups (intergroup). Within-group consensus thus refers to the variance within one single group, due to a spread of opinions in the group around the group's average opinion, whereas between-group consensus refers to the variance due to different opinions of the people in two groups (a dyad) around the dyad's average opinion.

Organizational groups function in a strategy-driven context of interdependent relationships with other organizational groups. It is this very nature of organizations that requires organizational groups to coordinate their efforts and interests not only within but also between groups to achieve organizational goals (Brett & Rognes, 1986; Kramer, 1991; van Knippenberg, 2003). This interdependence requires groups to coordinate their strategic efforts and to operate as parts of a bigger whole for the organization at large to perform well (Joshi, 2006; Ketokivi & Castañer, 2004; Marks et al., 2005; Richter et al., 2005). But, organizational groups cannot effectively coordinate their strategic efforts and implement strategy unless they have a shared understanding of the strategy both within and between groups. From that perspective, it is somewhat surprising that strategic consensus between groups has received far less attention than consensus within groups (Kellermanns

et al., 2005; 2011). Perhaps this lack of attention reflects the more general tendency in research in management to overlook the importance of intergroup relations (Hogg et al., 2012; Richter et al., 2006; van Knippenberg, 2003). Only a number of scholars have noted the importance of studying consensus between interdependent units in addition to within-group strategic consensus (Kellermanns et al., 2005; Markoczy, 2001; Wooldridge & Floyd, 1989), but very few have studied the actual phenomenon. Exceptions include work by St John and Rue (1991) who investigated the concept to a limited extent in an explorative study that examined consensus between marketing and manufacturing groups.

As it is shown that effective synchronization of efforts across groups enables the exchange of inputs and processes for the attainment of collectively held goals (DeChurch & Marks, 2006; Edmondson, 2003), better understanding strategic consensus between groups is thus an important challenge to research and practice in strategy implementation. In the following section, we therefore take a network perspective on strategic consensus between organizational groups.

Network perspective on Strategic Consensus Between Groups

When strategic efforts rely on collaboration and synchronization of more than one formal organizational group intergroup consensus is required. There is, for instance, evidence from studies on Multi Team Systems (MTS), two or more teams that interface directly and interdependently in order to accomplish collective goals, that the extent to which such a small network effectively synchronizes its efforts strongly predicts their collaborative effectiveness (DeChurch & Marks, 2006; Marks et al., 2005). In an organization the pattern of informal connections (ties) organizational members or units (nodes), the network structure, determines the extent to which individuals and groups can effectively synchronize their efforts. Ties serve as channels for the flow of interpersonal resources between and within groups and the extent to which individuals and groups are connected to one another will facilitate and constrain the flow of resources that can move throughout the network (Ibarra, 1993). Organizations are increasingly conceptualized and studied as networks of organizational members or groups (e.g., Ibarra, 1993; Reinholt et al., 2011; Sparrowe & Liden, 2005; Tsai, 2001; Tsai, 2002). The nodes in these networks are connected by relational ties that allow for the exchange of resources, such as strategic information, task advice and knowledge (Reinholt et al., 2011; Sparrowe & Liden, 2005;

Tsai, 2002), the increase and confinement of the power of the actors (Burt, 1992) and the rise of trust and social norms (Gulati, 1995). Often, these ties are influenced by the relationships of individual members, as these interact interpersonally and as representatives of their groups (Ibarra, Kilduff, & Tsai, 2005). Thereby the links between individuals can act as antecedents for the formation of intergroup ties and a network can thus provide a flexible exchange structure that goes beyond the hierarchical structure created by the organization. Vice versa, individual cognitions about the network (connections) are also affected by the network (e.g. Ibarra et al., 2005). Therefore it is not surprising that various scholars have simultaneously considered individuals and the larger collective, either the group or the network (e.g., Balkundi & Harrison, 2006; Ibarra et al., 2005). The meta-analysis by Balkundi and Harrison demonstrated that incorporating both individual team member and team-level network characteristics explain team-level outcomes and thus highlight the benefits of multilevel research endeavors. We extend their work by looking at how team member and team-level network characteristics influence the consensus relationship between groups.

Organizational networks are likely to have an important influence on strategic consensus because teams need to coordinate objectives and resources as a group, but also with other groups in the organization. Organizational groups often hold specialized knowledge and therefore knowledge transfer among organizational groups provides opportunities for mutual learning and intergroup cooperation (Kogut & Zander, 1992; Tsai & Ghoshal, 1998). Relational ties allow groups to obtain and provide additional information they need to execute their tasks and prevent them from making decisions that are inconsistent with organizational goals. Networks may thus also shape the sharedness of understanding of strategic objectives, because network ties can heighten attention and commitment to joint objectives. Edmondson (2003), for instance, demonstrated that for interdependent operating teams going beyond the boundaries of their own team played a critical role in their support and implementation of the hospital's objectives. Whereas without having ties with others in the organization, it is easier for a group to pursue their own interests at the expense of the overall organization.

Networks of individuals and groups may also contribute to effectiveness. Prior work has revealed positive associations between network characteristics and performance-related

outcomes, such as innovation (Tsai, 2001; Tsai, 2002) and individual and team performance and productivity (Balkundi & Harrison, 2006; Soda & Zaheer, 2012; Sparrowe et al., 2001). As noted by Reinholt, Pedersen and Foss (2011) many of these studies assumed knowledge- and/or resource-sharing to be an underlying mechanism driving such outcomes and we argue it is also an underlying mechanism of intergroup consensus.

From the perspective of between-group strategic consensus in organizations the most relevant network characteristic is centrality, which has been studied at both the individual and team level. Centrality is the extent to which a node occupies a central position in a network by having many ties to other actors, or by having connections to centrally located actors (Kilduff & Brass, 2010; Reinholt et al., 2011; Sparrowe et al., 2001; A. Zaheer et al., 2010). On the one hand being central gives the node more access to resources and more knowledge sharing opportunities', but on the other hand having a large numbers of direct ties can drain a node's own resources because more ties create larger demands as they can be laborious to maintain (Burt, 1997). As the influence of centrality on intergroup consensus is not straightforward we separate individual and group centrality as distinct concepts.

Team Centrality and Strategic Consensus Between Groups

Organizational groups differ in their internal knowledge, resources, practices and capabilities. In general, its members tend to focus on intra-group processes and their own group and its immediate goals as opposed to those of the whole organization (Ketokivi & Castañer, 2004). However, groups need other groups to provide them with knowledge, products, or services, and rely on them to accommodate group needs (van Knippenberg, 2003). Even when groups function relatively independently as far as their task performance is concerned, they may compete for certain resources within the organization or be interdependent for important organizational outcomes (Kramer, 1991). Intergroup links and networks allow organizational groups to obtain new and other resources and knowledge (Reinholt et al., 2011; Tsai, 2001) and by occupying a central position in the network, a group is likely to access such resources.

Central teams, have a larger amount and diversity of knowledge sharing opportunities and superior and quicker access to critical information, resource flows and knowledge or

practices developed by other units (Gulati et al., 2000; Tsai, 2001). This includes an understanding of where knowledge is located inside the organization, and how to obtain it (Hansen, 2002). Because of their structurally advantageous position central groups are also likely to have more control and influence within the organization (Burt, 1992; Ibarra, 1993). Not only can central teams therefore make better strategic and operational decisions and even improve their performance based on this central position (i.e., the meta-analysis by Balkundi & Harrison, 2006), but is also likely that they are more aware of the fact that their group does not operate in a vacuum, but as part of a larger whole in which different groups complement and supplement each other's efforts. Not only can interaction with other groups offer the opportunity to develop more differentiated, less intergroup biased, perceptions of (members of) other groups (Gaertner *et al.*, 1999), but by communicating with other groups about work it is also very likely that both actors are influenced by each other's ideas and interests. In contrast, groups who are not centrally positioned in the network have few knowledge sharing opportunities. They may find themselves isolated from where "the action" is and are cut off from the ongoing communication and instead take care of their own group rather than to cooperate for the organizational interest. Therefore, it is unlikely that these groups have a shared understanding of strategic priorities with other groups in the organization, due to the lack of attention to organizational objectives inspired by their low centrality.

A counter argument, however, is that centrality may be laborious to maintain because actors must spend time and effort on maintaining numerous ties (Burt, 1997), taking them away from their tasks. Also, centrality might push groups towards sharing and receiving only acceptable and attitude-reinforcing information and constrain groups to act independently (Krackhardt, 1999). Moreover having a large number of ties may drain the group's resources and at a certain point more connections do not add new knowledge but rather increase the amount of redundant information. Central groups risk being overloaded with information, making it more difficult to identify main issues and separate them from side issues.

We follow Balkundi and Harrison (2006) in resolving which of these two arguments is most suited in organizational settings. Given that organizational teams are created by the organization to accomplish tasks, the informal advice relationships among actors are likely

to be work related involving formally assigned tasks and goals. Hence, patterns of relationships between team members start with a task-based backdrop and context. Therefore we expect that informal relationships facilitating goal achievement will be much stronger than those hindering it.

In effect then, for any group, the extent to which the group holds a central position is a determining factor for their degree of between-group consensus. We argue that this influence of group centrality is of equal importance for both groups in the dyad and thus combines into a collective dyad-output, making an aggregated composition measure, such as taking the dyad-mean, appropriate (e.g., Barrick et al., 1998; Chen et al., 2004; Klein & Kozlowski, 2000). Thus, we hypothesize that dyads of groups are more likely to achieve high levels of between-group consensus when the average centrality of both the groups in the dyad is higher.

Hypothesis 1: The average level of centrality in a dyad is positively related to between-group strategic consensus.

Individual Centrality and Strategic Consensus Between Groups

Some studies specifically focus on the centrality of the team leader or manager (Balkundi & Harrison, 2006), but because the informal network of ties can be and often is different from the formal network (Soda & Zaheer, 2012), the team leader is not necessarily the most central member of a team. Central individuals, because of their numerous connections to others, have greater access to, and a larger amount and diversity of, resources as knowledge and (confidential) information about work related issues (Gulati et al., 2000; Sparrowe et al., 2001). Centrally positioned employees can be considered as major channels of knowledge and information in networks; they are in “the thick of things” (Reinholt et al., 2011). Through their many connections it is very likely that these individuals are more aware of the fact that their group does not operate in a vacuum, than their less central colleagues. In general, central individuals gather and disseminate information from their many contacts which is likely to shape their goal perceptions and preferences not only in terms of the interests of their own group but also in terms of collective objectives.

Through their structurally advantageous position central individuals also have more relationships to draw upon, have more power to pursue their ideas more easily and thus

enjoy a broad span of influence and control (Burt, 1992; Ibarra, 1993). In addition others are likely to view their accumulated work-related knowledge and large networks as valuable resource and sign of credibility (Marx et al., 2006; Sparrowe et al., 2001; Tsai, 2001). Consequently, they are seen as attractive knowledge sharing partners by others. Especially because many of the issues in organizations are non-routine, the advising and coordinating role of central individuals can supplement formal routines and authority. Central individuals can therefore, through the fact that they are viewed as credible source, act as a pacemaker for heightening attention to organizational objectives and the 'bigger picture', when sharing their knowledge and work related information with their many ties. Thus, central individuals may be a key strategic source at the heart of shared understanding on organizational objectives among groups in the organization.

On the negative side, however, this powerful position increases the risk that central actors will withhold valuable information, resources and support (Sparrowe et al., 2001) or control the flow of knowledge (Burt, 1992). This reduces the influential position of the group this centrally-located individual belongs to and it might even influence the group's performance negatively (Krackhardt, 1999). Besides, maintaining a large number of contacts and managing the different obligations that results from it consumes time, time that the central individual might have better spent on other important issues.

Here we again resolve these contrasting arguments by recognizing that patterns of relationships between team members start with a task-based backdrop and context (Balkundi & Harrison, 2006). Because the informal advice relationships among actors are likely to be work related we expect that informal relationships facilitating goal achievement will be much stronger than those hindering it. The findings by Sparrowe and colleagues (2001), who found that in an organization's advice network central individuals exhibit higher levels of both in-role and extra-role performance -where extra-role performance includes measures of helping colleagues- further supports our assertion.

Clearly the input of the most central member of a group can thus have a big influence on the likeliness that this group has a shared understanding on strategic priorities with other groups in the organization. When the inputs of the member with the highest ability are critical, for instance when generating solutions to problems, using the maximum score is recommended (e.g., Barrick et al., 1998; Chen et al., 2004; Klein & Kozlowski, 2000).

We theoretically support aggregation following these recommendations and argue that because the most central member will share the knowledge gained from ties outside the group with ties within its group this will make the whole group recognize that they complement and supplement efforts of other groups. This in turn will have a positive effect on the group's strategic consensus with other groups. Even when other members of the group are less central, the most central member of the group can compensate for this and with its knowledge, influence and credibility heighten the whole group's awareness of collective goals.

In effect then, for any group, the inputs of the highest central member is critical, it is the individual with the most central position that is a determining factor for the degree of between-group consensus. Here we argue that the influence of the most central member is of equal importance for both groups in the dyad and thus combines into a collective dyad-output, making an aggregated composition measure appropriate (e.g., Barrick et al., 1998; Chen et al., 2004; Klein & Kozlowski, 2000). That is, considering the highest central members of each group in a dyad, it is the average centrality of these most central members in the dyad that predicts between-group strategic consensus.

Hypothesis 2: The mean level of centrality of the most central members of each group in a dyad is positively related to between-group strategic consensus.

Methods

Data Collection

To test our hypotheses, we examined a mid-sized listed information technology consultancy firm from Western Europe. The firm serves a range of clients, from small local enterprises to large international corporations, in a range of industries, including retail, wholesale, manufacturing, real estate and charity. The business acquired from these clients is the development of industry-specific solutions ranging from business consulting to management services and software development to innovative services. Teams are formed around services and industries, not around projects, and consist of 3-25 employees, with complementary competencies, that need to interact daily. Hence, this firm is a relative hierarchical company in which employees have sufficient opportunities to build (strong) ties within and between teams in the organization. Preliminary interviews with company

representatives (a human resources director and a member of the top management team (TMT)) and available company data confirmed that the hierarchical structure and employees rely on sharing knowledge and resources with colleagues when performing their tasks. The TMT of the firm also provided us with the strategic priorities of their organization.

The data were collected (1) with the relevant firm records, including HR data and an organogram displaying the hierarchical structure of the organization, and (2) with an extensive web-based survey in which we asked employees to report their relationships with coworkers and to evaluate the organization's strategic priorities. We launched the survey with a group e-mail to all employees that was signed by the CEO and included an explanation of the importance of the survey and a personalized link to the survey website. This personalized link ensured the confidentiality of individual responses. Two reminders, an email to all managers with the response percentages so far, and a final announcement of closure of the survey were sent in order to increase the response rate.

The survey was sent to all 46 teams in the organization and the TMT (405 respondents in total). Three hundred thirty-one employees answered the questionnaire, which corresponds to a response rate of 82 percent. We separated the TMT from the sample and discarded 7 teams either because less than half of the team had responded or because the team had less than three respondents that answered the survey. Two hundred ninety-eight responses were used in the final data analysis (i.e., the final response rate was 74 percent). The mean age of the participants was 42 (SD = 7.9); 89% were male; they worked at the firm an average of 6 years (SD = 3.9); 84.8% had a Bachelor degree or higher. Our final sample was 39 teams, ranging in size from 3 to 21 members, including employees with double team memberships⁸, with an average of 8.13 persons per team. These 39 teams constitute to 741 dyads that can be studied in the analysis of between-group strategic consensus.

Data Analysis

It is important to note that the unit of analysis in this study is the relationship between pairs of teams, so all the variables are dyadic. Also, we study the dyadic relationships

⁸ Employees that had double team membership were included in both their teams in our analysis.

between all teams in the organization. Thereby, we recognize that teams are dependent on and thus form relationships with multiple teams in the organization, rather than asking managers to assess cross-functional cooperation (Ketokivi & Castañer, 2004) or asking groups about their intergroup relations with respect to specific out-group(s) (DeChurch & Marks, 2006; Richter et al., 2006).

Dyadic variables are not independent. When each row and column of a matrix stands for a group, the cells in the matrix correspond to relations between pairs of groups, thus the observations are auto-correlated if they are in the same row or in the same column. Therefore, we had to employ statistical procedures designed for dealing with dyadic data and thus do not assume independence (Dekker et al., 2007; Krackhardt, 1988). Ordinary Least Square techniques are not appropriate here because relational data are systematically interdependent (Dekker et al., 2007). Hence, we used the Multiple Regression Quadratic Assignment Procedure (MRQAP, see Borgatti et al., 2002; Dekker et al., 2007; Krackhardt, 1988) to determine how group and member centrality affect between-group strategic consensus. Our main reason for choosing MRQAP is because its results can be interpreted in a fashion similar to a traditional (multiple) regression analysis (Dekker et al., 2007). In this study, the permutation-correlation process was repeated 2,000 times, to estimate the likelihood of observing a statistic by chance alone while accounting for the row/column interdependencies among the matrices. From the various permutation technique-options in Ucinet (Borgatti et al., 2002), we chose the double Dekker semi-partialling procedure (Dekker et al., 2007).

Measures

In this section, the measures and their operationalizations are discussed. This study relies on existing measures that are employed with five-point Likert-type scales, unless noted otherwise.

Independent variables

As is typical in network research (Ibarra, 1993), the centrality indexes were based on responses to one question. To identify an individuals' and teams' network position we followed the work of Burt (1992) and Ibarra (1993) asking the respondents: "Please indicate the names of your colleagues with whom you most often discuss what is going on

in the organization?” Respondents were also told that they could choose both colleagues from within their team and outside of their team. Due to the large number of persons involved, 405 in total, gathering full network data can be highly time-consuming and respondents' fatigue could result in inaccurate responses. Because our hypotheses required full-network data, we therefore modified the question and asked respondents to select up to 9 colleagues from a name generator with all employee names. This allowed respondents to select their answers and only select the strongest ties (i.e., Moran, 2005; Xiao & Tsui, 2007). Next, we constructed a relational matrix of links between individuals in which the ij^{th} cell is coded 1 if actor i indicated a tie with actor j . The resulting binary data matrix was analyzed using Ucinet to calculate the measures of centrality.

Scholars use a variety of constructs and measures to describe centrality within a network (Tsai, 2001), we focused on power centrality (Bonacich, 1987). This type of centrality takes into account that a focal actor's status in a network depends on his or her own centrality as well as the centralities of those actors he or she is connected to. Thus, an actor's power centrality is its summed connections to others, weighted by their centralities. Compared to simple degree centrality, the Bonacich measure provides a more global representation of an actor's centrality in the overall network (A. Zaheer et al., 2010). We look at power centrality because it considers both direct and indirect ties, and therefore is a more accurate indicator of the extent to which an actor is embedded in the whole organizational network.

Average centrality of teams in dyad. The average degree of power centrality of teams in a dyad was determined with Bonacich's (1987) measure of network centrality. First, we measured the position of each individual in the network using this measure of network centrality that reflects that an individual's status is a function of the status of those to whom he or she is connected. Thus, an actor's centrality is his or her summed connections to others, weighted by their centralities. The measure uses an attenuation factor to account for the fact that the centralities of other actors may change the overall centrality score of an actor (A. Zaheer et al., 2010). We computed the centrality scores using Ucinet, with a value of 0.5 for the attenuation factor to ensure that an individual's power centrality is increased by being connected to actors with high centrality. In computing the centrality ratings, we did not symmetrize relations, the distinction between

being the source and the object of a relation was preserved (Ibarra, 1993). Second, we used the average centrality score of all team members as the centrality score of a team. Third, we computed the arithmetic mean of the centrality scores of the two teams of the dyad to translate the results to the relational dyadic level.

Maximum centrality in teams of the dyad. The maximum degree of power centrality in teams of a dyad was also determined with Bonacich's (1987) measure of network centrality as described in the previous section. After determining the position of each individual in the network using this approach, we used the maximum centrality score in a team as the maximum power centrality score and computed the arithmetic mean of these group-maximum-centrality scores in the two teams of the dyad to translate the results to the relational dyadic level.

Dependent variable

Degree of Between-group strategic consensus. The degree of between-group strategic consensus was determined with the r measure that is part of Strategic Consensus Mapping (SCM, Tarakci et al., in press), a new analytical approach which can be used to visualize and quantify consensus within and between groups while capturing the specific content of this consensus and variations in the degree of consensus.

We asked respondents to rank the organization's 8 strategic priorities in terms of importance (the assessment of strategic consensus typically found in strategic management research, cf. Kellermanns et al., 2011). To obtain a measure of strategic consensus, in line with SCM, we employed per team a principal component analysis of the transposed data matrix (vector model of unfolding see, e.g., Borg & Groenen, 2005), placing the team members in columns and the strategy items in the rows. This technique jointly plots the strategic priorities in relation to the preferences of respondents regarding these priorities for all members of a team. The resulting biplot depicts the respondents' prioritizations as vectors and the strategic priorities as points in a two-dimensional space, thereby visualizing both the 'content' and 'locus' (within-group) facets of the multi-faceted

definition of consensus proposed by Markoczy (2001)⁹. The projections of the strategic priority points onto the first axis of the biplot represent the overall view of the group and can be interpreted as the *prototypical group member*. Since the method provides a biplot for each team, the correlation between the prototypical members of two groups captures the between-group consensus for these two groups (for further methodological details the reader may refer to Tarakci et al., in press).

The measure for between-group consensus, $r(A, B)$, is operationalized as the correlation of the object scores of the strategic priorities on the first principal component for two management teams (A and B), after rotating the solution so that the first axes coincides with the vector of the average of the respondents' vectors. An $r(A, B)$ of 1 indicates the perfect overlap of the two teams regarding the strategy items; $r(A, B) \approx 0$ represents no strategic consensus between the two teams; and $r(A, B) \approx -1$ reveals two opposite notions of the strategy in the two teams.

Control variables

Because the degree of within-group strategic consensus, dyadic strategic congruence and direct communication between teams can be possible alternative explanations, we controlled for them.

Degree of Within-group strategic consensus. There is not necessarily a positive relation between within-group strategic consensus and between-group strategic consensus. That is, in theory it is possible that two teams have high within-group consensus, but their between-group consensus is low because they agree on a different strategic content. On the other hand two teams can have low within-group consensus, but quite a high degree of between group-consensus because what they on average agree on is the same strategic content. In practice however it is more likely that when two teams have high within-group consensus, their between-group consensus is also high. Because once a team has more within-group consensus this consensus is likely to be on the strategic content as

⁹ If two team members hold similar views regarding the prioritization of strategic items, their corresponding two vectors in the biplot are close to each other. Consequently, the degree of strategic consensus within the team is depicted by the spread of all of the vectors in the biplot (i.e., all of the team members); a narrow bundle of vectors indicates a high degree, whereas, a wide distribution of vectors indicates a low degree of within-group consensus. Through rotation, to ensure that the average (vector) of component loadings coincide with the first dimension, the projections of strategy items onto the first axis represent the overall view of the group and can be interpreted as the prototypical group member.

communicated by the organization.

The degree of strategic consensus within a group was determined with the SCM's α measure on the rankings of the list of the strategic priorities (Tarakci et al., in press). This measure uses the biplots, also used to determine between-group strategic consensus, and considers the first two principal components of each team-biplot. The degree of within-group strategic consensus is defined by:

$$\alpha = \sqrt{\sum_{s=1}^2 \left(m^{-1} \sum_j a_{js} \right)^2},$$

where a_{js} is the s^{th} component loading for respondent j ($j = 1, \dots, n$). α takes values between 0 and 1. If all of the members of the management team have similar views regarding the strategy the α measure will be close to 1, but when the members of the management team have very different views and thus low consensus the α measure will be low (close to zero). Because within-group strategic consensus originates at the team level it was translated to the relational level. We calculated the average within-group consensus for each dyad of teams.

Dyadic strategic congruence with the TMT. When teams agree with the Top Management Team, all other things being equal, it is more likely that they also have higher between-group strategic consensus with other teams in the organization, and this between-group consensus is then thus on the strategy as set out by the organization. We define dyadic strategic congruence with the TMT as the similarity of perceptions, about the importance of specific strategic priorities to the organization, of the TMT and both the teams in the dyad.

For each team their congruence with the TMT was calculated by taking the square root of the sum of the squared differences between the average strategic priority ratings of the TMT and the team. Then we multiplied it by minus one (Colbert et al., 2008), so a high score indicates high degrees of similarity between the TMT and the team on their views on the strategic priorities. Thereafter it had to be translated into a matrix representing the dyadic relationships, averaging the congruence scores of the two teams.

Direct Communication link. If a high degree of regular communication among organizational members is already taking place in the organization this might be an alternative explanation for higher degrees of between-group consensus. We created a 39×39 matrix based on the same item that was used for centrality and group data to calculate whether there was communication between each of the groups in the organization. We used symmetric data for the communication matrix such that when one or more individuals from a group responded that (s)he communicated with one or more individuals from another group this was coded as 1. If individuals from neither of the groups indicated they communicated with the other group, the communication between the dyad was coded as 0.

Results

Table 7 reports means, standard deviations, and QAP correlations for the key variables used in this research. We observe that there are significant correlations between most of our constructs on the hypothesized directions. We also observe a high correlation between average power centrality of teams and maximum power centrality in teams. This is in line with earlier studies on different types of operationalization (e.g., Barrick et al., 1998) and also not unexpected given that the same trait was operationalized differently (i.e., average and maximum) and the maximum power centrality of the most central member in the team is also incorporated in the average degree of centrality of the team (a higher individual score will increase the average score, thus the effect of the higher score is somewhat reflected in the average-score operationalization). Table 8 shows the results of QAP multiple regression analyses, where all the continuous independent variables were centered to increase the interpretability. The coefficients presented in the table are standardized regression coefficients.

Table 7: Descriptive Statistics and QAP Correlations

Variable	Mean	S.D.	1	2	3	4	5
1 Within-group strategic consensus in dyad	0.60	0.11					
2 Dyadic strategic congruence with the TMT	-3.46	0.72	-0.17				
3 Direct Communication link	0.13	0.33	0.06	0.20 ^{***}			
4 Average power centrality of teams in dyad	9.60	5.34	0.01	-0.16	-0.02		
5 Maximum power centrality in teams of dyad	27.86	14.95	-0.04	-0.00	-0.02	0.81 ^{***}	
6 Between-group strategic consensus	0.64	0.25	0.38 ^{**}	0.23 ^{**}	0.19 ^{***}	0.12	0.30 ^{**}

N(groups) = 39; *n* (dyadic relations) = 741; † $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Model 1 shows that all controls together have a significant explanatory power on between-group strategic consensus ($R^2= 0.24; p < 0.001$). Model 1 suggests that dyads with a higher degree of within-group strategic consensus had significantly more between-group strategic consensus ($\beta = 0.42; p < 0.001$) and that dyads with higher strategic alignment with the TMT also had significantly more between-group strategic consensus ($\beta = 0.28; p < 0.01$). Finally, model 1 shows that there is a significant positive relationship between a direct communication link and between-group strategic consensus ($\beta = 0.10; p < 0.001$).

Table 8: Results of QAP Regression for Between Group Strategic Consensus¹⁰

Variable	Model 1	Model 2	Model 3	Model 4
	β	β	β	β
Within-group strategic consensus in dyad	0.42 ***	0.42 ***	0.43 ***	0.43 ***
Dyadic strategic congruence with the TMT	0.28 **	0.30 **	0.28 **	0.23 **
Direct Communication link	0.10 ***	0.10 **	0.11 **	0.11 ***
Average power centrality of teams in dyad		0.17 *		-0.27 *
Maximum power centrality in teams of dyad			0.32 ***	0.54 ***
Adjusted R ²	0.24 ***	0.27 ***	0.34 ***	0.37 ***

N (groups) = 39; n (dyadic relations) = 741; entries are standardized regression coefficients (significance) derived by the MRQAP double Dekker semi-partialling method at 2000 permutations; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

In the Models 2 and 3 we add the effects of the independent variables, to observe their separate effects. In Model 2, we add the effect of power-degree centrality of teams in a dyad, that is the groups summed connections to others, weighted by their centralities, and find that the variance accounted for significantly improves compared to model 1 ($\Delta R^2 = 0.03; p < 0.001$). Confirming Hypothesis 1, a higher average level of centrality in a dyad is positively associated with its degree of between-group strategic consensus ($\beta = 0.17; p < 0.05$). To test hypothesis 2, we add the effect of the maximum power-degree centrality in teams of a dyad in Model 3 and find that the variance accounted for significantly improves

¹⁰ Please note that it is common not to report standard errors with QAP-regression results (e.g., Allatta & Singh, 2011; Borgatti & Cross, 2003; Polzer et al., 2006; Tsai, 2002; S. Zaheer & Zaheer, 2001).

compared to Model 1 ($\Delta R^2 = 0.10$; $p < 0.001$). The results of Model 3 confirm Hypothesis 2, a higher mean level of centrality of the most central members of each group in a dyad is positively related to its degree of between-group strategic consensus ($\beta = 0.32$; $p < 0.001$).

Finally, in Model 4, we simultaneously add all the independent variables and find that the variance accounted further improves compared to Model 3 ($\Delta R^2 = 0.04$; $p < 0.001$). The effect of the maximum power-degree centrality in teams of a dyad is still significant and its effect is bigger than in Model 3 ($\beta = 0.54$; $p < 0.001$), but the effect of average power-degree centrality of teams in a dyad becomes significantly negative ($\beta = -0.27$; $p < 0.05$).

Discussion

We developed an analysis of between-group strategic consensus that sees this consensus as subject to network dynamics. The support for our predictions that between-group consensus in dyads of organizational groups is determined by the average level of group centrality in a dyad (Hypothesis 1) and the centrality of the most central members of each group in a dyad (Hypothesis 2) speaks to the viability and promise of such a network perspective on between-group strategic consensus.

Theoretical Implications

First, we advance research on strategic consensus by demonstrating that a network perspective is very powerful for predicting the degree of strategic consensus between groups. An organization is a group of groups, with strategy driven interdependent relationships between those groups. For an organization at large to perform well, groups need to coordinate their strategic efforts and interests not only within their group but also between groups (Brett & Rognes, 1986; Joshi, 2006; Kramer, 1991; Richter et al., 2006; van Knippenberg, 2003). Building strategic consensus between groups therefore becomes essential to foster coordination (cf., Kellermanns et al., 2005). One of the main contributions of this study is that, although the importance of group and member centrality has been demonstrated for many group and organizational outcomes, to our knowledge, this is the first to demonstrate its value for understanding intergroup strategic consensus.

Prior work on centrality has revealed its positive associations with both individual outcomes, such as power (Ibarra, 1993) and performance (Sparrowe et al., 2001), and group outcomes, such as knowledge sharing (Burt, 1992; Reinholt et al., 2011) and

performance (Balkundi & Harrison, 2006; Tsai, 2001). Some scholars have, however, also pointed out that there might be downsides to having a central position (Burt, 1997; Krackhardt, 1999; Sparrowe & Liden, 2005), as having a large numbers of direct ties can be laborious to maintain and may drain a node's own resources. Our findings confirm our argument that, given the task-based backdrop and context of centrality, it has a positive impact on intergroup goal achievement processes, as the knowledge sharing opportunities provided by central network positions heighten groups' shared understanding of joint objectives. Our findings support our prediction that the average level of centrality in a dyad is positively related to between-group strategic consensus.

In addition, although previous studies have already shown that central individuals, through their structurally advantageous central position, have more power, credibility and influence (Ibarra, 1993; Marx et al., 2006; Sparrowe et al., 2001; Tsai, 2001), to our knowledge, this is the first to demonstrate that they can use their credibility and influence to make their groups recognize that they complement and supplement efforts of other groups. This study supports our prediction that central individuals can act as a pacemaker for heightening attention to organizational objectives, as it is the average centrality of these most central members in the dyad that predicts between-group strategic consensus. Against expectations we do not find that both centrality of the team and of the most central member together have a positive effect on intergroup consensus. When we look at the combined effects the association of average power centrality of teams in a dyad with intergroup consensus becomes significantly negative while the most central members of teams in a dyad is more positively associated with intergroup consensus in comparison to its separate influence. An explanation for this (unexpected) finding might be that groups with one very central member do not benefit additionally from having more very central members, rather it might result in an overload of information, making it more difficult for groups to distinguish between key issues and side issues. Another explanation, worthy of future research, could be that something co-varies with centrality in its effect on between-group consensus. Despite the speculation resulting from this finding, the results do make clear that central individuals may be a key strategic source at the heart of consensus on organizational objectives between groups in the organization. As a direct implication the present study also indicates that future research in the field of consensus should benefit

from considering the organizational network and the network positions of individuals and groups together.

Our study also makes contributions beyond the field of strategic consensus, however. Studies on intergroup issues in organizations are sparse (Kramer, 1991; Richter et al., 2006; van Knippenberg, 2003). By developing the current network perspective, we thus also advance the understanding of intergroup relations in organizations more generally and offer perspective of breaking more conceptual ground. For instance, intergroup relations in organizations differ from other social contexts in the fact that managers can intervene. Recent work by Hogg, van Knippenberg and Rast (2012) argues that leadership of collaborative performance of different organizational groups requires a different kind of leadership, because it is associated with unique challenges that are not addressed by traditional leadership theories. The role of such intergroup leadership in building understanding with the organizational cause could be examined in the future, as well as how this leadership can benefit from the organizational network in doing so.

Managerial Implications

Given the emphasis organizations normally put on teams by organizing people in groups –engaging in team building activities, setting group-goals and giving each group a leader– it is important that organizations recognize that this focus on groups takes away attention from the fact that teams also need to cooperate with other groups. In order to shift groups’ attention from the group to the organization it helps to have cooperative goals that emphasize the need to coordinate and cooperate with other groups (Gaertner et al., 1990) and explain how the group goals tie in with the overall mission of the organization (van Knippenberg, 2003). In addition, we urge organizations to ensure that employees engage sufficient in activities to build intergroup ties, either through frequent intergroup meetings, job rotation programs, overlapping group memberships or boundary spanning activities (Marrone, 2010). Our study demonstrates that intergroup ties are likely to further shared understanding between groups.

Our study also shows that the most central member of a group is vital in that group’s shared understanding with other groups. However, a group can only benefit from its most central member if that central member shares his or her knowledge with the group and when the group is open to this new knowledge and information. Managers should therefore

recognize the potential of having central group members and of having an open and psychologically safe group atmosphere, to ensure employees can share and exchange their knowledge and beliefs freely (Edmondson, 2003). This way groups can benefit most from the resources and knowledge of all its members.

Lastly, our study has important managerial implications for the success of the strategy implementation. Given the importance of collaborative processes in the ‘group of groups’ that is the organization, organizations can signal to their employees that intergroup coordination and collaboration is valued. This can be done by emphasizing collaborative skills in human resource planning and development and regularly monitoring of both intergroup and intragroup collaboration processes. Also, to promote intergroup activities organizations can consider rewarding at the intergroup level, such as rewarding all groups involved in a certain project, production process or service, rather than at the group level (van Knippenberg, 2003).

Limitations

Despite the interesting implications of this study its results need to be handled with some caution, as this study is cross-sectional and relies on a single organization, which allows neither for testing directionality of the results nor generalizing the findings to other organizations. Experimental research will be necessary to test for causality and longitudinal studies are necessary to study how consensus between groups develops over time. Besides, the organization that we studied was an ICT consultancy firm, when interpreting the results the organizational and environmental conditions in this type of organization need to be taken into account. Our understanding of the role of between-group strategic consensus would greatly benefit from multi-organization studies that are better able to capture the influence of actual variation in strategic consensus between groups and related constructs between organizational groups.

Also, in our work we compared the influence of the centrality of the team and the most central individual in the team for dyadic intergroup consensus, there are however many more facets of organizational networks that can influence strategic consensus between groups. Given the long and rich research tradition of network research, we are convinced that our empirical support for the value of the network perspective on consensus between groups can be the start of a long and prosperous research tradition. Structural

holes (Burt, 1992; Burt, 1997) and structural and relational embeddedness (Moran, 2005) may, for instance, offer more insight into how organizational networks influence the creation of shared strategic understanding between groups. Furthermore, as in most network studies, characteristics of the nodes (individuals) may play a role in driving the results. Future research may consider combining nodal characteristics with structural ones. Also, both strategic consensus and centrality have been linked with performance (e.g., Balkundi & Harrison, 2006; Dooley et al., 2000; Homburg et al., 1999; Markoczy, 2001; Sparrowe et al., 2001; Tsai, 2001). Given our results, extending the value of this network approach could be the investigation of the effect of between-group consensus on intergroup and organizational performance.

Conclusion

Using a network lens, we shed light on how actors' centrality in the organization can influence intergroup consensus. We showed that more central groups have more shared understanding with other groups and that the most central individuals may be a key strategic source at the heart of consensus among groups in the organization. Also, our results demonstrated that the flexible exchange structure of a network can go beyond the hierarchical structure created by the organization in shaping the sharedness of understanding of strategic objectives among groups that is so important for the effective intergroup coordination and cooperation in organizations. We hope that our work stimulates other researchers to break new ground in an extended analysis of intergroup strategic consensus' and network characteristics in the strategy process and strategy implementation.

Chapter 5

AGREEING IS NOT ENOUGH: BOUNDARY SPANNING BEHAVIOR AS MODERATOR OF THE RELATIONSHIP BETWEEN STRATEGIC CONSENSUS BETWEEN GROUPS AND INTERGROUP COOPERATION OF MANAGEMENT TEAMS

Despite the clear importance of intergroup cooperation for organizations, the conditions that foster it are not very well understood. Strategic consensus between groups is frequently argued to stimulate cooperation between organizational groups, but empirical findings on the actual relationship between strategic intergroup consensus and intergroup cooperation are sparse. Likewise, boundary spanning is intended to establish interactions between groups, but its effect has been studied mostly for assisting the own group in meeting its overall objectives. We argue that both intergroup consensus and boundary spanning can improve intergroup cooperation. Additionally we hypothesize that the effect of strategic consensus between groups on intergroup cooperation is moderated by the degree to which teams display boundary spanning behavior. Results of a field study of the top 370 managers and their interdependent teams in a large government task organization support the hypothesized main effects and interaction. Dyads with higher degrees of strategic consensus had better intergroup cooperation when they displayed more boundary spanning behavior. The way in which these findings extend the cooperation and intergroup literature, as well as more applied implications are discussed.

The importance of cooperation for organizations is widely recognized (Ancona & Caldwell, 1990; Lawrence & Lorsch, 1967; Smith et al., 1995; Tjosvold, 1984; Tjosvold, 1988a). Due to the complexity of strategic issues organizations face, work is frequently carried out in interdependent work groups (Keller & Loewenstein, 2011; Kramer, 1991). Cooperation within these groups has received much attention (Campion, Papper, &

Medsker, 1996; Smith et al., 1995; Thomas, 1992; Tjosvold, 1984; Tjosvold, 1988a). But organizations also need to ensure that these interdependent work groups cooperate and align their strategic efforts (Joshi, 2006; Richter et al., 2006; van Knippenberg, 2003). Effective and productive intergroup cooperation is, however, not self-evident. Most organizations formally structure the relationships between groups and departments to be cooperative, but only reward groups for their own accomplishments and may even compare their relative performance (Tjosvold, 1984). How to get interdependent teams, that may also compete, to cooperate?

Surprisingly, given its importance, intergroup cooperation has received limited attention. Intergroup cooperation is easier said than done, it can be challenging (Ancona & Caldwell, 1992; Marrone, 2010) and a lack of it has even been identified as a barrier to strategy implementation (Beer & Eisenstat, 2000). A substantial body of research has accumulated on strategic consensus, the shared understanding of organizational strategy, driven by the idea that strategic consensus enhances organizational performance by improving coordination and cooperation within the organization (e.g., Bourgeois, 1980; Dooley et al., 2000; Kellermanns et al., 2011; Markoczy, 2001). We pose that strategic consensus between groups is likely to foster intergroup cooperation, because groups that share similar views are more likely to understand one another's perspectives, to communicate more easily, to integrate distributed knowledge, and to coordinate more effectively (Cannon-Bowers et al., 1993; Cronin and Weingart, 2007; Kellermanns et al., 2005). We argue that in a dyad of groups higher strategic consensus between groups is associated with a higher degree of intergroup cooperation.

Research on boundary spanning behavior, a team's efforts to establish and manage links with other groups within the organization, has focused mostly on how such behaviors assist the group in meeting its overall objectives (Ancona & Caldwell, 1990; Marrone, 2010). While these coordination, negotiation, and information gathering activities also allow for a tighter coupling between organizational groups. Boundary spanning activities should thus be seen as intergroup relationship-building activities and not just as moments of intergroup contact. We propose that, if both of the teams in a dyad engage in boundary spanning behavior, this improves their intergroup cooperation.

For strategic consensus between groups to result in intergroup cooperation, teams also need to invest (cognitive) energy in understanding their colleagues. Due to its other-focused nature, boundary spanning behavior helps groups to realize the potential of shared strategic understanding for intergroup cooperation, as it may not only facilitate information exchange (Hansen, 1999) but also engender an integration of different perspectives (Ancona, 1990) and install more understanding of the interdependence between groups that characterizes organizations (Mohrman, Cohen, & Mohrman, 1995). Based on this, we propose that boundary spanning behavior moderates the effect of strategic consensus between groups on intergroup cooperation.

So far, research on intergroup issues has mostly studied structural determinants, considering the actors as black boxes, psychological underpinnings, ignoring the setting in which the behaviors occur and the role of intergroup perceptions on group processes (exceptions include Pettigrew & Tropp, 2006; Richter et al., 2006). Also, research on strategy implementation has long studied groups without taking the complexity of structural and psychological barriers to the integration of group efforts into account. Our study addresses these issues and thereby yields valuable insights into intergroup cooperation, along the lines of the behavioral strategy literature (Powell et al., 2011). We offer realistic assumptions about intergroup cooperation, by scaling individual and group cognition and behavior to intergroup collective behavior. Second, significant gaps still exist in our understanding of strategic consensus (see the review by Kellermanns et al., 2011) and boundary spanning (see the review by Marrone, 2010). Complementing these literatures we show how boundary spanning behaviors and strategic consensus impact collaborative intergroup efforts. Finally, by studying management teams, that are of great influence to the integration of collaborative strategic efforts, we make the contribution of identifying factors that assist intergroup leadership (Hogg et al., 2012), and assist managers in setting an example of intergroup cooperation.

Theoretical Background and Hypotheses

Intergroup Cooperation

Cooperation, the process of working or acting together to achieve certain goals, has long been recognized as crucial to the success of organizations (Ancona & Caldwell, 1990;

Lawrence & Lorsch, 1967; Smith et al., 1995; Tjosvold, 1984; Tjosvold, 1988a). Cooperation is a central process to achieve unity of effort both within and among various subsystems in the accomplishment of the organization's task (Keller & Loewenstein, 2011; Kramer, 1991; Lawrence & Lorsch, 1967) and implementation of the strategy (Dooley et al., 2000; Hambrick & Cannella Jr, 1989). In cooperation, people perceive their goal attainments as positively related, assist and influence each other, exchange resources and are open to consider each other's ideas. Opposing views or conflict are not suppressed in cooperation, but encouraged and managed constructively, to ensure mutual resources are recognized (Tjosvold, 1984; Tjosvold, 1988a).

Cooperation within groups – teams, work groups, departments – has received much attention and is associated with many positive outcomes, including performance (Campion et al., 1996; Smith et al., 1995; Thomas, 1992), high quality work, firm productivity and customer satisfaction (Tjosvold, 1988a). Cooperation also has non-economic effects, such as, enhanced employee satisfaction (Campion et al., 1996), reduced conflict (Tjosvold, 1988a) and increased confidence about working together in the future (Thomas, 1992; Tjosvold, 1984). Classically, the relationships with other groups are considered an 'input' or 'context' that impact groups' cooperation process, or are considered part of boundary management and thereby part of how groups' shape their role and manage their environment (e.g., Hackman, 1987). Some studies on cooperation therefore examined whether teams are able to be both internally and externally active. Ancona (1990), for instance, found that inter-team cooperation supported collaboration within teams and others found that collaborative intergroup processes during multi-team projects had predictive properties for later team performance (Hoegl, Weinkauff, & Gemuenden, 2004).

Much less has been uncovered about cooperation between groups, the process by which two groups (a dyad of groups) join forces to perform their collaborative task exceptions include (cf. Mathieu, Marks, & Zaccaro, 2001; Richter et al., 2005; Tjosvold, 1988a). We argue that intergroup cooperation is very important, because the interdependence between organizational groups requires that they too need to coordinate their strategic efforts (Joshi, 2006; Ketokivi & Castañer, 2004; Marks et al., 2005; Richter et al., 2005). Groups need to operate as parts of a bigger whole for the organization at large to perform well. Besides, they depend on other groups' input for accomplishing their own

task (Lawrence and Lorsch, 1967, Griffin and Hauser, 1996, Hoegl et al, 2004). Even when groups function relatively independently as far as task performance is concerned, they may compete for resources within the organization or be interdependent for important organizational outcomes (Kramer, 1991). The earlier and the more continuously groups cooperate, the more likely that their sub-tasks will fit together in the end (Lawrence & Lorsch, 1967). Unproductive interaction on the other hand is not only unpleasant for employees, it is likely to waste time and resources and results in dissatisfied customers, lost business and lower productivity (Hoegl et al., 2004; Tjosvold, 1988a).

Effective and productive intergroup cooperation is not self-evident. Poor coordination of strategic efforts between teams is identified as one of the silent strategy killers (Beer & Eisenstat, 2000). Therefore it is not surprising that recently leadership across group boundaries, known as intergroup leadership, has been identified as one of the bigger challenges of leadership in organizations (Hogg et al., 2012). Coordinating strategic activities and resources to ensure that organizational groups perform their collaborative tasks can be challenging (Ancona & Caldwell, 1992; Marrone, 2010). Organizations often offer mixed-motives for intergroup cooperation, as groups have incentives to both cooperate with other groups and to compete against them (Kramer, 1991). Many studies have demonstrated that merely categorizing members into distinctive groups is sufficient to produce intergroup bias (e.g., Brewer & Gaertner, 2001; Islam & Hewstone, 1993; Pettigrew & Tropp, 2006), which diminishes the willingness to cooperate with other groups. In addition, intergroup bias can be intensified by competition for scarce resources, and only rewarding groups for their own accomplishments (Kramer, 1991; Mohrman et al., 1995; Tjosvold, 1984). Mere contact between groups is not sufficient to improve intergroup relations, although it is proven to reduce intergroup bias (Pettigrew & Tropp, 2006). To prevent intergroup bias, groups need to recognize the interdependencies on other teams and to have shared understanding of the overarching strategy (e.g., Ashforth & Mael, 1989; Hoegl et al., 2004). Tjosvold (1988), for instance, found that a sense of shared purpose was one of the main reasons for groups to cooperate with other groups.

Supervisors and managers play a critical role in helping groups with the development of their tasks and shaping their understanding of the (need for) cooperation (i.e. sensemaking, Gioia & Chittipeddi, 1991b; Lüscher & Lewis, 2008). Also, managers fulfill

a complex intermediary position during implementation of change (Balogun, 2003). Managers are social actors embedded in a complex network of intra- and intergroup relations. They need to develop relationships that cut across functional and hierarchical boundaries (Smith et al., 1995). They manage one or multiple operational teams and spend much of their time facilitating cooperation between groups -in addition to cooperation within groups- (Mintzberg, 1970; Tjosvold, 1988a). Recognizing that managers often serve as the primary conduits for the coordination of intergroup activities, and thus act as boundary spanners, Richter et al. (2006) examined how the group leaders' characteristics and behaviors related to the joint work of dyads of health care teams. To extend their work we recognize that, at the same time, managers are grouped in management teams to coordinate the work of different functions, departments or groups. The continuing interest in cooperation and the lack of understanding of intergroup cooperation suggest the need to unravel cooperation between these management teams, because these managers and their management teams set an example of and give meaning to intergroup cooperation (Gioia & Chittipeddi, 1991b; Lüscher & Lewis, 2008).

Managers' motives, perceptions and cognitions are an influence on the integration of collaborative strategic efforts as much as they are shaped by the strategy process. Managers have more involvement in the strategy process than people in operational teams (Colbert et al., 2008). To put collective goal attainment into perspective, their strategic role is to communicate and clarify the underlying logic of the strategic priorities to their subordinates (Colbert et al., 2008; Floyd & Wooldridge, 1992b; Wooldridge et al., 2008). Managers can thus be expected to have a clear cognitive frame of what strategic priorities are important to the organization and how the strategic efforts of the separate groups tie together to ensure organizational performance. However, to unravel intergroup cooperation we need to look beyond managers' individual understanding and behaviors and scale individual and group cognition to collective intergroup behavior (Powell et al., 2011). We propose that management teams' intergroup cooperation is contingent upon shared attitudinal and behavioural factors, such as their shared understanding of the strategy and collective boundary spanning behaviour.

The potential benefits of Strategic Consensus Between Groups

A substantial body of research has accumulated on strategic consensus, the shared understanding of organizational strategy, driven by the idea that strategic consensus enhances organizational performance by improving coordination and cooperation within the organization (e.g., Bourgeois, 1980; Dess, 1987; Dooley et al., 2000; González-Benito et al., 2012; Kellermanns et al., 2011; Markoczy, 2001; Priem et al., 1995). Strategic consensus has been recognized as one of the most important concepts in strategy implementation¹¹ (González-Benito et al., 2012; Markoczy, 2001). Strategic consensus within groups is associated positively with group (Mathieu et al., 2008) and organizational performance (Kellermanns et al., 2011), facilitates within-group communication (Kellermanns et al., 2008; Mathieu et al., 2008), within-group coordination of actions, and within-group creation of synergies (Cannon-Bowers et al., 1993).

Within-group consensus and between-group consensus differ at the conceptual level (cf. Kellermanns et al., 2011). Within-group strategic consensus is the degree of shared understanding of strategic priorities among the members of one group. Between-group strategic consensus is the degree of shared understanding of strategic priorities between two groups. Within-group consensus thus refers to the variance within one single group, due to a spread of opinions in the group around the group's average opinion, whereas between-group consensus refers to the variance due to different opinions of the people in two groups (a dyad of groups) around the dyad's average opinion.

So far, research has paid little attention to consensus between groups and rather focused on consensus within groups. This is surprising given that effective synchronization of efforts across groups is essential for collective goal attainment (DeChurch & Marks, 2006; Edmondson, 2003). A number of scholars have noted the importance of studying strategic consensus between interdependent groups in addition to within-group consensus (Kellermanns et al., 2005; Kellermanns et al., 2011; Ketokivi & Castañer, 2004; Markoczy, 2001; Wooldridge & Floyd, 1989), but very few have studied the actual phenomenon. Valuable exceptions like the explorative study by St John and Rue (1991),

¹¹ Note that we do not focus on strategy formulation, where in the process of sensemaking and sensegiving (Gioia & Chittipeddi, 1991) scepticism and dissensus may be good and premature consensus bad (Floyd & Wooldridge, 1992b), but rather focus on the shared understanding of an established strategy as an important element in strategy implementation.

who investigated consensus between marketing and manufacturing groups, and the illustrative case study of organizational goal coherence between a management team and cross-functional operational team by de Haas et al. (2000), only looked at between group consensus for one particular dyad of groups, while groups form relationships with multiple groups in the organization.

Shared understanding of the strategy among groups is likely to foster intergroup cooperation because groups that share similar views are more likely to understand one another's perspectives, to communicate more easily, to integrate distributed knowledge, and to coordinate more effectively (Cannon-Bowers et al., 1993; Cronin & Weingart, 2007; Kellermanns et al., 2005). Trust is often an antecedent of cooperation, and strategic consensus is likely to facilitate the needed levels of trust and information exchange because it establishes a shared mental framework between groups (Kellermanns et al., 2005). Underlying the need for consensus for intergroup cooperation is the assumption that the cooperative behaviors most important for strategy implementation are not part of routine behavior, and cannot be exactly prescribed (Colvin & Boswell, 2007). Typically strategy is not articulated in great detail and groups should thus rely on their understanding of the organizational strategy to resolve upcoming issues in a way that is consistent with the strategy (Amason, 1996). Shared understanding of the rationale of the strategy allows teams to act independently, but in a way that is consistent with the actions of other groups. Cronin and Weingart (2007) argued that unless team members have similar prioritization of goals, they will work toward different directions. We extend their reasoning and argue that unless teams have similar prioritization of goals, they will work toward different directions which results in poor information processing, conflict, and thus poor cooperation between the teams. Thus, we propose the following:

Hypothesis 1: In a dyad of groups, higher strategic consensus between groups is associated with a higher degree of intergroup cooperation.

The potential benefits of Boundary Spanning Behavior

Boundary spanning activities (Ancona, 1990; Ancona & Caldwell, 1992; Marrone et al., 2007; Marrone, 2010) are behaviors intended to establish relationships and interactions with external actors or groups that can assist their group in meeting its overall objectives. However, this definition of team boundary spanning is not restricted to include only those

behaviors that are consequently beneficial to the group only. Boundary spanning behavior allows for diversity in the information obtained by the boundary spanning group (Hansen, 1999), opportunities to negotiate project expectations and requirements (Ancona, 1990), and coordination across mutually interdependent groups (Ancona & Caldwell, 1992; Mohrman et al., 1995). Effective boundary spanning behavior not only directly benefits team effectiveness (Ancona & Caldwell, 1992; Marrone, 2010), team conflict resolution and task coordination within teams (Mathieu et al., 2008), but is also important for knowledge transfer between teams (Hansen, 1999), organizational learning (Edmondson, 1999) and implementation of change initiatives across intra-organizational boundaries (Balogun, Gleadle, Hailey, & Willmott, 2005). Boundary spanning activities should thus be seen as intergroup relationship-building activities and not just as moments of intergroup contact.

At the root, boundary spanning is an individual behavior, but it represents team-level actions carried out for the purposes of meeting collective performance goals (Chen et al., 2004; Klein & Kozlowski, 2000; Marrone, 2010; Mathieu et al., 2008; Morgeson & Hofmann, 1999). In the current analysis, we therefore consider the influence of boundary spanning as a team-level construct (we will also substantiate this conceptualization empirically). For the study of intergroup cooperation, the question then becomes how the levels of boundary spanning in the different groups in the dyad should be treated to come to a dyad-level predictor. Boundary spanning behavior is an influence where the one group's boundary spanning at least to a certain extent can compensate for higher boundary spanning of the other group. In that sense, the influence of boundary spanning is one that unfolds in intergroup interaction as a function of both groups' collective level of boundary spanning. Therefore the average (mean) level of boundary spanning in the dyad is the more appropriate composition model to capture its influence.

Although boundary spanning activities can be seen as intergroup relationship-building activities, most recent work on boundary spanning centers on the team level and has identified strategies that groups can use to manage their external environments (boundary management) and ways in which these boundary-spanning activities facilitate group effectiveness (see the review by Marrone, 2010). Ancona and Caldwell (1992), however, emphasize that boundary spanning can go beyond gain at group level, as it allows groups

to integrate information and resources and thereby manage their intergroup dependence. Work in which team boundary spanning is also conceptualized to affect intergroup outcomes, suggests that it is an important requisite for intergroup cooperation. The multiteam systems (MTS) literature, about systems of two or more mutually interdependent teams that share at least one common goal, for instance, demonstrated that the extent to which such a system of teams effectively synchronizes its efforts is a strong predictor of collective success, above and beyond any single component team's internal team process (DeChurch & Marks, 2006; Marks et al., 2005). This is in line with work by Edmondson (2003), who demonstrated that the boundary spanning activity across interdependent operating room teams played a critical role in supporting and implementing the hospital's objective of introducing a new technology. Thus, if both of the teams in a dyad engage in boundary spanning behavior, this enables them to manage, negotiate and coordinate their activities with each other and thereby improves their intergroup cooperation. In sum, we hypothesize the following:

Hypothesis 2: In a dyad of groups, the mean level of boundary spanning behavior is positively related to the degree of intergroup cooperation.

The Moderating Role of Boundary Spanning Behavior

Our hypothesis that intergroup consensus between groups is important to create intergroup cooperation highlights the need to consider processes that facilitate this relation. As Floyd and Wooldridge (1992a) pointed out, it is possible that organizational members agree on goals in the abstract, but each pursue them in a different way. When there is only shared understanding on a tacit level between groups, this does not necessarily translate into good cooperation. Tacit shared understanding is simultaneous and similar understanding among two or more groups without communication or interaction between them (cf. Lam, 2000). As indicated earlier, the cooperative behaviors most important for strategy implementation are not part of routine behavior, and cannot be exactly prescribed (Colvin & Boswell, 2007). Also, groups should rely on their understanding of the organizational strategy to resolve upcoming issues in a way that is consistent with the strategic intention (Amason, 1996). But in order to cooperate with other groups, understanding of how sub-tasks will fit together in the end (Lawrence & Lorsch,

1967), and how both groups are dependent on each other to be successful is also required (Mohrman et al., 1995).

If two groups have the same understanding of strategy, but perceive the teams' collaborative task flowing from that strategy differently, this is likely to create conflict (Cronin & Weingart, 2007). Both groups will, based on the best intentions, try to solve what are essentially incompatible problems. Failing to see how the strategic efforts of one group tie in with those of other groups can impair cooperation. For consensus to result in intergroup cooperation, teams thus also need to invest (cognitive) energy in understanding their colleagues and their strategic efforts. Mere communication with other groups is not sufficient to develop this understanding (Ancona & Caldwell, 1992). Rather, team behaviors that are directed outward, towards information exchange, negotiation and coordination with other groups in the organization should be considered: boundary spanning behavior. Due to its other-focused nature, boundary spanning behavior can help to realize the potential of shared strategic understanding for intergroup cooperation, as it may not only facilitate information exchange (Hansen, 1999) but also engender an integration of different perspectives and install more understanding of the interdependence between groups that characterizes organizations (Mohrman et al., 1995). Through these activities, boundary spanning allows for a tighter coupling between organizational groups, often filling many of the gaps left by formal integrating systems (Ancona & Caldwell, 1992) and left open in the strategy. Based on this reasoning, we propose that boundary spanning behavior moderates the effect of consensus between groups on intergroup cooperation. We therefore hypothesize the following:

Hypothesis 3: The mean level of boundary spanning behavior in a dyad moderates the effect of strategic consensus between groups on intergroup cooperation, such that strategic consensus between groups has a more positive relationship on intergroup cooperation when groups engage more in boundary spanning behavior.

Methods

Procedures and Participants

An online employee survey was administered among all senior and middle managers at a large government task organization from Western Europe (> 4000 employees). The

organization offers a good context for our study because it was in the top-down strategy implementation phase and recognized the need for alignment around strategy in that phase. One year before our study the organization had finalized the strategy formulation process, and started the strategy implementation phase. The organization's strategic priorities were defined by the top management team (TMT) of the company specifically for their organization. Employee and team data were collected with the relevant firm records, including HR data and an organogram displaying the hierarchical structure of the organization. On our request the organization identified for each management team all the interdependent relationships with other teams; relationships that the management team depends on for materials, resources and information in order to do their job¹² (e.g., Tjosvold, 1988b; Van Der Vegt et al., 2000).

We launched the survey with an e-mail that was signed by the CEO and included an explanation of the importance of the survey, and a personalized link to the survey website. The survey did explicitly address respondents as a member of their primary management team, to ensure that possible double-team memberships did not bias the clarity of group boundaries (Marrone, 2010). Two reminders and a final announcement of closure of the survey were sent in order to increase the response rate. In all of our communications as well as on the welcome page of the survey we highlighted the anonymity and confidentiality of individual responses.

The survey was sent to all the senior and middle management groups in the organization and the TMT (55 groups, 373 respondents in total). The response rate was 86%. We separated the TMT from the sample and discarded 2 groups which had a response rate lower than 50% (thus underrepresenting the group), or less than 3 respondents. Our final sample consisted of 52 groups, ranging in size from 3 to 15 members with an average of 5.8 persons per group. The mean age of the participants was 47.0 (SD = 7.5); 82% were male; they had an average work experience of 12.6 years (SD = 10.7); they all had a Bachelor degree, 43% also had a Master degree.

The resulting 52 groups constitute 282 interdependent dyads of groups. We study the role of strategic consensus and boundary spanning behavior on intergroup cooperation in

¹² Since the organization did not allow asking each team about their intergroup cooperation with the other 54 teams, we asked teams only about their cooperation with teams they had an interdependent relation with.

all these interdependent dyads, rather than asking groups about their intergroup relations only with respect to one specific other group (e.g., DeChurch & Marks, 2006; Richter et al., 2006; St John & Rue, 1991) or asking managers to assess the overall cross-functional cooperation (e.g., Ketokivi & Castañer, 2004). To confirm that interdependent management teams indeed communicated, respondents were asked: “Please indicate the names of your colleagues with whom you most often discuss what is going on in the organization?” (Burt, 1992; Ibarra, 1993). Respondents were also told that they could choose both colleagues from within their team and outside of their team. The results were aggregated, where the i, j^{th} cell was coded 1 if one of the team members in team i indicated a tie with one of the members of team j , or vice versa. This aggregation confirmed communication between teams in all interdependent dyads.

Data Analysis

It is important to note that the unit of analysis in this study is the relationship between pairs of organizational groups, so that all the variables concern dyadic relations that form a matrix of observations with the organizational groups as row and column entities. To study such dyadic relationships between all groups in the organization, we used the Multiple Regression Quadratic Assignment Procedure (MRQAP, see Borgatti et al., 2002; Dekker et al., 2007; Krackhardt, 1988). MRQAP was developed for and is normally applied to the study of network data. The application of MRQAP to the study of intergroup relations is recently been demonstrated for consensus between groups (Porck, van Knippenberg, Tarakci, Ates, Groenen, & de Haas, 2012). The method enables the analysis of relational data and its results with respect to parameter estimates, can be interpreted in a fashion similar to a traditional (multiple) regression analysis (Dekker *et al.*, 2007). The inference obtained by Ordinary Least Square (OLS) techniques is not appropriate here because relational data are systematically interdependent (Dekker *et al.*, 2007). That is, the rows and columns of the matrix correspond to the groups and the cells in the matrix correspond to the relations between pairs of groups (the dyadic variable). Due to this structure the observations of the dyadic variables are auto-correlated and not independent. MRQAP provides a better alternative than OLS as it allows direct comparison of matrix-level data (Tsai, 2002) and corrects the autocorrelation problem (Krackhardt, 1988).

Measures

All measures in this study rely on established scales from the literature which are employed with five-point Likert-type scales, unless noted otherwise.

Average Intergroup Cooperation in dyad. Intergroup cooperation was determined with a six-item scale, ranging from 1 ("to no extent") to 5 ("to a great extent"). We developed items based on the work on cooperative dynamics between organizational units by Tjosvold (1988a). The scale was qualitatively pretested with two teams from the organization that did not participate in the study. The items were found to meaningfully capture intergroup cooperation. Sample items include 'Relevant information is discussed in an open manner among members of these teams' and 'Both teams find it easy to cooperate with each other'. We asked each respondent about their intergroup cooperation with five teams their own team had an interdependent relation with. Per dyad a minimum of four respondents, two of each team, were asked to rate the intergroup cooperation. This resulted in on average 3.6 ratings per dyad¹³. The scale had good reliability ($\alpha = 0.86$).

Degree of Between-group strategic consensus. The degree of between-group strategic consensus was determined with the *r* measure that is part of Strategic Consensus Mapping (SCM, Tarakci et al., in press), a new analytical approach which can be used to visualize and quantify consensus within and between groups while capturing the specific content of this consensus and variations in the degree of consensus.

We asked respondents to rank the organization's 11 strategic priorities in terms of importance (the assessment of strategic consensus typically found in strategic management research, cf. Kellermanns et al., 2011), using a similar set up as in the multichoice logit model (e.g., Fok, Paap, & Van Dijk, 2012; Vann Ophem, Stam, & van Praag, 1999). To obtain a measure of strategic consensus, in line with SCM, we employed per team a principal component analysis of the transposed data matrix (vector model of unfolding see, e.g., Borg & Groenen, 2005), placing the team members in columns and the strategy items in the rows. This technique jointly plots the strategic priorities in relation to the preferences of respondents regarding these priorities for all members of a team. The resulting biplot depicts the respondents' prioritizations as vectors and the strategic priorities as points in a

¹³ Such a rating is comparable to the use of supervisory rating to assess intergroup dyads (see Richter et al., 2005; Richter et al., 2006).

two-dimensional space, thereby visualizing both the ‘content’ and ‘locus’ (within-group) facets of the multi-faceted definition of consensus proposed by Markoczy (2001)¹⁴. The projections of the strategic priority points onto the first axis of the biplot represent the overall view of the group and can be interpreted as the *prototypical group member*. Since the method provides a biplot for each team, the correlation between the prototypical members of two groups captures the between-group consensus for these two groups (for further methodological details the reader may refer to Tarakci et al., in press).

The measure for between-group consensus, $r(A, B)$, is operationalized as the correlation of the object scores of the strategic priorities on the first principal component for two management teams (A and B), after rotating the solution so that the first axes coincides with the vector of the average of the respondents’ vectors. An $r(A, B)$ of 1 indicates the perfect overlap of the two teams regarding the strategy items; $r(A, B) \approx 0$ represents no strategic consensus between the two teams; and $r(A, B) \approx -1$ reveals two opposite notions of the strategy in the two teams.

Boundary Spanning Behavior in the dyad. Boundary spanning behavior was measured by five items of the boundary activities scale from Ancona and Caldwell (1990). The scale had good reliability ($\alpha = 0.81$). Respondents were asked to indicate the extent to which they felt each of the items was part their responsibility in dealing with people outside the team. Sample items include ‘Procure things which the team needs from other teams or individuals in the company’ and ‘Negotiate with others in the company for delivery deadlines’. Principal components analysis on the items extracted a single factor.

In this study, boundary spanning behavior is conceptualized as a group-level variable. To confirm aggregation to group level, we calculated the interrater agreement index. We used the a_{wg} agreement index instead of the r_{wg} because unlike r_{wg} , a_{wg} does not rely on any specification of the null distribution and eliminates sample size and scale dependency problems (Brown & Hauenstein, 2005). The mean a_{wg} value for boundary spanning

¹⁴ If two team members hold similar views regarding the prioritization of strategic items, their corresponding two vectors in the biplot are close to each other. Consequently, the degree of strategic consensus within the team is depicted by the spread of all of the vectors in the biplot (i.e., all of the team members); a narrow bundle of vectors indicates a high degree, whereas, a wide distribution of vectors indicates a low degree of within-group consensus. Through rotation, to ensure that the average (vector) of component loadings coincide with the first dimension, the projections of strategy items onto the first axis represent the overall view of the group and can be interpreted as the prototypical group member.

behavior (0.69) was above the 0.60 cutoff point (Brown & Hauenstein, 2005) and confirmed aggregation to the group level. Consistent with our theoretical discussion, boundary spanning behavior was subsequently aggregated to the dyadic level by averaging the boundary spanning behavior scores of the two management teams in each dyad.

Control variables

To rule out possible alternative explanations, we controlled for the degree of within-group strategic consensus in the dyad and dyadic strategic alignment with the TMT.

Degree of Within-group strategic consensus. In theory it is possible that two management teams have high within-group but low between-group consensus, because they agree on a different strategic content, or both have low within-group but quite a high degree of between-group consensus because what they on average agree on is the same strategic content. However, in practice it more likely that when two management teams have high within-group consensus, their between-group consensus is also high. This relation is especially probable for management teams that are hierarchically close to the TMT and research has shown that strategic awareness (Hambrick, 1981) and strategic understanding (Wooldridge & Floyd, 1990) increase as the team hierarchical distance to the TMT diminishes. Since managers' strategic role is to communicate and clarify the underlying logic of the strategic priorities to their subordinates (Colbert et al., 2008; Floyd & Wooldridge, 1992b; Wooldridge et al., 2008), one could expect that managers have the clearest understanding of what goals are important to the organization (Colbert *et al.*, 2008). To ensure that it really is the shared understanding of strategy between the management teams, and not within, that thrives intergroup cooperation, we control for the degree of shared understanding within the teams in the dyad.

The degree of strategic consensus within a management team was determined with the SCM's α measure on the rankings of the list of the strategic priorities (Tarakci et al., in press). This measure uses the biplots, also used to determine between-group strategic consensus, and considers the first two principal components of each team-biplot. The degree of within-group strategic consensus is defined by:

$$\alpha = \sqrt{\sum_{s=1}^2 \left(m^{-1} \sum_j a_{js} \right)^2},$$

where a_{js} is the s^{th} component loading for respondent j ($j = 1, \dots, n$). α takes values between 0 and 1. If all of the members of the management team have similar views regarding the strategy the α measure will be close to 1, but when the members of the management team have very different views and thus low consensus the α measure will be low (close to zero). Because within-group strategic consensus originates at the team level it was translated to the relational level. We calculated the average within-group consensus for each dyad of teams.

Dyadic strategic alignment with the TMT. Although it is possible that management teams have high within-group consensus on other strategic priorities than as formulated and communicated by the TMT, in practice it is more likely to be on the strategy advocated by the TMT. This is especially probable because management teams that hierarchically close to the TMT. The net result could be that a dyad of management teams with high-between group consensus also has high between-group consensus not as a result of the intergroup relations processes studied here, but because they both happen to be aligned with the TMT. To establish the intergroup origins of the relationships tested in the current study, we therefore controlled for strategic congruence with the TMT.

For each management team their alignment with the TMT was calculated by taking the measure for between-group consensus and particularly looking at, $r(\text{TMT}, A)$. Thereafter it had to be translated into a matrix representing the dyadic relationships, averaging the congruence scores of the two teams.

Results

Table 9 reports means, standard deviations, and QAP correlations for the key variables used in this research. With respect to the hypothesized relations, we observe significant correlations between intergroup cooperation and between groups strategic consensus, but for intergroup cooperation and boundary spanning behavior. We also observe that there is a significant correlation between intergroup cooperation and dyadic

alignment with the TMT and a moderate significant correlation between alignment and BGSC, indicating that if a dyad has higher strategic consensus between groups this dyad is also more likely to be more aligned with the TMT.

Table 9: Descriptive Statistics and QAP Correlations

Variable	Mean	S.D.	1	2	3	4
1 Within-group strategic consensus in dyad	0.69	0.07				
2 Dyadic strategic alignment with the TMT	0.62	0.14	0.28			
3 Between-group strategic consensus in dyad	0.60	0.21	0.17	0.53 **		
4 Average Boundary Spanning of teams in dyad	3.68	0.23	-0.30 †	0.27	0.00	
5 Average Intergroup Cooperation of teams in dyad	3.41	0.47	0.05	0.23 †	0.18 †	0.16

N (groups) = 52; n (dyadic relations) = 282; † $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table 10 shows the results of QAP multiple regression analyses, where all the continuous independent variables were centered to increase the interpretability. The coefficients presented in the table are standardized regression coefficients. The first model includes the control and main variables. Model 1 confirmed Hypothesis 1, higher strategic consensus between groups in a dyad is associated with a higher degree of intergroup cooperation ($\beta = 0.11$; $p < 0.05$) The results in Model 1 also confirmed Hypothesis 2, the mean level of boundary spanning behavior in a dyad is positively related to the degree of intergroup cooperation ($\beta = 0.14$; $p < 0.01$). Both Hypothesis 1 and 2 are confirmed controlling for within-group strategic consensus in a dyad, which is not significantly associated with intergroup cooperation, and dyadic strategic alignment with the TMT, is positively associated with intergroup cooperation ($\beta = 0.12$; $p < 0.05$). The latter indicates that dyads that are more aligned with the TMT have higher intergroup cooperation. Finally, in Model 2, we added the interaction between boundary spanning behavior and between groups strategic consensus. In line with our Hypothesis 3, the coefficient for the interaction was positive and statistically significant ($\beta = 0.09$; $p < 0.05$).

Table 10: Results of QAP Regression for Between Group Strategic Consensus

Variable	Model 1	Model 2
	β	β
Within-group strategic consensus in dyad	0.04	0.04
Dyadic strategic alignment with the TMT	0.12 *	0.11
Between-group strategic consensus in dyad	0.11 *	0.10 *
Average Boundary Spanning of teams in dyad	0.14 **	0.15 **
Between-group strategic consensus \times Boundary Spanning		0.09 *

Entries are standardized regression coefficients (significance) derived by the MRQAP double Dekker semi-partialling method at 2,000 permutations; $\dagger p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

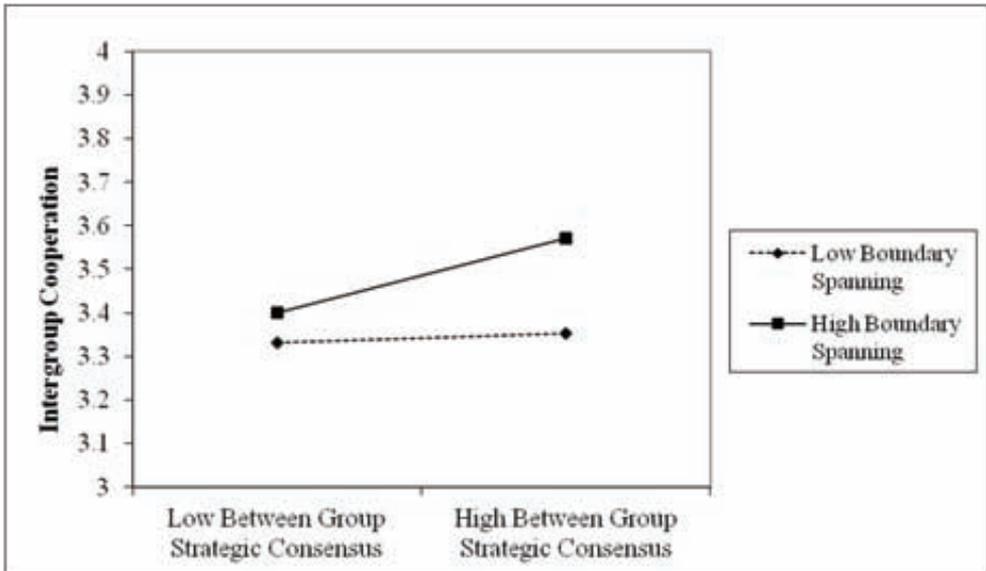


Figure 5: Interaction between between group strategic consensus and boundary spanning behavior on intergroup cooperation

In order to explore the nature of the interaction effect, we plotted the interaction in line with recommendations by Aiken and West (1991) (see Figure 5 for the pattern of the simple slopes). This confirms that indeed the mean level of boundary spanning behavior in a dyad moderates the effect of strategic consensus between groups on intergroup

cooperation, such that strategic consensus between groups has a more positive effect on intergroup cooperation when teams engage more in boundary spanning behavior.

Discussion

This study applied a multilevel theoretical lens to examine what organizations can do to ensure that their groups cooperate during strategy implementation. The support for our predictions that between-group consensus in dyads of groups improves intergroup cooperation (Hypothesis 1), the average level of boundary spanning behavior in dyads of groups improves intergroup cooperation (Hypothesis 2), the effect of strategic consensus between groups on intergroup cooperation is moderated by the degree to which teams display boundary spanning behavior (Hypothesis 3) contributes to an understanding of how cooperation can be fostered and continued in today's complex organizations and provides insight into the management of intergroup relations. Our findings suggest that while strategic shared understanding and boundary spanning are valuable, separate tools to improve intergroup cooperation, real improvements of the collaborative strategic efforts of groups can be achieved if these are combined.

Theoretical Implications

First, we advance research on cooperation by examining it in an intergroup setting. Prior work on cooperation has revealed its positive associations with performance (Campion et al., 1996; Smith et al., 1995; Thomas, 1992), high quality work, firm productivity and customer satisfaction (Tjosvold, 1988a), enhanced employee satisfaction (Campion et al., 1996) and increased confidence about working together in the future (Thomas, 1992; Tjosvold, 1984). But an organization is a group of groups, with strategy driven interdependent relationships between those groups. For an organization at large to perform well, groups need to coordinate their strategic efforts and interests not only within their group but also between groups (Brett & Rognes, 1986; Joshi, 2006; Kramer, 1991; Richter et al., 2006; van Knippenberg, 2003). Ensuring cooperation between groups is therefore crucial to the success of organizations. Nonetheless, research on predictors of cooperative relationships between groups is sparse. While research on intergroup issues has, so far, either studied structural determinants, considering the actors as black boxes, or psychological underpinnings, ignoring the setting in which the behaviors occur (Kramer,

1991). Similarly, research on strategy implementation has long studied groups without taking the complexity of structural and psychological barriers to the integration of group efforts into account. This study offers, much needed, realistic assumptions about intergroup cooperation, by scaling individual and group cognition and behavior to intergroup collective behavior in strategy implementation. Thereby we yield valuable insights into intergroup cooperation, along the lines of the behavioral strategy literature (Powell et al., 2011).

Second, consistent with research at the team and organizational level (e.g., Cannon-Bowers et al., 1993; Kellermanns et al., 2011; Mathieu et al., 2008), we found that strategic consensus between groups has a positive influence on the coordination of efforts between groups. By demonstrating this positive relationship between strategic intergroup consensus and intergroup cooperation (both a direct relationship and an indirect one via boundary spanning), we provide theoretical insights answering an important question in research on strategic consensus to explicitly open up the ‘black box’ between consensus and performance (Kellermanns et al., 2011). We do note however that these findings concern management teams, groups that are hierarchically close to the TMT and have more involvement in the strategy process than people in operational teams (Colbert et al., 2008). We assume that because these management teams consist of the managers that lead the operational groups in their collaborative efforts, they can set an intergroup cooperation example. Whether this is indeed the case should be established, of course, and future research should yield the evidence for the viability of this idea. Additionally, it is important to recognize that while consensus may enhance strategy implementation, it may also reduce flexibility (Homburg et al., 1999). Future research should consider longitudinal studies of strategy implementation as a means for examining whether and how groups with high consensus with other groups adapt their process to accommodate to changes in the environment and how this in turn influences their intergroup cooperation.

Third, we provide insights into the intergroup-level benefits of boundary spanning. We demonstrate that more boundary spanning in both groups in a dyad improves intergroup cooperation. Several possible mechanisms may explain this finding. For example, frequent interactions with external parties regarding project and task requirements could reduce task uncertainty and intergroup bias. Further, higher levels of

individual and team boundary spanning allows for opportunities to negotiate project expectations and requirements, pursue change objectives, and transfer knowledge and coordination across mutually interdependent groups (Ancona & Caldwell, 1992; Balogun et al., 2005; Hansen, 2002; Mohrman et al., 1995). Thereby helping teams to accomplish their joined tasks and meet collaborative expectations. Additionally, we show that boundary-spanning activities help team members form shared understanding of the strategy, which further improves the positive relation between intergroup consensus and cooperation. Many studies suggest that team functioning improves as a result of team boundary spanning (Ancona & Caldwell, 1992; Marrone, 2010; Mathieu et al., 2008). However, there may also be more synergistic gains between external and internal team activities for intergroup relations. Further developing an understanding of the role of boundary spanning and the interplay between external and internal team dynamics for intergroup cooperation remains important, because as organizational work becomes increasingly complex, specialized, and non-routine, tasks are no longer easily performed independently or sequentially but require interdependent and coordinated action across various groups in the organization (DeChurch & Mathieu, 2009; Marrone, 2010).

Finally, as organizations increasingly rely on groups to span functional and organizational boundaries, and to cooperate more intensively with each other, it becomes ever more critical to understand leadership of collaborative performance of different organizational groups. Such intergroup leadership (Hogg et al., 2012) is associated with unique challenges that are not addressed by traditional leadership theories. By studying management teams, that are of great influence to the integration of collaborative strategic efforts, we made an important contribution by identifying factors that assist intergroup leadership, and assist managers in setting an example of intergroup cooperation.

Managerial implications

This research contributes to an understanding of how cooperation can be fostered and continued in today's complex organizations and provides insight into the management of intergroup relations. Overall, the results of this study have high practical relevance based on the demonstrated predictive qualities of the process variables investigated. As our findings document, strategic consensus between groups and boundary spanning have a profound impact on intergroup cooperation. Thus assessing and managing group's shared

understanding of the strategy and boundary spanning behavior early on during the strategy implementation helps identify and counteract cooperation problems long before these can result in conflict, delays, lower productivity and wasted time and resources (Hoegl et al., 2004; Tjosvold, 1988a).

First, there are a number of ways in which organizations can improve the cooperation between groups. Special collaboration trainings, that include topics like communication skills, could be an option. Hoegl, Weinkauff, & Gemuenden (2004) found that the most collaborative teams in multiteam systems held regular workshops in which cooperation within the team and with other teams is openly discussed. Overlapping team memberships are often suggested, to further exchange of information, these 'force' members of the team to span the boundaries of the own group. This cooperation is not only good for the organization and its performance but also for the employees, as positive cooperation makes them feel more competent and more confident about working together in the future (Tjosvold, 1988a). Furthermore, considering the importance of cooperation both within and between groups for the overall performance of the organization, emphasizing collaborative skills in human resource management and personal development planning and in regularly monitoring of both intergroup and intra-group collaboration processes is important. Also, to promote intergroup activities, organizations can consider rewarding at the intergroup level, such as rewarding all groups involved in a certain project, production process or service, rather than at the group level (van Knippenberg, 2003).

Second, this study demonstrates the importance of intergroup consensus; it is not enough to ensure that managers know about the overall business strategy. It is therefore important for organizations to put mechanisms in place so that consensus on strategies translates into consensus between groups. For example, the active participation and involvement of managers in the strategic planning process would be beneficial. Additionally it helps to set cooperative goals that emphasize the need to coordinate and cooperate with other groups (Gaertner et al., 1990) and explain how the group goals tie in with the overall mission of the organization (van Knippenberg, 2003). Because strategic consensus has positive consequences, the need for followers to form a consensus regarding organization strategies should explicitly be communicated to managers as a strategic role; they should be encouraged to internalize such efforts as a form of in-role behavior.

Third, by showing that boundary spanning relates positively intergroup cooperation and heightens the positive influence of strategic consensus between groups, our findings imply that organizations should help groups to understand and learn how to manage their external dependencies. To this end, organizations might actively encourage team training and development activities as well as planning sessions in which groups can openly discuss and create a common, shared understanding of the value and importance of boundary-spanning, translate this into externally oriented strategies, and formulate action plans (Marrone et al., 2007). But above all, this study shows that managing either consensus or boundary spanning is not sufficient to foster intergroup cooperation, both are required to stimulate the cooperation between groups.

Limitations and future research

Despite the valuable theoretical and managerial implications of this study, its results need to be handled with some caution, as this study is cross-sectional and relies on a single organization, which allows neither for testing directionality of the results, nor for generalizing the findings to other organizations. Field-experimental research will be necessary to test for causality. Also, neither intergroup consensus, boundary spanning nor intergroup cooperation should be seen as one-off events, rather they unfold over time, with one gaining in influence as a function of the other. This is an important dynamic; boundary spanning adds to the creation of intergroup consensus and cooperation, and intergroup cooperation shapes future boundary spanning. Longitudinal studies are necessary to study how this dynamic develops over time. Our understanding of the role of intergroup cooperation would also greatly benefit from multi-organization studies to establish the generalizability of our findings.

Another potential limitation arises from the fact that all the data were within group en between group shared perceptions rather than external ratings. However, although shared perceptions are not ideal it is important to recognize that the intergroup consensus, average boundary spanning behavior and intergroup cooperation rating, were constructed out of the ratings of members of both of the management teams in the dyad; they are thus inter-subjective, intergroup ratings. Although this rating is not as strong as an external rating, we

do not believe that it holds the same problems as individual self-ratings, as they do not leave open the possibility that results can be attributed to purely intrapersonal processes¹⁵.

Finally, it is also worth noting that our focus on intergroup cooperation builds on the proposition that such cooperation is important in the strategy implementation process and thus ultimately for organizational performance (e.g., Ancona & Caldwell, 1990; Lawrence & Lorsch, 1967; Smith et al., 1995; Tjosvold, 1984; Tjosvold, 1988a). We did not establish such linkages empirically in the present study; however, it would be valuable when future research would establish these relationships. Given the promising results of this study, extending the current approach to the investigation of the effect of intergroup cooperation on intergroup effectiveness and organizational performance should hold great promise.

Conclusion

Together, these findings have important implications for future research on intergroup relations and team processes. They call into question the enduring notion in strategic management and organizational behavior literature that the relationships with other groups are an input or context that impact groups' cooperation processes. The results underscore the need to systematically investigate the complexity of strategic and psychological barriers to the integration of group efforts.

¹⁵ Looking at cooperation as a relationship that increases confidence about working together in the future (Thomas, 1992; Tjosvold, 1984), it might be considered best to let those in the relationship judge its quality. Some even argue that it is important to understand manager's perspectives; how they believe they are operating and cooperating with other groups in the organization and how they believe their behavior has affected their interactions (Tjosvold, 1988a).

Chapter 6

GENERAL DISCUSSION

Coordinating activities and resources to ensure that organizational groups perform their collaborative tasks is widely recognized as an essential challenge for organizations (Joshi, 2006; Marks et al., 2005; Richter et al., 2006; van Knippenberg, 2003). Not surprisingly then, a substantial body of research has accumulated on strategic consensus, the shared understanding of organizational strategy, driven by the idea that strategic consensus enhances organizational performance by improving coordination and cooperation within the organization (e.g., Bourgeois, 1980; Dess, 1987; González-Benito et al., 2012; Kellermanns et al., 2011; Markoczy, 2001). Yet notwithstanding the widely recognized importance of shared understanding in groups in general, and strategic consensus within groups more specifically, our understanding of the drivers and contingencies of collective goal attainment and implementation of the strategy, remains limited without taking into account intergroup relations. That is, each organizational group functions in a strategy-driven context of interdependent relationships with other groups (Kramer, 1991; van Knippenberg, 2003). For an organization to perform well, groups need to coordinate their efforts and interests not only *within* their group but also *between* groups (Joshi, 2006; Ketokivi & Castañer, 2004; Marks et al., 2005; Richter et al., 2005; van Knippenberg, 2003). Given the potential contributions of more understanding of strategic consensus between groups, increased research efforts seem necessary and desirable.

In an attempt to advance our understanding and stimulate future research on intergroup relations in strategic management and organizational behavior in general and strategic consensus between groups specifically, this dissertation focused attention on some important antecedents, contingencies, and outcomes of strategic consensus between groups. To this end, we conducted four studies that approached the main topic from multiple theoretical perspectives (e.g. social identity, social networks, and boundary spanning behavior) and multiple levels of analysis (individual, group, and dyad of groups).

The findings of the four studies provide a number of important insights that extend knowledge on the drivers, mechanisms, and outcomes of strategic consensus between groups and highlight the need to redirect our attention more strongly to the role of intergroup dynamics in strategic management and organizational behavior.

Summary of the main findings and theoretical implications

Chapter 2 offered a new method (SCM) to measure, visualize and aggregate individual cognition to group and between group level with a more comprehensive, integrative conceptualization of the multiple dimensions of consensus. SCM enables the quantification of the degree of consensus within and between a given set of groups as well as the visual representation of the content of consensus within groups. The method also makes it possible to test whether longitudinal or cross-sectional differences in the degrees of within- and between-group consensus are statistically significant. The use of SCM was illustrated drawing on data gathered during the course of a strategic intervention. SCM's core contribution is the enhanced potential it provides researchers to conduct more fine-tuned and extended analyses of strategic consensus within and between groups and, consequently, to develop overarching theories that build on the multifaceted nature of strategic consensus (Hodgkinson & Johnson, 1994; Kellermanns et al., 2005; Markoczy, 2001; Wooldridge & Floyd, 1989). In addition, SCM's longitudinal assessment of consensus makes it possible to detect changes in consensus over time, providing further insight into the mechanisms of the consensus-formation process (Markoczy, 2001) and the effectiveness of strategic-consensus-fostering interventions (Hodgkinson et al., 2006; Hodgkinson & Healey, 2008b).

Chapter 3 advanced research on strategic consensus by demonstrating that a social identity perspective is very powerful for predicting the degree of strategic consensus between groups. Although the positive effects of group identification on various group outcomes have been studied extensively (for a meta-analysis see, Riketta & van Dick, 2005) one of this study's strengths is proving that higher group identification in a group can actually disrupt intergroup relations. We showed that in an organizational dyad the group with the strongest group identification –due to its strong in-group focus-limits achieving a high degree of strategic consensus with the other group. On the other hand,

groups that identify highly with the organization value the organizational interests more (Ashforth & Mael, 1989; van Knippenberg, 2000) and our study is among the first to show that organizational identification thereby also improves intergroup relations in the organization context. More specifically, we demonstrate that the group with the lowest organizational identification in an organizational dyad fosters achieving a high degree of strategic consensus between groups. As a direct implication of revealing this tradeoff between group and intergroup effects of group and organizational identification, the present study indicates that future research in the field of social identification should benefit from considering group and intergroup outcomes together. Additionally, we showed that dyads with higher average intergroup anxiety have lower between-group consensus. Hence, in addition to a social identity perspective, we provide evidence that motivational and affective factors such as anxiety must be considered to uncover dynamics of and mechanisms for building consensus between groups. Finally, by adapting well-established techniques from social network analysis to our study of intergroup consensus we answer calls in the consensus literature to develop techniques that enable the analysis of consensus between groups (Kellermanns *et al.*, 2005). It is worth emphasizing that, to the best of our knowledge, our study is the first to examine the strategic consensus of groups with multiple other groups in an organizational setting.

Chapter 4 developed an analysis of between-group strategic consensus that sees this consensus as subject to network dynamics. Prior work on centrality has revealed its positive associations with both individual outcomes, such as power (Ibarra, 1993) and performance (Sparrowe *et al.*, 2001), and group outcomes, such as knowledge sharing (Burt, 1992; Reinholt *et al.*, 2011) and performance (Balkundi & Harrison, 2006; Tsai, 2001). Our findings confirmed our argument that, given the task-based backdrop and context of centrality, it also has a positive impact on intergroup goal achievement processes, as the knowledge sharing opportunities provided by central network positions heighten groups' shared understanding of joint objectives. We showed that in a dyad the centrality of each group is a determining factor for the degree of consensus between the groups and the most central individuals are an important driver for strategic alignment between groups. As a direct implication the study indicates that future research in the field

of consensus should benefit from considering the organizational network and the network positions of individuals and groups together.

Chapter 5 advanced research on cooperation by examining it in an intergroup setting. This study offers, much needed, realistic assumptions about intergroup cooperation, by scaling individual and group cognition and behavior to intergroup collective behavior in strategy implementation (Powell et al., 2011). It demonstrated that strategic consensus between groups and boundary spanning behavior are requisites for intergroup cooperation, and that the effect of strategic consensus between groups on intergroup cooperation is moderated by the degree to which groups display boundary spanning behavior. By demonstrating this positive relationship between strategic intergroup consensus and intergroup cooperation (both a direct relationship and an indirect one via boundary spanning), we provide theoretical insights answering an important question in research on strategic consensus to explicitly open up the ‘black box’ between consensus and performance (Kellermanns et al., 2011). Additionally, significant gaps still exist in our understanding of boundary spanning (see the review by Marrone, 2010). Complementing this literature we provide insights into the intergroup-level benefits of boundary spanning. Thereby we yield valuable insights into intergroup cooperation, along the lines of the behavioral strategy literature (Powell et al., 2011; Tjosvold, 1984; Tjosvold, 1988a).

Implications for Future Research, and Practice

While the present dissertation addressed and contributed to the understanding of intergroup consensus and cooperation, the interplay between external and internal team dynamics for intergroup relations remains important. Especially because organizational work becomes increasingly complex, specialized, and non-routine, tasks are no longer easily performed independently or sequentially but require interdependent and coordinated action across various groups in the organization (DeChurch & Mathieu, 2009; Marrone, 2010). As a result of offering a wider perspective that embraces and advances various theoretical perspectives, the integrative perspective of strategic consensus between groups in this dissertation creates a foundation for new discussions, sparks new ideas, and leads to new research questions.

Intergroup relations in organizations differ from other social contexts in the fact that managers can intervene. Managers are social actors embedded in a complex network of intra- and intergroup relations, they need to develop relationships that cut across functional and hierarchical boundaries (Smith et al., 1995). They play a critical role in helping groups with the development of their strategic tasks (e.g., Floyd & Wooldridge, 1992b; Floyd & Wooldridge, 1997) and shaping their understanding of the (need for) cooperation (i.e. sensemaking, Gioia & Chittipeddi, 1991b; Lüscher & Lewis, 2008). For instance, lower- and middle-level managers are key actors in launching and developing strategic initiatives (Marx et al., 2006). The teams working on these initiatives are often cross-functional with members of different groups working together as representatives of their own group. To ensure cooperation and prevent conflict between the group-representatives, offers a challenge to leaders. The different group-memberships of the members are not to be downplayed or ignored as they offer an important source of social identity to the members of the initiative team. Strong identification can however also cause bias towards members of other groups (out-groups). Recent work by Hogg, van Knippenberg and Rast (2012) argues that leaders can avoid identity threats and acknowledge intergroup differences by speaking to group member's intergroup relational identity, an identity that defines a group in terms of the group's relationship with one or more other groups. The importance of such intergroup leadership has been argued theoretically, but has not been studied before. Both for strategic initiatives and for other strategic behavior, the role of intergroup leadership in reducing intergroup anxiety and building identification with the shared organizational cause could be examined in the future, as well as how this leadership can benefit from the organizational network in doing so. Structural holes (Burt, 1992; Burt, 1997) and structural and relational embeddedness (Moran, 2005) may, for instance, offer more insight into how organizational networks influence the creation of shared strategic understanding between groups. Furthermore, as in most network studies, characteristics of the nodes (individuals) may play a role in driving the results. Future research may thus also consider combining nodal characteristics with structural ones.

Additionally, multiteam system studies have demonstrated that the extent to which a system of teams effectively synchronizes its efforts is a strong predictor of collective success, above and beyond any internal team process (DeChurch & Marks, 2006; Marks et

al., 2005; Mathieu et al., 2001). Such effective synchronization between teams is particularly important to organizations, but also very challenging. Especially since the interdependence between groups in an organization is less obvious to employees than in a multi-team system. Since the main focus for most employees is their own work group, cooperation with and trust in members of other groups is not self-evident (Kramer, 1991; van Knippenberg, 2003). Strong identification and intergroup anxiety may, for instance, increase interpersonal or task related conflict between groups. This conflict can either have a strongly negative impact on strategic consensus by reducing the use of agreement-seeking behaviors or positive by increasing the understanding of what needs be done through the discussion of the groups' different perspectives and ideas (Jehn, 1995). Even in situations where members of different groups prefer to cooperate with each other, they might be reluctant to initiate such collaboration themselves, due to the absence of guarantees that members of other groups can be trusted to reciprocate. There is quite some work on intergroup conflict, mostly deriving from the social identity research stream (e.g., Richter et al., 2005; Tajfel & Turner, 1979) but to our knowledge they have overlooked its effect on intergroup outcomes such as intergroup consensus. Likewise, little research has studied trust between groups and how it is affected or could be restored after intergroup conflict. This avenue could be very interesting because, as Richter and colleagues (2005) rightly point out, there is a difference between conflict-free and effective intergroup relations.

Implications for Practice

Productive relations between groups are not self-evident, poor coordination of strategic efforts is even identified as one of the main silent strategy killers (Beer & Eisenstat, 2000). Not surprisingly, given the complexity of intergroup relations, managers are finding it a difficult task to build cooperative relationships and to (create conditions that) foster cooperation (Smith et al., 1995). Consequently, this dissertation offers valuable insights to managerial practice, as it addresses "real" problems facing "real" managers (cf. Hambrick, 1994).

Chapter 2 proposed a novel method namely strategic consensus mapping (SCM) for a comprehensive understanding of strategic consensus. SCM allows practitioners to extract

what individuals and groups think about the strategy and to detect where and on which strategic goals there is alignment. Using these insights practitioners can decide on whether to carry out a strategic intervention to influence consensus and alignment in the organization. Also, SCM can be utilized to test effectiveness of such an intervention. Chapter 3 highlighted that organizations should be cautious of creating only a strong group identification and not creating a strong sense of organizational identification. Our results suggest that employees' group identification lowers their groups' shared understanding of the strategy with other groups. Whereas, identification with the organization has a positive effect on groups' shared understanding of the strategy with other groups and thereby may be more helpful to organizations and their managers. In order to shift groups' attention from the group to the organization it helps to have cooperative goals that emphasize the need to coordinate and cooperate with other groups (Gaertner et al., 1990) and explain how the group goals tie in with the overall mission of the organization (van Knippenberg, 2003). Chapter 4 highlighted that the most central member of a group is vital in that group's shared understanding with other groups. Managers should therefore recognize the potential of having central group members and of having an open and psychologically safe group atmosphere, to ensure employees can share and exchange their knowledge and beliefs freely (Edmondson, 2003). This way groups can benefit most from the resources and knowledge of all its members and of the members of other groups.

The results of chapter 3, 4 and 5 all showed that organizations should ensure that employees engage sufficient in activities to build intergroup ties, either through frequent intergroup meetings, job rotation programs, overlapping group memberships or boundary spanning activities (Marrone, 2010). If some of the group members belong to or boundary span with two or more groups, they are likely to further information exchanges between these groups and reduce intergroup bias. All the proven methods to lower intergroup anxiety (Chapter 3) are aimed at increasing intergroup contact. Our findings also demonstrate that intergroup ties are likely to further shared understanding between groups and intergroup cooperation (Chapters 4 and 5), as well as strengthen the link between consensus and cooperation between groups (Chapter 5).

Finally, given the importance of collaborative processes organizations are urged to signal to their employees that intergroup coordination and collaboration is valued. This can

be done by emphasizing collaborative skills in human resource planning and development and regularly monitoring of both intergroup and intragroup collaboration processes. Special collaboration trainings, that include topics like communication skills, could also be an option. Hoegl, Weinkauff, & Gemuenden (2004), for instance, found that the most collaborative teams in multiteam systems held regular workshops in which cooperation within the team and with other teams was openly discussed. Also, to promote intergroup activities organizations can consider rewarding at the intergroup level, such as rewarding all groups involved in a certain project, production process or service, rather than at the group level (van Knippenberg, 2003).

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SUMMARY

Groups – teams, work groups, departments – are the building blocks of organizations, however ‘no team is an island’. Groups need to coordinate and align their strategic efforts for the organization at large to perform. To better understand how groups can integrate their strategic efforts to operate as parts of a bigger whole, this dissertation investigates the crucial yet under-researched topic of *strategic consensus between groups*. If groups have strategic consensus, shared understanding of the strategy, they are more likely to coordinate and integrate more effectively and better perform their collaborative tasks.

The four studies composing this dissertation (1) propose a new method to measure, visualize and aggregate individual cognition to group- and between group-level with a more comprehensive, integrative conceptualization of the multiple dimensions of consensus; (2) demonstrate that the group with the strongest group identification and the group with the lowest organizational identification in an organizational dyad respectively limit and foster achieving a high degree of strategic consensus between groups; (3) show that in a dyad the centrality of each group is a determining factor for the degree of consensus between the groups and the most central individuals are an important driver for strategic alignment between groups; (4) indicate that strategic consensus between groups and boundary spanning behavior are requisites for intergroup cooperation, and the effect of strategic consensus between groups on intergroup cooperation is moderated by the degree to which groups display boundary spanning behavior. Together these findings extend strategic management along behavioral lines, offering an integrative view of strategic consensus between groups.

SAMENVATTING

Groepen - teams, werkgroepen, afdelingen - zijn de bouwstenen van een organisatie, maar 'een team is geen eiland'. Groepen moeten hun strategische activiteiten coördineren en onderling afstemmen om te zorgen dat de organisatie als geheel goed presteert. Met als doel beter te begrijpen hoe groepen hun strategische inspanningen kunnen integreren, om te functioneren als onderdeel van een groter geheel, onderzoekt dit proefschrift het cruciale maar nog weinig onderzochte onderwerp van *strategische consensus tussen groepen*. Als groepen strategische consensus, gedeeld begrip van de strategie, hebben, is de kans groter dat ze hun gezamenlijke taken beter coördineren, integreren en uitvoeren.

Resultaten van de vier studies die dit proefschrift vormen, tonen (1) een nieuwe methode om individuele cognitie te meten, te visualiseren en te aggregeren naar groepsniveau- en tussengroepsniveau met een meer omvattende conceptualisering van de verschillende dimensies van consensus; (2) dat in een organisatorische dyade van groepen de groep met de sterkste groep-identificatie en de groep met de laagste organisatie-identificatie het bereiken van een hoge mate van strategische consensus tussen groepen respectievelijk beperkt en bevordert; (3) dat in een dyade van groepen de centrale plaats van elke groep in het organisatienetwerk een bepalende factor is voor de mate van consensus tussen groepen en de meest centrale individuen een belangrijke motor zijn voor de strategische consensus tussen groepen; (4) dat de strategische consensus tussen groepen en het overschrijden van teamgrenzen door groepen vereisten zijn voor samenwerking tussen groepen, en het effect van strategische consensus tussen groepen op intergroeps-samenwerking wordt gemodereerd door de mate waarin groepen buiten de grenzen van eigen team treden. Samen dragen deze resultaten bij aan onderzoek in strategisch management en organisatiegedrag en bieden een multi-theoretisch perspectief op strategische consensus tussen groepen.

ABOUT THE AUTHOR

Jeanine Porck obtained her Bachelor's degree in Industrial Design Engineering and Master's degree in Strategic Product Design from Delft University of Technology. In 2009, Jeanine started her PhD project at the Erasmus Research Institute of Management, Erasmus University Rotterdam. She has served as chairman of the University PhD Council during her PhD candidacy.



In her dissertation, she brings together topics from organizational behavior and strategic management to investigate the antecedents, contingencies, and outcomes of strategic consensus between groups in the domain of strategy implementation. Specifically, she focuses on how social identification, social network structures, and boundary spanning behaviors help or hinder organizational groups and management teams to coordinate and align their strategic efforts. Her work in this field has been supported by data collection at a variety of (inter-)national companies, where she consulted the top management team during their strategy implementation with an objective diagnosis of the strategic alignment in their organization.

Jeanine presented her research at several international conferences including Academy of Management, Strategic Management Society and EURAM. Her research is currently under review in top management journals and joined work is forthcoming in the Strategic Management Journal.

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NO TEAM IS AN ISLAND AN INTEGRATIVE VIEW OF STRATEGIC CONSENSUS BETWEEN GROUPS

Groups – teams, work groups, departments – are the building blocks of organizations and need to coordinate and align their strategic efforts for the organization at large to perform. To better understand how groups can integrate their strategic efforts to operate as parts of a bigger whole, this dissertation investigates the crucial yet under-researched topic of strategic consensus between groups. If groups have strategic consensus, shared understanding of the strategy, they are more likely to coordinate and integrate more effectively and better perform their collaborative tasks.

The four studies composing this dissertation (1) propose a new method to measure, visualize and aggregate individual cognition to group- and between group-level with a more comprehensive, integrative conceptualization of the multiple dimensions of consensus; (2) demonstrate that the group with the strongest group identification and the group with the lowest organizational identification in an organizational dyad respectively limit and foster achieving a high degree of strategic consensus between groups; (3) show that in a dyad the centrality of each group is a determining factor for the degree of consensus between the groups and the most central individuals are an important driver for strategic alignment between groups; (4) indicate that strategic consensus between groups and boundary spanning behavior are requisites for intergroup cooperation, and the effect of strategic consensus between groups on intergroup cooperation is moderated by the degree to which groups display boundary spanning behavior. Together these findings extend strategic management along behavioral lines, offering an integrative view of strategic consensus between groups.

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