The Impact of Language Barriers
on Shared Mental Models in Multinational Teams

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ABSTRACT

Large corporations increasingly use multinational teams (MNTs) to integrate their global operations. To perform their complex tasks efficiently, team members need to develop shared mental models (SMMs), i.e. an organized understanding of the knowledge base they are sharing. However, the heterogeneity of MNT members presents a substantial challenge to SMM formation. While previous research has investigated the influence of different diversity factors on SMMs, the impact of language differences has been neglected so far. To address this important gap we investigate in depth how different elements of the language barrier impede the formation of different types of SMMs. Our findings integrate linguistic and psychological theories with management studies and complement our understanding of the antecedents of SMMs in MNTs. This is of crucial importance since SMMs have been established as important prerequisites for team performance.

INTRODUCTION

With the increasing scope of multinational corporations work has become highly complex, requiring the use of teams at all corporate levels (De Church & Mesmer-Magnus, 2010). To perform their interdependent tasks efficiently, MNT members need to develop a shared knowledge base which guides their interactions. Studies about team cognition frequently operationalize this shared knowledge base with the concept of SMMs, defined as "an organized understanding or mental representation of knowledge that is shared by team members" (Smith-Jentsch et al., 2005: 523; Mathieu et al., 2008: 429). Due to their heterogeneity, MNTs find it particularly challenging to achieve sharedness between team members' mental models. Since this constitutes a threat to MNT performance, the influence of different diversity factors on SMM formation has been examined. Surprisingly, however, language differences have never been taken into account. The present study aims to address this important gap.

THEORETICAL FRAMEWORK

Shared mental models: an important prerequisite for team performance

Chou et al. (2008) distinguish four types of mental models: *Task-specific SMMs* refer to knowledge about the procedures, courses of action, and strategies needed to perform a specific task. *Task-related SMMs* comprise knowledge of team roles, responsibilities and interaction patterns. *Team SMMs* include team members' knowledge of each other's preferences, strengths and weaknesses, whereas *attitude SMMs* comprise the knowledge of teammates' attitudes, values, and beliefs toward work tasks or working environments. Following Mathieu et al. (2008), SMMs can be conceptualized as "emergent states" mediating between team inputs and outcomes. SMMs have received much attention because they have been found to benefit team performance in a variety of areas, such as enhanced decision making (Cannon-Bowers et al., 1993), quality, efficiency and operational readiness (Smith-Jentsch et al., 2005; Lim & Klein, 2006).

Language: a forgotten antecedent to SMM formation

The importance of SMMs for team performance has already been established by multiple studies. However, to effectively foster SMMs, we also need to know the antecedents of SMM formation. A variety of studies has therefore been dedicated to the impact of different team member characteristics on SMM formation (for a review see Mohammed et al., 2010). In this context, we argue that language is a very important factor that has so far been entirely neglected. The present study introduces linguistic diversity as a new antecedent to SMM formation in MNTs. Closing this gap not only enhances our understanding of SMMs, it also complements the Input-Mediator-Outcome framework of team effectiveness (Ilgen et al., 2005) and contributes to the debate about the performance implications of team diversity.

The general impact of language barriers on the formation of shared mental models

We argue that language effects on SMMs can only be understood profoundly if different elements of the language barrier are distinguished from a linguistic viewpoint. Team members' lack in lexical, syntactical, and phonetic proficiency in the team's working languages constitutes the most readily detected element of language barriers (Henderson, 2005). If team members share only a limited vocabulary, cannot produce correctly structured sentences in the working

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language and strongly mispronounce expressions, less information can be exchanged per unit of time and misunderstandings frequently arise.

However, the potential disruptive effects of language diversity go beyond those visible and obvious causes of difficulties (Henderson, 2005). As language constitutes a part of culture (Piekkari, 2006), speech communities also differ in the way speakers create meaning (House, 1986). The research stream of cross-cultural pragmatics investigates sociolinguistic differences in speech acts like apologizing, requesting, refusing, or thanking, to find out how different speech communities use language in interactive contexts to create specific meaning (Pütz & Neff-Aertselaer, 2008). In spoken communication, differences in paraverbal forms to convey meaning, i.e. audible vocal cues like loudness of the voice, rhythm and speed (Sporer & Schwandt, 2006), add an additional layer of complexity. Sociolinguistic differences are often below the level of conscious awareness (von Glinow et al., 2004) and are therefore classified as "invisible" elements of the language barrier (Henderson, 2005: 70).

Possible effects of language on task-specific and task-related SMMs

Usually, the most important criterion for the staffing of MNTs is functional or technical expertise, so all members can be expected to know the procedures, courses of action, and strategies needed to perform their specific task prior to entering the team. Since this knowledge is not interactively constituted through team communication, the effects of language differences are expected to be weakest in relation to task-specific SMMs.

In contrast, language effects on task-related mental models knowledge may be stronger. Every team needs to actively agree on team roles, responsibilities and interaction patterns, so a shared understanding of these points can only be built through interaction. Accordingly, Lagerström and Andersson (2003) found that members of transnational teams may not understand their task assignments formulated in English if neither those who formulate them nor those who receive them are native speakers of English.

Possible impacts of language on team and attitude SMMs

To reach a shared understanding of each other's preferences, strengths and weaknesses as well as attitudes, values and beliefs team members need to share a certain degree of personal information. Most personal information is exchanged in informal conversations, but several

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authors found proficiency in a shared language to be a prerequisite for building informal networks between employees (Marschan-Piekkari et al., 1999; Beyene et al., 2009). As limited language comprehension may create a sense of remoteness or psychic distance (Piekkari, 2006), an individual's involvement in a team is influenced by his or her facility with the team's working language (Barner-Rasmussen & Björkman, 2007). Harzing and Feely (2008) therefore conclude that language issues can distort and damage relationships, accentuate group divides and lead to polarization of perspectives, perceptions and cognitions. These findings suggest that language differences can substantially hamper the formation of team and attitude SMMs.

Although the connection between language differences and SMMs in MNTs has never been investigated, existing findings suggest potentially strong linguistic impacts on SMM formation. What previous studies have not yet explained, however, are the mechanisms *how* language differences impede SMM formation in MNTs. The present study aims to address this important research gap by integrating SMM research from psychology and management studies with linguistic theory. Leaving the rather language-independent knowledge about specific tasks aside, we aim to explore how task-related, team and attitude SMMs are influenced by differences in pragmatic and paraverbal conventions between speakers of different mother tongues and /or by team members' lack of lexical, syntactical and phonetic proficiency in the working language.

METHODOLOGY

Research design

The cognitive construct of shared mental models has been investigated with a variety of techniques, but qualitative approaches to SMMs are still comparatively rare (for a review see Mohammed et al. 2010). We consciously chose a qualitative study design, as it yields a much richer content base of verbal data than quantitative techniques can provide (Mohammed et al. 2010). Specifically, we applied a comparative multiple-case study approach, which allowed us to cross-check and compare results in order to formulate more generalizable, robust and parsimonious theory than single cases could have yielded (Eisenhardt and Graebner, 2007; Yin, 2009). Our units of analysis were MNTs.

Research setting

In order to avoid industry- as well as home country-effects and to allow comparisons between our case study teams, we conducted all our investigations in one country and one industry: the German automotive industry. Our study focused on three out of the six major players in the German automotive industry. We conducted in-depth investigations in 15 teams, five in each corporation. Comparisons of different teams within one firm can help us to look beyond team idiosyncrasies, while comparisons between teams in different firms can indicate the influences of organizational culture on language use and team processes. To maximize theoretical relevance for our research purpose, the case study teams within each company were very carefully selected for a maximum degree of interdependency and interaction as well as a maximum degree of national diversity and linguistic distance (Chiswick & Miller, 2008) between their members.

Data Collection

Our dataset consists of 84 semi-structured and problem-centered interviews with the 15 leaders of our case study teams, 61 team members and 8 senior managers of the three companies under study. We aimed to interview team members from all represented nationalities and mother tongues and sampled respondents with different levels of English and German proficiency. As recommended by Zellmer-Bruhn and Gibson (2006) we furthermore conducted interviews with senior managers in order to obtain a detailed picture of each team's organizational context. Our theoretically guided informant choice ensured that saturation (Locke, 2001) was reached.

The interviews were conducted in either German or English, depending on which option the interviewees felt most comfortable with. All interviews were recorded and transcribed, yielding over one thousand single-spaced pages of transcripts.

Data Analysis

Our data collection followed the two core techniques of grounded theory: theoretical sampling (see description of our research setting above) and constant comparison (Rynes & Gephart, 2004). As recommended by Glaser and Strauss (1967), we compared our data in different ways. First, we examined the consistency of each single interview by comparing different parts of it. Second, we juxtaposed sections of different interviews within each team

which dealt with the same theme. Third, the interviews from team members on the one hand and team leaders on the other hand were compared. Fourth, the data from each team were aggregated and conceptualized into individual case studies. Fifth, the case studies from each company were compared amongst each other and validated against the background information provided by senior managers. Sixth, the results from each company were juxtaposed with findings from the other companies. The coding process was aided by the qualitative data analysis software ATLAS.ti.

FINDINGS

Interviewees in all teams emphasized that language barriers not only keep them from understanding everything colleagues say; they also frequently lead to misunderstandings and false perceptions of consensus. Whenever this happens, team members believe to have a shared knowledge base, although in reality they are talking at cross-purposes. These findings highlight the crucial importance of language for the formation of shared mental models.

The impact of invisible language barriers on task-related SMMs: pragmatic and paraverbal differences

Our study revealed that the formation of task-related SMMs was mainly impeded by pragmatic and paraverbal differences between speakers of different mother tongues. Concerning speech pragmatics, we found that the speech act of giving instructions can vary strongly. German team leaders verbalize instructions quite directly, whereas their counterparts from other countries tend to formulate them in a somewhat softened and indirect way. These results are in accordance with existing sociolinguistic findings (see e.g. House, 1996). What makes these differences so problematic for SMM formation is the fact that orders framed in a softened way are frequently perceived as mere suggestions by German team members, who subsequently fail to deliver the expected results. In these situations, sociolinguistic differences keep team leaders and members from reaching a shared understanding of individual roles and responsibilities.

The pragmatics of team members' verbal reactions to their leader's instructions reportedly differ equally. While Germans reportedly do not mince their words when they see

problems with their leaders' instructions, members of all other speech communities were found to give more indirect feedback.

Paraverbal differences were found to become problematic whenever team members from different speech communities use different intonations to convey their reluctance or hesitation. If German team leaders fail to recognize their team members' paraverbal criticism, it becomes almost impossible for the team to develop shared mental models about roles and responsibilities.

Furthermore, paraverbal disparities were found to impede team members' shared understanding of interaction patterns through distinct turn-taking behaviors. While German and in particular Italian colleagues were found to sometimes use overlapping turns, Japanese team members reportedly allowed for moments of silence between speakers' turns. These differences in turn-taking behavior imply the danger of misunderstandings and misattribution. If Japanese team members allow for silent periods between speech turns, this is often mistakenly interpreted as agreement, whereas in reality it is often meant to subtly show disagreement.
These effects demonstrate how differences in pragmatic and paraverbal conventions can obstruct the coordination of roles and responsibilities (i.e. task-related SMMs) within a multilingual team.

The impact of visible language barriers on team SMMs: choice of lean communication media

Our interviews revealed that language barriers can also severely impede the formation of team SMMs, which were found to suffer primarily from "visible" (Henderson, 2005:70) barriers like members' lack of lexical, syntactical and phonetic proficiency in the team's working language. If employees feel insecure in the team's working language, they were found to knowingly or unconsciously avoid complex communication situations conducted in this language. Whenever they have to contact team members speaking other mother tongues and have the choice between different media types, they tend to prefer asynchronous, written communication media, which allow them to take their time with formulating and to look up words in online dictionaries. Our findings show that this avoidance of rich communication media can substantially diminish the amount of personal message content exchanged between team members.

The impact of visible language barriers on attitude SMMs: emotional barriers

These effects are aggravated by the fact that the majority of our interviewees found it significantly harder to talk in a foreign language about private and personal issues compared to purely professional issues. While technical terms can be acquired mechanically, respondents report that personal communication with team members remains a challenge due to its emotional content.

Relating to others on an emotional level requires the right nuances and is therefore hard to achieve for inexperienced speakers of the team's working language. In some of our case study teams, language barriers were found to transform into emotional barriers between team members. These barriers make it hard to include personal content in task-related communication. More importantly, they were found to substantially diminish the amount of informal communication between team members of different mother tongues. Consequently, team members of different mother tongues find it very hard to reach a shared knowledge base about each other's preferences, strength and weaknesses as well as values, attitudes and beliefs.

THEORETICAL IMPLICATIONS

Our study makes important theoretical contributions to three areas of research. First, by establishing language differences as a so far entirely neglected antecedent to SMM formation and by investigating in depth the mechanisms how language barriers influence the formation of different types of SMMs in MNTs, the present study closes an important gap in our understanding of the determinants of SMM formation. This understanding is of crucial importance, since the positive relationship between SMMs and team performance has already been demonstrated by a large number of previous studies.

Second, this study extends our knowledge about SMMs in the specific context of multinational corporations. So far, the great majority of studies about the antecedents of SMMs were conducted in student teams, some in defense organizations, faculty decision making teams, or government employee teams (for an overview see Mohammed et al., 2010). Our study is among the first to investigate the concept in a decidedly multinational and multilingual environment. This context is of pivotal importance in today's globalized business world.

Third, our study contributes to the literature on the performance effects of team diversity. A large number of previous studies has investigated many different challenges of team

heterogeneity (for reviews see Jackson et al., 2003; Mathieu et al., 2008), but the present paper is the first to address the potential disruptive effects of linguistic diversity for SMM formation. We do not explicitly address the performance implications of reduced SMMs in multilingual teams, but the existing literature on the SMM-performance relationship suggest that the linguistic challenges to SMM formation, which we captured in our study, indirectly constitute substantial challenges to team functioning.

REFERENCES AVAILABLE FROM THE AUTHORS