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Unraveling the effects of cultural diversity in teams: A meta-analysis of research on multicultural work groups

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Abstract
Previous research on the role of cultural diversity in teams is equivocal, suggesting that cultural diversity's effect on teams is mediated by specific team processes, and moderated by contextual variables. To reconcile conflicting perspectives and past results, we propose that cultural diversity affects teams through process losses and gains associated with increased divergence and decreased convergence. We examine whether the level (surface-level vs deep-level) and type (cross-national vs intra-national) of cultural diversity affect these processes differently. We hypothesize that task complexity and structural aspects of the team, such as team size, team tenure, and team dispersion, moderate the effects of cultural diversity on teams. We test the hypotheses with a meta-analysis of 108 empirical studies on processes and performance in 10,632 teams. Results suggest that cultural diversity leads to process losses through task conflict and decreased social integration, but to process gains through increased creativity and satisfaction. The effects are almost identical for both levels and types of cultural diversity. Moderator analyses reveal that the effects of cultural diversity vary, depending on contextual influences, as well as on research design and sample characteristics. We propose an agenda for future research, and identify implications for managers.
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INTRODUCTION

Over the past few decades, a substantial body of research has been undertaken to examine the relationship between cultural diversity and team outcomes. This research has produced mixed, and often contradictory, results. Our goals in this study were to take stock of and synthesize the findings from previous research, to reconcile conflicting perspectives and past results, and to propose an agenda for the next stage of research in this field.

Most qualitative reviews of the field of diversity look at all dimensions of diversity, including gender, age, and function, as well as culture and ethnicity. These reviews conclude that studies' results are inconsistent with each other (e.g., Harrison, Price, & Bell, 1998; Joshi & Roh, 2007; Kirkman, Tesluk, & Rosen, 2004). For example, there are significant positive correlations between diversity and performance in some studies (e.g., Earley & Mosakowski, 2000; McLeod, Lobel, & Cox, 1996; Thomas, Ravlin,

& Wallace, 1996), contrasted by significant negative correlations in others (e.g., Jehn & Mannix, 2001; Kirkman et al., 2004; Thomas, 1999; Watson, Kumar, & Michaelsen, 1993). Meta-analyses have found no overall relationship between diversity and performance (Bowers, Pharmer, & Salas, 2000; Webber & Donahue, 2001), or a small negative effect (Stewart, 2006).

Although the effects of diversity in teams have typically been explained in terms of potential mediators, the actual evidence for the input–process–output linkage is not strong (e.g., Jackson, Joshi, & Erhardt, 2003; Mannix & Neale, 2005). Contextual variables probably moderate the relationship between diversity and team performance (Bell, 2007; Joshi & Roh, 2009). However, there is little theoretical clarity concerning how moderators influence the effects of diversity on team processes and outcomes; and moderators have not been examined systematically across studies (Jackson et al., 2003).

Most studies assume that all aspects of differences among people affect groups in the same way. Although there are clearly some parallels among different diversity sources (Van Knippenberg & Schippers, 2007), there is evidence that different types of diversity may influence team outcomes in different ways (Horwitz & Horwitz, 2007). Cultural diversity, in particular, may affect teams differently from other diversity sources (Lane, Maznevski, DiStefano, & Dietz, 2009; Lane, Maznevski, Mendenhall, & McNett, 2004). Cultural differences are often below the level of consciousness, so some of their effects may not be recognized. At the same time, culture is a source of strong categorization and stereotyping, so the effects of cultural diversity may be stronger than other sources.

In this study, we attempt to improve our understanding of the mechanisms and contextual conditions under which cultural diversity affects team processes, both theoretically and also empirically. Using meta-analysis, we can aggregate previous research and study the relationships more closely, thus providing a more comprehensive synthesis than a qualitative review could. Meta-analysis also allows us to explore how research design characteristics affect the results of team diversity studies.

LITERATURE REVIEW AND CONCEPTUAL MODEL

Culture and Cultural Diversity

Culture consists of a commonly held body of beliefs and values that define the "shoulds" and the "oughts" of life (Hofstede, 1980; House, Hanges, Javidan, Dorfman, & Gupta, 2004; Lane et al., 2009), and guide the meaning that people attach to aspects of the world around themselves (Earley, 2006). Cultures provide a source of identity for their members. In international business we most often talk about country-based cultures, but cultures also develop around professions, organizations, religions, and so on. Furthermore, because of historical combinations, increased immigration, or temporary flows of people across borders, most countries include multiple ethnic cultures, and many ethnic or religious cultures span country boundaries (Leung, Bhagat, Buchan, Erez, & Gibson, 2005; Tung, 2008).

Diversity, including cultural diversity, influences teams in three potentially opposing ways (Mannix & Neale, 2005). First, according to similarity-attraction theory, people are attracted to working with and cooperating with those they find similar in terms of values, beliefs, and attitudes (Williams & O'Reilly, 1998). Second, according to social identity and social categorization theory (Tajfel, 1982), people tend to categorize themselves into specific groups, and categorize others as outsiders or part of other groups. People treat members of their own group with favoritism, and may judge "others" according to group traits (e.g., stereotyping). These first two perspectives suggest that diversity's effect on teams is negative, because it makes social processes more difficult. Third, according to information-processing theory, diversity brings different contributions to teams. A diverse team thus covers a broader territory of information, taps into a broader range of networks and perspectives, and can have enhanced problem-solving, creativity, innovation, and adaptability (Ancona & Caldwell, 1992; Blau, 1977; Cox, 1994; Cox & Blake, 1991; Jackson, 1992; Katz, 1982; Pfeffer, 1983; Watson et al., 1993; Weick, 1969).

Cultural differences are associated strongly with all three mechanisms through which diversity influences teams. People from the same culture know that they share basic values and beliefs, and therefore feel strong similarity-attraction with each other (Triandis, 1959, 1960). Throughout history, nationality, race, and ethnicity have been among the most common social categories by which to identify people (e.g., Earley & Mosakowski, 2000; Tajfel, 1982), so social categorization of in-groups and out-groups can be quick and long-lasting in multinational teams. Finally, culture is associated with such deep differences in perspectives and

cognitive frameworks that people from different cultures bring very different sources and means of information-processing to a team (Hofstede, 2001; Lane et al., 2009). The generic effects of diversity are thus likely to be magnified when the source of diversity is culture.

Cultural Diversity and Intermediate Team Outcomes

It is important to develop more specific knowledge about the potential barriers and opportunities that cultural diversity offers (Brett, Behfar, & Kern, 2006; DiStefano & Maznevski, 2000). Research suggests that diversity, which is a team input, affects a variety of team processes and affective reactions, which in turn affect team performance, or the output (e.g., Earley & Gibson, 2002; Lawrence, 1997; Mannix & Neale, 2005; Marks, Mathieu, & Zaccaro, 2001; Williams & O'Reilly, 1998). Many different variables have been proposed as critical to group performance (e.g., Cohen & Bailey, 1997; Jackson et al., 2003; Smith, Smith, Olian, Sims, O'Bannon, & Scully, 1994; Williams & O'Reilly, 1998). To clarify cultural diversity's effects on team performance, we propose a model that categorizes these variables by whether they are associated with divergence or convergence (Earley & Gibson, 2002), and whether they lead to process losses or process gains (Steiner, 1972). The model is presented in Table 1.

Cultural diversity tends to increase divergent processes. Divergent processes are those that bring different values and ideas into the team and juxtapose them with each other (Canney Davison & Ekelund, 2004). Through the similarity-attraction and social categorization mechanisms, the differences are likely to be recognized, rather than going unnoticed or ignored. Some divergent processes contribute to the group performance positively – that is, they create process gains. They are important in enabling the team to achieve more than individual members could, working on their own. Examples include brainstorming and creativity (Adler, 2002; Cox, 1994). Divergent processes can also decrease the group's performance, if the differences are seen as detracting from the team's purpose or progress. A divergent process that creates a process loss is conflict.

Table 1 Intermediate variables in the relationship between cultural diversity and team performance: a taxonomy and examples

	Process gain	*Process loss*
Convergence	Cohesion	Groupthink
Divergence	Creativity	Conflict

Cultural diversity tends to decrease convergent processes. Convergent processes are those that align the team around common objectives, commitment, or conclusions. Some convergent processes contribute positively to group performance, and help the group achieve a single group outcome. These positive processes include communication, or the sharing of common meaning, and social integration, or the development of group cohesion, commitment, and identity. Other convergent processes contribute negatively to group performance because they make the group closed to dissent from within or new information from without, when the new information is important to achieving a high-quality decision. One example is groupthink (Janis, 1972), or the premature concurrence-seeking tendency that interferes with effective group decision-making.

From this framework, we have developed hypotheses by identifying variables in each category that have been shown to affect team processes and outcomes in a wide range of studies. Unfortunately, too little research has been done on convergent processes associated with process loss (e.g., groupthink) for us to test a research hypothesis, but we provide hypotheses for the other categories.

Divergent – Process gain: Creativity. In team processes, creativity is the consideration of a wide variety of alternatives and criteria for evaluating alternatives, and the building of novel and useful ideas that were not originally part of the consideration set. Creativity is an important component of innovation (e.g., O'Reilly, Williams, & Barsade, 1998), and can increase performance. Creativity is clearly a divergent process, and the creative benefits of heterogeneous team compositions have been supported by numerous studies (e.g., Cox & Blake, 1991; Doz, Santos, & Williamson, 2004; O'Reilly et al., 1998). Because cultural differences are associated with differences in mental models, modes of perception, and approaches to problems, they are likely to provide strong inputs for creativity.

Divergent – Process loss: Conflict. Conflict is the expression of differences in opinion or priority because of opposing needs or demands (Tjosvold, 1986), and is therefore a divergent process (although *resolving* conflict can be converging).

There is some evidence that task conflict may increase performance, and personal conflict may decrease performance (Jehn, Chadwick, & Thatcher, 1997), but a meta-analysis (De Dreu & Weingart, 2003) found that both types of conflict were negatively related to performance. As people with diverse backgrounds and experiences hold different belief structures and values, which affect their prioritization, interpretation and response to stimuli (e.g., Walsh, 1988; Wiersema & Bantel, 1992), group diversity inherently increases the potential for conflicts. Because cultural differences are deep, and often held subconsciously, the sources of conflict in multicultural teams may be difficult to identify, and even more difficult to resolve (e.g., Kirchmeyer & Cohen, 1992).

Convergent – Process gain: Communication. Effective communication, or the transmission of meaning from one person to another as it was intended, is an important alignment process. Effective communication is associated with good team performance, both directly and by impacting on other processes such as conflict resolution and cohesiveness. Cultural differences can greatly interfere with the communication process. Effective communication requires that individuals have at least a minimum of shared language around which to align. Different country-based cultures often have different languages, and even when they use a shared language they may not always translate the same way. The different values and norms among people from different cultures make it difficult for them to find a shared platform or a common approach (Maznevski, 1994).

Convergent – Process gain: Satisfaction. Satisfaction is the feeling of having a need adequately fulfilled. The team literature tends to focus on satisfaction with the group process and with the group outcome as the two most important aspects of satisfaction (Hackman, 1987). The relationship between diversity and satisfaction has generally been found to be negative (e.g., Basadur & Head, 2001). According to similarity-attraction theory, interactions with people who are similar tend to be more satisfying. Moreover, people are usually more satisfied the smoother the group operates, and perceive that diversity influences the group dynamics in a negative way. Cultures function in part to create a source of identity within the group, and in part to create efficiency within the group. Both of these aspects of satisfaction will be decreased when working across cultures.

Convergent – Process gain: Social integration. Social integration is "the attraction to the group, satisfaction with other members of the group, and social interaction among group members" (O'Reilly, Caldwell, & Barnett, 1989: 22). It captures a set of dynamics associated with general group functioning and collaboration, including cohesion (Katz & Kahn, 1978; Shaw, 1981), morale and trust (Smith et al., 1994), and coordination (McGrath, 1984; O'Reilly et al., 1989). Most research has found that diversity has a negative impact on social integration. For example, it is widely suggested that gender diversity diminishes group cohesion and trust (e.g., Jackson, Brett, Sessa, Cooper, Julin, & Peyronnin, 1991; Kirchmeyer, 1995), although Webber and Donahue's meta-analysis (2001) did not find any significant relationships. Because cultures develop in order to facilitate social integration *within* the culture, it follows that social integration will be lower when there are multiple cultures in a group. In addition, cultural diversity's strong association with similarity-attraction and social categorization imply that it will have a negative effect on social integration.

The foregoing discussion suggests that cultural diversity will be positively associated with divergent outcomes and negatively associated with convergent outcomes. In particular, we propose:

Hypothesis 1a: Higher cultural diversity will be associated with more creativity.

Hypothesis 1b: Higher cultural diversity will be associated with more conflict.

Hypothesis 1c: Higher cultural diversity will be associated with less effective communication.

Hypothesis 1d: Higher cultural diversity will be associated with lower satisfaction.

Hypothesis 1e: Higher cultural diversity will be associated with lower social integration.

Level and Type of Cultural Diversity

Because culture is a complex construct, with multiple effects, the various researchers have operationalized the construct differently. Meta-analysis allows us to examine the effects of these different

operationalizations on the results of team diversity studies.

Surface-level and deep-level aspects of culture. *Surface-level diversity* is defined as differences among team members in overt demographic characteristics, such as age or gender. For cultural diversity, the surface-level traits most commonly examined in team research are racio-ethnicity and nationality (Ely & Thomas, 2001; Mannix & Neale, 2005). *Deep-level diversity* refers to differences among team members' psychological characteristics, including personalities, values, and attitudes (e.g., Harrison et al., 1998). For cultural diversity, the deep-level traits most commonly measured are values or attitudes associated with culture (Hofstede, 1980; House et al., 2004; Kirkman & Shapiro, 2001).

There is little theoretical clarity concerning the differential effects of deep-level and surface-level diversity on team outcomes. Surface-level attributes such as race and ethnicity, because of their salience, are likely to trigger immediate similarity-attraction and categorization processes, and may thus have an adverse impact on a variety of team outcomes. Deep-level cultural attributes, such as differences in values, are also likely to affect team outcomes negatively, since value conflicts normally imply that there is no common ground on which to collaborate and communicate (Sitkin & Roth, 1993). However, deep-level attributes may also exert a positive influence on the team process. Deep-level cultural differences are associated with information-processing effects owing to the different cognitive perspectives (e.g., Mannix & Neale, 2005). The creative benefits of heterogeneous team composition come from the new ideas, multiple perspectives, and different problem-solving styles that members bring to the team (Adler, 2002; Cox & Blake, 1991; O'Reilly et al., 1998).

Deep-level and surface-level diversity thus may affect team processes in different ways, but with the exception of creativity, the direction of the effect on team outcomes is not clear. We will explore this issue in our meta-analysis, and propose the following hypotheses:

Hypothesis 2a: Deep-level cultural diversity will be more strongly associated with enhanced creativity than surface-level cultural diversity.

Hypothesis 2b: The level of diversity (deep-level vs surface-level) will moderate the relationship between cultural diversity and conflict.

Hypothesis 2c: The level of diversity (deep-level vs surface-level) will moderate the relationship between cultural diversity and communication effectiveness.

Hypothesis 2d: The level of diversity (deep-level vs surface-level) will moderate the relationship between cultural diversity and satisfaction.

Hypothesis 2e: The level of diversity (deep-level vs surface-level) will moderate the relationship between cultural diversity and social integration.

Cross-national and intra-national diversity. Popular wisdom suggests that the effect of cultural diversity is likely to be greater in teams with people from several different countries, as compared with teams composed of members from a single country. Because of common educational and other institutional systems, individuals from the same country hold relatively similar values and beliefs, and language and communication barriers are less likely to pose problems. By contrast, in teams composed of individuals from different countries, differences in values, norms of behavior, and communication styles are a frequent source of irritation, misunderstandings, and conflict (e.g., Brett et al., 2006; DiStefano & Maznevski, 2000). This seems to suggest that the effects of cross-national diversity on team outcomes are stronger than for intra-national diversity.

However, there are several caveats to this argument. First, as Tung (1993, 2008) pointed out, intra-national variations can be as significant as those between members of different national cultures. For example, there could be more similarities in perspectives and values between English-speaking Canadians and Americans than between Anglophone and Francophone Canadians. Moreover, evidence suggests that some of the problems associated with cultural diversity may be amplified in a single-country context, because they are less recognized intra-nationally. For example, research on the sociocultural dynamics of alliances, mergers and acquisitions indicates that cultural differences create greater barriers to social integration in domestic than in cross-border combinations, because managers and employees pay less attention to cultural differences at the corporate level than at the national level, and thus tend to underestimate the importance of cultural factors (Stahl & Voigt, 2008; Weber, Shenkar, & Raveh, 1996). Applied to research on multicultural teams, these findings

suggest that not only could intra-national teams have surface- or deep-level diversity as great as cross-national teams, they may face even greater barriers to effective collaboration by not recognizing that diversity in the first place.

Cross-national and intra-national diversity thus may affect team processes in different ways. Cross-national diversity is more likely to be associated with language barriers and differences in communication style – and therefore with less effective communication – than is intra-national diversity. But the literature also clearly shows that multinational teams have the potential to be more creative than intra-national teams, thanks to the varying perspectives that individuals from different countries bring to the team (e.g., Adler, 2002; Cox & Blake, 1991). We will explore the complex and partly contradictory effects of type of diversity (cross-national vs intra-national) in our meta-analysis. Since the multicultural team literature is insufficiently developed to allow the formulation of directional hypotheses for all of the relationships considered, some of the hypotheses are non-directional.

Hypothesis 3a: Cross-national diversity will be more strongly associated with enhanced creativity than intra-national diversity.

Hypothesis 3b: The type of diversity (cross-national vs intra-national) will moderate the relationship between cultural diversity and conflict.

Hypothesis 3c: Cross-national diversity will be more strongly associated with decreased communication effectiveness than intra-national diversity.

Hypothesis 3d: The type of diversity (cross-national vs intra-national) will moderate the relationship between cultural diversity and satisfaction.

Hypothesis 3e: The type of diversity (cross-national vs intra-national) will moderate the relationship between cultural diversity and social integration.

Moderating Effects of Contextual Variables

The effect of diversity on team dynamics is likely to be influenced by various aspects of the team and its context (e.g., Earley & Gibson, 2002; Ely & Thomas, 2001; Jackson et al., 2003; Joshi & Roh, 2007; Leung et al., 2005; Pelled, 1996; Van Knippenberg & Schippers, 2007). We focus on contextual influences that are likely to have an immediate impact on the activities that the team engages in, and the interactions among team members (Joshi & Roh, 2007, 2009): the nature of the task, team size, team dispersion, and team tenure.

Task complexity. Tasks are more complex to the extent that they are less structured, less routine, more ambiguous, and require higher levels of interdependence (McGrath, 1984). Task complexity has been studied as a moderator in several studies, but with inconclusive results. Jehn (1995) and Stewart (2006) found that in non-routine tasks diversity's effect is less negative than in routine tasks. However, De Dreu and Weingart (2003) concluded from their meta-analysis that the higher the task complexity the stronger the negative correlation between diversity and performance. We propose that task complexity will augment the effect of cultural diversity. If the task is complex, the opportunities for process gains through divergence (e.g., enhanced creativity) will be greater. However, aligning through positive convergence processes will be more difficult, and the opportunities for conflict will also be greater. Thus we propose the following hypotheses:

Hypothesis 4a: The more complex the task, the more cultural diversity will be associated with increased creativity.

Hypothesis 4b: The more complex the task, the more cultural diversity will be associated with increased conflict.

Hypothesis 4c: The more complex the task, the more cultural diversity will be associated with decreased communication effectiveness.

Hypothesis 4d: The more complex the task, the more cultural diversity will be associated with decreased satisfaction.

Hypothesis 4e: The more complex the task, the more cultural diversity will be associated with decreased social integration.

Team size. As groups grow in size, they experience increasing problems in many areas, including communication (Blau, 1977; Indik, 1965), coordination (e.g., Blau, 1977; Gratton & Erickson, 2007), risk of social loafing (Mullen, Johnson, & Drake, 1987),

and lower cohesion (Indik, 1965; Shaw, 1981; Steers & Rhodes, 1978). Although some studies find increased performance when groups are larger (e.g., Yetton & Bottger, 1983), because larger teams may be more able to obtain resources such as time, energy, money, and expertise, it is generally concluded that increased group size significantly reduces performance and productivity in the quality as well as the quantity of the output (e.g., Mullen et al., 1987; Mullen, Johnson, & Salas, 1991; Steers & Rhodes, 1978). Like complexity, an increase in team size increases the number of variables a team must manage. We hypothesize, therefore, that group size will augment the effects of diversity, making both the process losses and process gains through divergence and convergence greater. Since there is little theoretical clarity concerning how group size influences the effects of diversity on creativity, no moderator hypothesis is formulated for the latter.

Hypothesis 5a: The larger the team, the more cultural diversity will be associated with increased conflict.

Hypothesis 5b: The larger the team, the more cultural diversity will be associated with decreased communication effectiveness.

Hypothesis 5c: The larger the team, the more cultural diversity will be associated with decreased satisfaction.

Hypothesis 5d: The larger the team, the more cultural diversity will be associated with decreased social integration.

Team dispersion. Dispersion is the degree to which a team's members are distributed across locations. Dispersed teams mostly communicate using technology (or virtually), rather than face to face. In general, this makes communication and other convergent processes more difficult, and reaping the benefits of divergence is also more challenging (Gibson & Gibbs, 2006; Hinds & Mortensen, 2005; Jarvenpaa & Leidner, 1999; Martins, Gilson, & Maynard, 2004; Maznevski, Canney Davison, & Jonsen, 2006; Maznevski & Chudoba, 2000). However, by reducing face-to-face contact, dispersion also reduces the cues that team members tend to rely on for determining similarity and for social categorization (Carte & Chidambaram, 2004; Mortensen & Hinds, 2001). Communication contributions therefore tend to be more evenly balanced in dispersed teams (Martins et al., 2004). We propose that the negative effects of cultural diversity on convergent process gains (e.g., commitment, cohesion, trust) will be less evident in dispersed teams than in co-located teams. However, the barriers to effective communication make it difficult for people from different cultural backgrounds to share their ideas in ways the team can use (Gibson & Gibbs, 2006). We propose that dispersion will have competing effects on conflict: team members will be less able to share conflicting ideas; however, when conflict arises, members will be less able to understand each others' perspectives, and conflict is likely to remain unresolved or even escalate (Hinds & Mortensen, 2005; Maznevski et al., 2006). Therefore a non-directional hypothesis is formulated. Specifically, we propose the following moderator hypotheses:

Hypothesis 6a: In dispersed teams, cultural diversity will be associated with lower creativity than in co-located teams.

Hypothesis 6b: Team dispersion will moderate the relationship between cultural diversity and conflict.

Hypothesis 6c: In dispersed teams, cultural diversity will be associated with less effective communication than in co-located teams.

Hypothesis 6d: In dispersed teams, cultural diversity will be associated with greater satisfaction than in co-located teams.

Hypothesis 6e: In dispersed teams, cultural diversity will be associated with greater social integration than in co-located teams.

Team tenure. Tenure, or the amount of time a team has spent together, has long been considered an important influence on group development (e.g., Pfeffer, 1983; Weick, 1969). In general, the longer a team is together, the smoother and more automatic its processes become. Usually this is helpful to groups, for example for reducing conflict (e.g., Jehn & Mannix, 2001). But such automatic processes can also hurt teams' performance in the long run if they lead to decreased creativity (Austin, 1997). With cultural diversity, time seems to allow a shift in the group's focus from "surface level" characteristics that are used for instant categorization and stereo-

typing to a deeper understanding and appreciation of group members' underlying psychological characteristics (Harrison, Price, Gavin, & Florey, 2002; Milliken & Martins, 1996). Watson et al. (1993) and Harrison et al. (1998) found that the negative effects of cultural diversity decreased over time. Time also allows culturally diverse teams to create a common identity, which contributes to their performance (Earley & Mosakowski, 2000). We therefore expect tenure to decrease the degree to which cultural diversity negatively affects convergent process gains and divergent process losses, while at the same time reducing the divergent process gain of creativity.

Hypothesis 7a: Cultural diversity will be associated with lower creativity in teams with long tenure than in teams with short tenure.

Hypothesis 7b: Cultural diversity will be associated with less conflict in teams with long tenure than in teams with short tenure.

Hypothesis 7c: Cultural diversity will be associated with more effective communication in teams with long tenure than in teams with short tenure.

Hypothesis 7d: Cultural diversity will be associated with higher satisfaction in teams with long tenure than in teams with short tenure.

Hypothesis 7e: Cultural diversity will be associated with higher social integration in teams with long tenure than in teams with short tenure.

The hypotheses are summarized in Figure 1.

METHOD

Sample

Because meta-analysis involves aggregation of effect sizes across studies, only studies that provided the statistical information required to calculate an effect size for the relationship between cultural diversity and one or more outcome variables were included. The literature search involved manual and computerized searches of relevant published and unpublished studies. Computerized searches were performed on several different databases (including ABI/INFORM, Business Source Premier, EconLit, PsychInfo, Science Direct, and the Social Science Citation Index), using the following keywords: team and/or group, and culture, diversity, multicultural, international, and/or multinational. Other search strategies included the screening of bibliographies, conference proceedings, Internet searches, and manual searches in relevant books and research journals. In an attempt to minimize the "file drawer problem" (Rosenthal, 1984), team researchers were contacted by e-mail, and copies of potentially relevant unpublished papers were requested.

A total of 112 studies were identified through this search process. In cases where two or more studies relied on the same sample, the study that provided the most complete statistical information was selected, and the others were excluded. In cases where no effect sizes could be calculated, owing to missing or incomplete information, an e-mail was sent to the author with a request for additional information. The final sample consisted of 108 empirical studies with a combined sample size of 10,632 teams.[1]

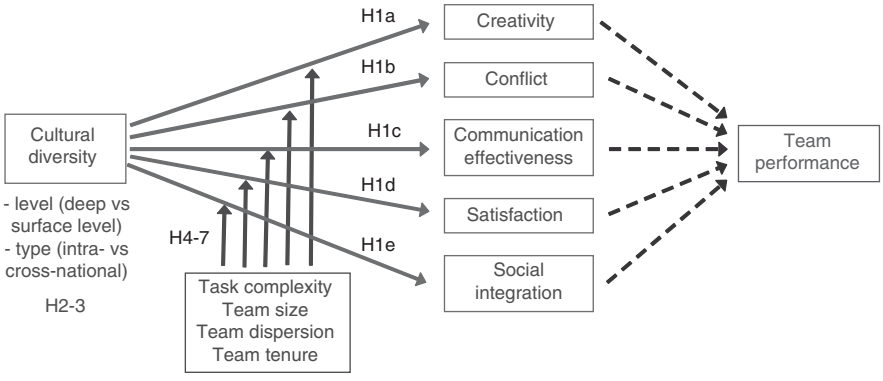

Figure 1 Summary of hypotheses and conceptual model.
Solid arrows indicate relationships tested in this study; dotted arrows indicate proposed relationships.

Dependent Variables

Performance. Although we did not hypothesize an effect of cultural diversity on performance, given the conflicting results of previous research it was appropriate to explore the direct relationship as a starting point. In studies that were based on student samples and conducted in an educational context, performance measures typically consisted of group project scores or grades assigned for course-related projects (e.g., Chatman & Flynn, 2001; Harrison et al., 2002; Jehn & Mannix, 2001). Some of the field studies defined performance as the extent to which the team accomplished its purpose and produced the intended results (e.g., McLeod et al., 1996). Other studies used more objective performance indicators, such as sales performance figures (Ely, 2004; Jackson & Joshi, 2002), workgroup composite bonus (Jehn & Bezrukova, 2004), quality of customer service (Kirkman & Shapiro, 2001), or the winning percentage of teams in a sports context (Timmerman, 2000).

Creativity. Studies included in the meta-analysis assessed creativity in terms of the novelty of ideas generated on a brainstorming task (McLeod et al., 1996), the ability to generate creative solutions to problems or case studies (Rodriguez, 1998), and the development of creative endings to short stories (Paletz, Peng, Erez, & Maslach, 2004).

Conflict. Following Jehn and Mannix (2001), three types of conflict were examined: task, relationship, and process conflicts. Task conflict is an awareness of differences in viewpoints and opinions pertaining to a group task. Relationship conflict is an awareness of interpersonal incompatibilities, including affective components such as feeling tension and friction (Jehn & Mannix, 2001). Process conflict is defined as an awareness of controversies about how task accomplishment will proceed (Jehn, Northcraft, & Neale, 1999).

Communication effectiveness. The majority of studies directly assessed communication effectiveness among team members (e.g., Earley & Mosakowski, 2000; Maznevski, 1995). Some studies focused on more qualitative aspects of group communication, for example whether people talked with one another openly (Earley & Mosakowski, 2000), or whether interpretative ambiguity arose because of ambiguous communication episodes (Kilduff, Angelmar, & Mehra, 2000).

Satisfaction. Satisfaction was measured at the group level: that is, team members were asked whether they were satisfied with the team, and responses were aggregated at the level of the team. Satisfaction can originate from pleasant social interactions (e.g., Martins, Miliken, Wiesenfeld, & Salgado, 2003; Miller, 1994) or from performing satisfactorily as a collective (e.g., Earley & Mosakowski, 2000; Rohn, 2004). The construct thus captures satisfaction with the group in general, and with its performance in particular.

Social integration. Social integration is the perception of affective dimensions of group processes (O'Reilly et al., 1989; Smith et al., 1994), such as cohesion, trust, morale, satisfaction, and attraction. In the meta-analysis, we excluded satisfaction, because we captured this construct separately.

Independent Variable

As discussed above, cultural diversity is operationalized in different ways by level and type. We included studies using both surface-level and deep-level measures (Ely & Thomas, 2001; Harrison et al., 1998; Jackson et al., 2003; Jehn et al., 1999), and using cross-national and intra-national definitions (Tung, 1993, 2008). We tested whether different levels or types of cultural diversity affected team outcomes in different ways.

Moderators and Control Variables

Moderators. To ease analysis and interpretation, moderators were created with bimodal values. *Task complexity* (high/low) was based on coder ratings of four task characteristics: task ambiguity, structuredness, routineness, and interdependence. To measure *team size* (small/large), a median split of *z*-standardized team size scores was performed. *Team dispersion* was the degree to which a team's members were distributed across locations (co-located/geographically dispersed). *Team tenure* was the amount of time that the team members spent together prior to measurement of the dependent variable, with a split of up to 20 h and more than 20 h based on a natural grouping of studies.

Controls. Each of the studies included in the meta-analysis was coded for a variety of research design and sample characteristics, which served as con-

trols. They included: *study design* (cross-sectional or longitudinal); *study setting* (laboratory/educational or field); whether cultural diversity was *actively influenced* through the team assignment (yes or no); *publication status* (unpublished or published); *geographic region* in which the study was conducted (North America or other); *method for assessing team outcomes* (survey or archival data); *objectivity of information source for assessing outcomes* (objective or subjective).

Coding and Inter-rater Agreement

All studies were coded by two independent raters. The inter-rater reliability coefficient used was Cohen's *kappa*. The inter-rater reliability coefficients for the variables included in the meta-analyses ranged between 0.81 and 0.95, suggesting that the coding process produced reliable data. Any disagreements between coders were discussed and resolved.

Meta-analytical Procedure

Control for artifacts and calculation of mean effect sizes. To rule out bias due to uneven sampling, point-biserial correlation coefficients were corrected for the attenuation effect of unequal sampling (Hunter & Schmidt, 1990). Studies that relied on self-report measures were corrected for unreliability. Undesirable statistical properties of the product-moment correlation coefficient were controlled by applying Fisher's Z_r transformation (Hedges & Olkin, 1985). Finally, each effect size was weighted by the inverse of its squared standard error value, following a fixed-effects model when calculating mean effect sizes (Lipsey & Wilson, 2001).

Treatment of multiple effect sizes. Since multiple effect sizes from the same study are statistically dependent, effect sizes were averaged when a study provided multiple indicators of the same outcome variable (e.g., different aspects of social integration). If a study examined several different outcome variables (e.g., social integration and creativity), the effect sizes were included in separate meta-analyses.

Fail-safe N (FSN). The FSN was calculated to determine the robustness of results and the potential role of publication bias. FSN refers to the number of non-significant studies that would be necessary to reduce the effect size to a non-significant value (Rosenthal, 1984).

Homogeneity testing and moderator analysis. If homogeneity of the effect size distribution could not be established, further analyses were undertaken to determine the presence of moderator variables. Homogeneity testing was done by computing the homogeneity *Q* statistic to test the overall variability of study-level effect sizes (Hedges & Olkin, 1985). Moderator analysis was undertaken by comparing subgroups. Subgroup analysis involves calculating the mean effect size for each of the two categories of the moderator or control variable as an estimate for the respective population *r*. A critical ratio test is then performed to determine whether the population *r*s are significantly different. A significant *Z* statistic suggests that the characteristic used to divide the sample is a moderator (Dalton, Daily, Certo, & Roengpitya, 2003).

RESULTS

Impact of Cultural Diversity on Team Performance and Intermediate Outcomes

Although we made no hypothesis about the direct relationship between cultural diversity and performance, we explored the relationship as a matter of interest and as a baseline by which to compare the other results. As indicated by Table 2, the mean effect size estimate for performance is close to zero. This finding is consistent with the equivocal or no-effect results seen in other reviews and meta-analyses.

A series of meta-analyses were performed to examine the relationships between cultural diversity and the proposed intermediate outcomes. Table 2 presents the results of the hypotheses tests.

In the meta-analysis of studies investigating the effect of cultural diversity on *creativity*, a significant mean effect size of 0.16 ($p<0.05$) emerged, which suggests that cultural diversity is positively associated with creativity. Thus Hypothesis 1a is supported. The meta-analysis of team *conflict* measures yielded a mean effect size of 0.07 ($p<0.05$) across different types of conflict measures. More fine-grained analyses reveal that cultural diversity is positively associated with task conflict, with a significant mean effect size of 0.10 ($p<0.05$), and unrelated to relationship conflict and process conflict. Thus Hypothesis 1b is only partially supported. The meta-analysis of studies

Table 2 Meta-analysis of research on the effect of cultural diversity on teams: main effect analyses

Outcome measure	*k*	*N*	*Mean ES*	*−95% CI*	*+95% CI*	*Range of effect sizes*	*Fail-safe N*	*Q*	*Variance explained by S.E. (%)*	*Moderation Indicated*
Creativity	5	160	0.16*	0.00	0.32	−0.14; 0.48	3	10.45*	45.43	Yes
Conflict	22	1181	0.07*	0.01	0.13	−0.31; 0.34	29	44.72**	48.70	Yes
Task conflict	11	629	0.10*	0.02	0.18	−0.40; 0.35	11	33.74***	31.94	Yes
Relationship conflict	12	603	0.05	0.03	0.13	−0.28; 0.22	/	15.49	77.08	No
Process conflict	4	253	0.01	−0.11	0.14	−0.24; 0.18	/	7.62†	52.41	Yes
Communication effectiveness	8	300	−0.03	−0.15	0.09	−0.36; 0.32	/	16.11*	49.57	Yes
Satisfaction	9	425	0.15**	0.05	0.25	−0.14; 0.41	14	17.02*	50.53	Yes
Social integration	22	1382	−0.07*	−0.12	−0.02	−0.44; 0.36	29	45.38**	48.00	Yes
Performance	42	7184	−0.02	−0.04	0.00	−0.60; 0.48	/	159.19***	26.36	Yes

k=Number of effect sizes; *N*=Number of teams examined; mean ES=weighted mean effect size; −95% CI=lower bound of the 95% confidence interval; +95% CI=upper bound of the 95% confidence interval; fail-safe *N*=number of nonsignificant studies that would be necessary to reduce the effect size to a nonsignificant value; *Q*=value of chi-square distributed homogeneity statistic *Q*; variance explained by S.E.=percentage of observed variance explained by sampling error.
Slash (/) indicates that no hypotheses were formulated with regard to different conflict types and performance so no fail-safe Ns were calculated.
†$p<0.10$; *$p<0.05$; **$p<0.01$; ***$p<0.001$.

investigating the relationship between cultural diversity and *communication effectiveness* yielded a non-significant mean effect size of −0.03, which suggests that cultural diversity does not affect communication effectiveness. Thus Hypothesis 1c is not supported. In the meta-analysis of team *satisfaction* measures, a significant mean effect size of 0.15 ($p<0.01$) was obtained. However, the effect was not in the predicted direction, suggesting that cultural diversity is associated with higher, not lower, levels of satisfaction. Finally, the mean effect size of −0.07 obtained in the meta-analysis of *social integration* measures was statistically significant ($p<0.05$) and in the expected direction, which suggests that cultural diversity has a negative influence on the affective dimension of social integration assessed in this study. Thus Hypothesis 1e is supported.

Collectively, the main effect analyses suggest that cultural diversity increases task conflict and reduces social integration among team members. These process losses may be offset by process gains in the form of enhanced creativity and, counter to our hypothesis, satisfaction with the team process.

Impact of Level and Type of Cultural Diversity

We conducted a series of moderator analyses to test whether different levels (surface-level vs deep-level) and types of cultural diversity (cross-national vs intra-national) affect team outcomes in different ways. Exploration of moderators is indicated when the homogeneity *Q* statistic is significant (Hedges & Olkin, 1985). This criterion was met for all five outcome variables, as shown by Table 2. Moderator analysis should not be performed if the number of effect sizes per subgroup is less than three (Dalton et al., 2003; Lipsey & Wilson, 2001); therefore not all hypotheses could be tested.

Subgroup analyses revealed that the results of studies that examined the effect of surface-level cultural diversity on team outcomes did not differ significantly from the results of studies that examined deep-level diversity, except for communication effectiveness (see Table 3). Studies assessing surface-level attributes found a negative relationship between cultural diversity and communication effectiveness, whereas studies measuring deep-level attributes found a positive relationship. Thus Hypothesis 2c is supported, but Hypotheses 2b and 2e are not supported (Hypotheses 2a and 2d could not be tested).

With regard to type of cultural diversity, we were able to conduct subgroup analyses only for the two hypothesized variables of conflict and social integration. The results showed no significant differences between studies that examined the effects of cultural diversity in a single-country setting (i.e., intra-national diversity) and the results of studies that used multinational samples (i.e., cross-national diversity). Thus Hypotheses 3b and 3e are not supported.

Table 3 Results of subgroup analyses[a]

Outcome measure	*Subgroups*	*Z*	*k*	*N*	*Mean ES*	*−95% CI*	*+95% CI*	*Q*	*Moderation indicated*
Level of cultural diversity									
Conflict	Surface level	0.42	16	775	0.08*	0.00	0.15	32.90**	Yes
	Deep level		5	318	0.05	−0.07	0.16	11.33*	Yes
Communication effectiveness	Surface level	2.50*	5	170	−0.16*	−0.32	0.00	7.15	No
	Deep level		3	130	0.14†	−0.04	0.32	2.77	No
Social integration	Surface level	0.94	14	735	−0.06†	−0.14	0.01	21.36†	Yes
	Deep level		5	363	0.00	−0.10	0.11	18.30*	Yes
Type of cultural diversity									
Conflict	Intra-national	0.11	3	168	0.04	−0.11	0.20	9.03*	Yes
	Cross-national		6	362	0.03	−0.08	0.13	23.17***	Yes
Social integration	Intra-national	0.14	5	364	0.01	−0.10	0.11	2.54	No
	Cross-national		6	404	0.00	−0.10	0.10	19.08**	Yes
Task complexity									
Conflict	Low	2.38*	4	208	−0.10	−0.24	0.04	5.05	No
	High		12	628	0.09*	0.01	0.17	23.13*	Yes
Social integration	Low	0.42	11	664	−0.04	−0.12	0.03	26.10**	Yes
	High		5	297	0.07	−0.19	0.04	9.27*	Yes
Team size									
Conflict	Small	0.57	9	507	0.12**	0.03	0.21	19.19*	Yes
	Large		8	447	0.08	−0.02	0.17	13.05†	Yes
Communication effectiveness	Small	2.82**	3	93	0.14	−0.07	0.36	2.49	No
	Large		4	134	−0.27**	−0.45	−0.09	0.81	No
Satisfaction	Small	2.58**	3	127	0.28**	0.10	0.46	2.91	No
	Large		3	163	−0.04	−0.20	0.12	0.28	No
Social integration	Small	1.14	7	385	−0.09†	−0.19	0.02	12.85*	Yes
	Large		6	394	−0.17*	−0.27	−0.07	2.66	No
Geographic dispersion									
Conflict	Co-located	2.53*	19	1054	0.10*	0.04	0.16	38.07**	Yes
	Dispersed		3	127	−0.14	−0.32	0.04	0.56	No
Communication effectiveness	Co-located	1.48	5	187	0.04	−0.11	0.19	6.41	No
	Dispersed		3	113	−0.15	−0.34	0.05	7.35*	Yes
Social integration	Co-located	2.50*	16	1096	−0.08**	−0.14	−0.02	29.36*	Yes
	Dispersed		5	207	0.11	−0.03	0.25	4.27	No
Team tenure									
Conflict	Up to 20 h	1.88*	7	381	0.00	−0.10	0.10	15.45*	Yes
	>20 h		14	755	0.12***	0.05	0.20	22.21†	Yes
Communication effectiveness	Up to 20 h	2.08*	3	132	0.12	−0.06	0.29	4.06	Yes
	>20 h		5	168	−0.14†	−0.30	0.02	7.50	Yes
Satisfaction	Up to 20 h	1.46	5	316	0.19**	0.07	0.30	14.60**	Yes
	>20 h		4	109	0.02	−0.18	0.22	0.46	No
Social integration	Up to 20 h	0.60	4	292	−0.12*	−0.23	0.00	18.43***	Yes
	>20 h		17	1045	−0.07*	−0.13	−0.01	21.46	No

[a]Moderator analyses could not be conducted for all outcome categories, as the number of studies providing the necessary information to test moderator hypotheses sometimes did not meet the minimum requirement of three effect sizes per subgroup.
Z=*Z* value of critical ratio test for the comparison of subgroups; *k*=number of effect sizes; *N*=number of teams examined; mean ES=weighted mean effect size; −95% CI=lower bound of the 95% confidence interval; +95% CI=upper bound of the 95% confidence interval; *Q*=value of chi-square distributed homogeneity statistic *Q*.
†$p<0.10$; *$p<0.05$; **$p<0.01$; ***$p<0.001$.

Moderating Effects of Context

The moderator hypotheses regarding the influence of *task complexity* could be tested for only two variables: conflict and social integration (Hypotheses 4b and 4e). The results of critical ratio tests presented in Table 3 suggest that task complexity moderates the relationship of cultural diversity with conflict, but not the relationship with social integration. Cultural diversity is positively associated with conflict when task complexity is high, and unrelated to conflict when task complexity is low. Thus Hypothesis 4b is supported, but Hypothesis 4e is not supported.

We were able to test the moderating effect of *team size* on conflict, communication effectiveness, satisfaction, and social integration (Hypotheses 5a–5d). The results of subgroup analyses suggest that team size moderates the effects of cultural diversity on communication effectiveness and satisfaction. As the team size increases, cultural diversity is associated with reduced communication effectiveness and satisfaction, providing support for Hypotheses 5b and 5c.

With regard to *team dispersion*, the moderator analyses suggest that cultural diversity tends to be associated with higher levels of conflict and lower levels of social integration when teams are co-located than when they are dispersed. However, we found no moderating effect of team dispersion on communication quality. Thus Hypotheses 6b and 6e are supported, but Hypothesis 6c is not supported.

Finally, the moderating effect of *team tenure* could be tested for four outcome variables: conflict, communication effectiveness, satisfaction, and social integration (Hypotheses 7b–7e). Contrary to Hypotheses 7b and 7c, the results suggest that cultural diversity is associated with higher levels of conflict and less effective communication in teams that have spent more time together compared with teams with less tenure. No evidence of moderating effects were found for satisfaction and social integration. Thus Hypotheses 7d and 7e are not supported.

Impact of Study Design and Sample Characteristics

Each study was coded for research design and sample characteristics, which served as controls. Subgroup analyses revealed that the study setting and the geographic region where the research was carried out influenced the study results.[2] The results of studies that were conducted in *laboratory or educational* settings and based on student samples did not differ significantly from the results of *field* studies based on non-student samples, except for social integration outcomes. Cultural diversity tends to be negatively associated with social integration in studies that use student samples (mean ES=−0.11, n=942), but not in field studies that use samples of managers or employees (mean ES=0.01, n=440).

We controlled for the *geographic region* where the research was carried out by comparing the results of studies that were conducted in North America with the results of studies that were performed in other parts of the world. Subgroup analyses suggest that location seems to matter, but only for studies focusing on conflict as the dependent variable. Studies conducted outside North America tend to find a positive relationship between cultural diversity and conflict (mean ES=0.21, n=265), but studies carried out in North America tend to find no significant relationship (mean ES=0.04, n=847).

DISCUSSION

Previous research into the role of cultural diversity in teams has yielded inconclusive, and often contradictory, results. To reconcile past findings we developed a model of the mechanisms through which cultural diversity affects team outcomes, and tested it using meta-analytic techniques. The overall findings confirmed that cultural diversity was unrelated directly to team performance. Our meta-analysis explored the nature of this relationship more closely, looking at intermediate outcomes and moderators of the relationship between cultural diversity and team outcomes.

Summary of Results

Cultural diversity raises barriers to convergence, and increases the forces of divergence in teams. Since convergence and divergence are associated with different types of process losses and process gains, we hypothesized that diversity would have specific mixed effects. The meta-analytic findings, summarized in Figure 2, suggest that cultural diversity is clearly associated with divergence. More diverse teams experienced the process gain of increased creativity, but also the process loss of increased conflict. Cultural diversity's association with convergence was less clear. More diverse teams experienced the process loss of lower social integration. But, contrary to our hypotheses, culturally diverse teams did not experience less effective

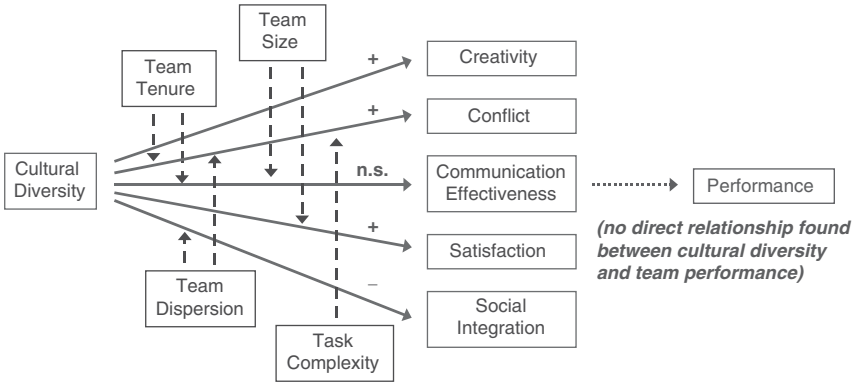

Figure 2 Impact of cultural diversity on team outcomes: summary of results.
+, −, n.s. indicate positive, negative, and non-significant main effects.

communication, and they had higher satisfaction than homogeneous teams.

It is important to note that the mean effect sizes obtained in the main effect analyses were generally small (Cohen, 1977). Thus a large proportion of the variance of the dependent variables remained unexplained, suggesting the importance of considering moderator variables (Leung et al., 2005). The use of meta-analysis to detect moderating effects not testable in the primary studies led to the study's most interesting results and substantially larger effect sizes than those obtained in the main effect analysis.

Specifically, we looked at contextual influences, such as the nature of the task and structural aspects of the team (team size, team dispersion, and team tenure), as potential moderators. Of the 13 moderator relationships we were able to test, seven showed significant moderator effects. Culturally diverse teams had more conflict if the task was complex, if they were co-located rather than dispersed, and if they had longer tenure. These teams had less effective communication if they were larger in size, and if they had more time together. Satisfaction was lower in culturally diverse teams that were larger, and social integration was lower in teams that were co-located. Some of these effects were counter to our hypotheses, and will be discussed further below.

To explore the nature of cultural diversity, we examined whether the level (surface vs deep level) or type of cultural diversity studied (cross-national or intra-national) was associated with different results. We found only one significant difference related to the level of culture examined. When culture was measured using surface-level indicators, we found a negative relationship between cultural diversity and communication effectiveness; however, when culture was measured using deep-level indicators, cultural diversity was positively associated with communication effectiveness.

Research and sample characteristics were also associated with different results. Studies that were conducted in laboratory or educational settings and based on student samples tended to find a negative relationship between cultural diversity and social integration, whereas field studies based on non-student samples found no relationship. Finally, in studies conducted outside North America, cultural diversity was generally associated with more conflict, whereas in studies conducted in North America no significant relationship with conflict was observed.

In summary, we found three complementary explanations for a "zero-direct-effect" relationship between cultural diversity and team performance: positive and negative effects on intermediate outcomes; moderated relationships with intermediate outcomes; and effects of study design characteristics.

Meta-analytic Results Raise Questions

Our theoretical model was founded on literature on diversity, culture, and teams, and the results mostly supported the general model. However, unexpected findings raised important questions about culturally diverse teams, and raised questions for further examination.

What level and type of culture? Culture is complex, and operates at many levels. While country or ethnic origin is often used as a proxy for an individual team member's culturally oriented values, the two levels may actually capture different aspects of diversity. Surface-level indicators may

be associated most with similarity-attraction and social identity effects, and deep-level indicators with information-processing and value incongruence effects. We were therefore surprised that level of culture was associated with only one difference in effect. Practically, then, it seems that surface-level indicators do serve as a proxy for deep-level indicators. This is consistent with a recent qualitative review of the work group diversity literature (Van Knippenberg & Schippers, 2007), which found that the distinction between diversity types (e.g., readily observable demographic attributes vs deeper-level attitudes and values) was not associated with differential relationships with outcome variables.

We also examined the effects of cross-national vs intra-national diversity in teams. We found no significant differences for the outcomes assessed in this study. It seems likely that cross-national and intra-national diversity affect team processes in different ways, as our theoretical analysis suggests; however, the meta-analytic findings show that the effect sizes are the same. This supports the conclusion that "intra-national variations can be as significant as cross-national differences" (Tung, 2008: 41).

These results highlight the importance of specifying culture more carefully in future research. We should not assume that intra-national and cross-national diversity are the same, simply because the patterns of effect sizes at the team level are similar. Even the simple categorization of surface and deep level, which is ubiquitous in the literature, may be misleading. Deep-level cognitive differences may affect information processing, whereas deep-level value differences may affect similarity-attraction and social categorization. To capture the complexity of the relationship between cultural diversity and team processes and outcomes, a more fine-grained analysis of cultural diversity attributes (e.g., ethnicity, race, values) and the mechanisms by which they affect team outcomes is needed.

Higher satisfaction in culturally diverse teams. The meta-analysis found that culturally diverse teams had higher team satisfaction than culturally similar teams. This finding contradicts the general research on diversity, but the number of teams examined, the fail-safe *N* value, and the strength of the effect size suggest it is robust. The phenomenon is worth exploring further, since it suggests that members of multicultural teams may be highly motivated to work together, and perhaps this motivation can help to overcome the potential process losses.

Cultural diversity and communication effectiveness. Counter to our hypothesis, and to previous research on diversity in general, cultural diversity had no effect on communication effectiveness. We found two moderators of the relationship. As predicted, in larger teams, cultural diversity was associated with decreased communication effectiveness. Counter to our prediction, cultural diversity was associated with decreased communication effectiveness in teams with longer tenure. Furthermore, as described above, communication was more effective if diversity was measured using deep-level attributes rather than surface-level ones. The combination of these results is difficult to interpret, and may be related to combinations of moderators, as discussed below.

Dispersed multicultural teams have less conflict and more social integration than co-located teams. This pair of findings suggests we need to understand much more about how diverse teams work when they are geographically dispersed. The lower level of conflict in multicultural dispersed teams may represent an avoidance of engaging differences in views, or team members may simply have fewer chances to experience conflict related to value incongruence. It would also be worthwhile to explore the role of expectations in shaping these outcomes. Members of multicultural dispersed teams may be more attentive to cultural diversity, and more inclined to resolve conflicts constructively.

Team tenure associated with more conflict and less effective communication. We suggest that this counter-intuitive result is due to the effect of multiple moderators in combinations. For example, teams with longer tenure might also be teams with more complex tasks. The longer time working together on these complex tasks may give culturally diverse teams an opportunity to get into deeper and more difficult issues, for which they might experience task conflict and less effective communication. It is also possible that process losses due to diversity's effects may accumulate over time, particularly in teams experiencing significant strain. Given the techniques of meta-analysis, and the small number of studies using each moderator, we could not examine these ideas further, but they are important for future research.

Are study characteristics more meaningful than we thought? The fact that the setting of the study – laboratory or field, and North America or

else where – was associated with some differences in results suggests that the context may be part of what is being researched. Researchers should pay more attention to how study characteristics may be related to the cultural dynamics of the research being conducted.

Future Research Agenda

The combination of findings supporting the general model and unexpected findings helps us develop a proposed research agenda. First, research should continue to examine areas in which we can fine-tune our understanding of processes. Clearly this means studying moderators more, and more systematically. Dispersion, team tenure, task complexity, and study setting affect the relationship between cultural diversity and team processes. Our unanticipated findings suggest that combinations of moderators affect teams in important ways. Rather than continue to examine the effects of cultural diversity and single moderators, we suggest that future research should examine the most critical combinations of moderators. This will require more complex field research and large sample sizes.

With one exception (team tenure), all moderators examined in this study were structural rather than process oriented: consequently, they capture only static aspects of teams. However, the management-oriented literature on diversity is filled with examples of diversity having a positive or negative effect, depending on *how* the diversity is managed (e.g., Adler, 2002; Stahl, 2006, 2008; Thomas & Ely, 1996). Research has not yet been able to isolate these process-oriented moderator variables. Future studies should focus more on such variables as the level of boundary-spanning activities, the amount of support for informal community building, the style of the team leader (e.g., Gratton & Erickson, 2007), or processes for paying attention to cultural dynamics themselves (Thomas et al., 2008).

Finally, as suggested by the fact that the setting of the study was in some ways associated with different results, the omnibus and distal contexts (Joshi & Roh, 2007) in which multinational teams operate deserve further research attention. For example, the effects of certain diversity attributes may be more pronounced in some cultures and negligible in others. Demographic attributes such as racio-ethnicity play a different role in historically diverse countries such as Canada or the US than in countries such as Germany or Japan. Future research would benefit from a closer examination of whether certain diversity attributes are more salient in some cultural contexts than in others.

CONCLUSION

Based on the results of a series of meta-analyses, we conclude that cultural diversity in teams can be both an asset and a liability. Whether the process losses associated with cultural diversity can be minimized and the process gains be realized will ultimately depend on the team's ability to manage the process in an effective manner, as well as on the context within which the team operates. Future research endeavors should focus on the mechanisms through which cultural diversity affects team dynamics and performance, and on the conditions that help or hinder effective team performance.

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NOTES

[1]A synopsis of study characteristics, samples, measures, scale reliabilities, and effect sizes for the studies included in the meta-analyses is available from the authors.

[2]The detailed results of the subgroup analyses can be obtained from the authors.

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