# Expertise Dissensus:
# A Multi-level Model of
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# about Member Expertise

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**ABSTRACT**

Why are some teams more effective than others at using their members' expertise to achieve short-term performance and longer term developmental benefits? We propose that a critical factor is expertise dissensus—members' differing perceptions of each other's level of expertise. We argue that performance hinges on how team members perceive all others' expertise—not just how they view the most expert team member—and that even latent disagreement about how much each person can contribute will undermine individuals' development and teams' capacity building. We develop and test a multi-level model of expertise dissensus, finding that it hampers team coordination, increases task and relationship conflict, and lowers all dimensions of team effectiveness: team performance, team viability, and individual member development.

Keywords: Dissensus, conflict, coordination, expertise perceptions, multi-level, team effectiveness

Organizations are increasingly dependent on original knowledge to create value, and many organizations have turned to team-based approaches to foster innovation and generate high performance. Delivering superior performance requires teams to make full use of each member's expertise, which often proves remarkably difficult (Bunderson, 2003; Gardner, 2012). Sustaining longer-term competitive advantage, however, requires even more: firms need to continuously develop the capabilities of their individuals and teams. Because knowledge workers learn through doing and thrive when they have the opportunity to apply their knowledge (Lowendahl, 2005), ensuring that their expertise gets considered and used is vital for development (Hackman, 2002). Enhancing teamwork capabilities rests on experimenting and integrating members' knowledge to build capacity to learn from their experiences, which similarly requires that all members' contributions be shared and used (Edmondson, 2012). Yet the question of why some teams are more effective than others at using their members' expertise to achieve short-term performance and longer-term developmental benefits remains a core puzzle in small groups research (Hackman, 2011; Hackman & Katz, 2010).

We propose that members' differing perceptions of each other's level of expertise is critical to explaining this puzzle. These days, because team membership changes frequently and many team members are simultaneously part of several different teams (O'Leary, Mortensen, & Woolley, 2011), members have less and less opportunity to establish shared perspectives on the task, their context, and each other (Wageman, Gardner & Mortensen, 2012). Moreover, teams increasingly span disciplinary and cultural divides, so that members have different ways of valuing each other's skills (Cheng, Chua, Morris, & Lee, 2012). These trends suggest that, more than ever, teams face challenges in reaching a collective understanding about how to value and use their members' expertise, which is essential for short-term performance and long-term

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capability development .

Despite its increasing prevalence, small groups research has so far largely neglected the study of teams' differing expertise perceptions, focusing instead on the effects of teams' shared perception of expertise (Bunderson, 2003; Gardner, Gino & Staats, 2012; Littlepage, Robison, & Reddington, 1997). But an emerging body of research shows that teams' perceptual disparity on other group constructs such as conflict (Jehn, Rispens, & Thatcher, 2010) and trust (De Jong & Dirks, 2011) has significant performance consequences, suggesting that revisiting assumptions of sharedness produces important theoretical advances. Acknowledging potential disparity between the way team members perceive one another's level of expertise similarly calls for further theorizing and investigation, particularly as it affects not only short-term performance but also long-term development.

Small-groups research linking knowledge recognition and performance has often concluded that teams under-use their members' knowledge because the members fail to recognize who amongst them has the highest level of task expertise. For example, both transactive-memory research (Lewis, 2004) and expert-influence research (Baumann & Bonner, 2004; Littlepage, Schmidt, Whisler, & Frost, 1995) focus on teams' identification of their member with the best subject-matter knowledge. Although identifying and deploying the top expert is important, recognizing and using the expertise of remaining team members is also critical; otherwise the team fails to use the full amount of expertise that each member brings to bear. Reconceptualizing the expertise-recognition challenge as "how much each member knows" rather than "who knows the most" would advance our understanding of why some knowledge-worker teams are more effective than others at fully leveraging their members' expertise.

This paper addresses these issues by introducing the concept of expertise dissensus: the opposite of consensus, dissensus refers to differences of opinion. We define expertise as specialized knowledge that is acquired through training and experience; "expertise dissensus" therefore represents the variance in team members' perceptions of one another's level of task-relevant, specialized knowledge. We develop theoretical propositions to explain how expertise dissensus affects team processes and team- and individual-level outcomes and we test our multi-level model in a field sample of 72 knowledge-worker teams from a global professional service firm.

**EXPERTISE IN TEAMS**

Literature relevant to expertise perception within teams can be found in two mature lines of research: transactive memory systems and expert influence. The transactive memory systems approach focuses on expertise identification and proposes that teams with a shared cognitive directory of "who knows what" are better able to use the team's knowledge (Hollingshead, 2001; Wegner, 1987). Fundamental to a transactive memory system are each members' specialization in a certain body of knowledge, and agreed-upon perceptions about the specializations. Empirical studies in both the lab (Lewis, Lange, & Gillis, 2005; Liang, Moreland, & Argote, 1995) and the field (Austin, 2003; Lewis, 2003) have linked transactive memory systems to positive performance. The expert influence research stream is concerned with whether and how groups identify their most expert member in a given domain and how much influence that expert wields. Findings indicate that groups have a hard time collectively and accurately identifying their most expert member, and instead assume that their most dominant members are the most expert (Baumann & Bonner, 2004; Libby, Trotman, & Zimmer, 1987; Littlepage et al., 1995).

These two research streams support two conclusions. First, expertise perceptions are essential to a team's ability to use its members' expertise to achieve higher performance. Second,

team members often struggle to accurately recognize one another's expertise. These conclusions underscore the importance of continued research on the impact of expertise perceptions on team outcomes.

Research from these two perspectives, however, also highlights two assumptions that warrant closer examination. The first assumption is that the biggest challenge for a team is to identify who knows *the most* in a particular knowledge domain and to grant him or her the most influence in getting the job done. This assumption made sense in the lab settings where research on expertise recognition and influence was first conducted. Lab-based teams often are manipulated so that there exists an objectively-correct subject-matter specialist, and the tasks are designed so that using or deferring to that expert leads to better performance. In recent years, research on transactive memory has extended into field settings (e.g., Austin, 2003; Yuan, Fulk, Monge, & Contractor, 2010), but retained this underlying theoretical assumption (Lewis & Herndon, 2011).

Many organizational teams, however, face at least one of two circumstances in which the *absolute* expert may not be the key to group effectiveness. First, the team member who is most expert for several subtask areas does not have time to do them all. Second, if teams value members' learning, then assigning a person with less expertise would be preferred. In these situations, identifying the person with the *optimal* degree of knowledge is different than identifying the team's top expert, and it requires that teams recognize each member's degree of expertise.

A second assumption of expertise research that calls for reexamination is that perceptions of expertise are shared among team members. A transactive memory system by definition requires team members to have a shared directory of one another's expertise domains, and empirical research typically averages measures of the transactive memory (or its dimensions) to

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the team level (Lewis, 2004). A group might fully agree about domains of expertise yet disagree about how much expertise different members hold in each domain. For example, a team might agree that both Daniel and Anna are expert negotiators, but some members might think Anna is better than Daniel, while others think the opposite. Similarly, expert influence research operationalizes perceptions by aggregating individual expertise ratings to the group mean or by asking the group as a whole to identify its expert (e.g., Bottger, 1984; Littlepage, Robison, & Reddington, 1997). Given how difficult it is to recognize a group's actual top expert (Libby et al., 1987; Littlepage et al., 1995), we suggest that it is even more difficult to accurately distinguish between all team members, which will result in teams lacking true consensus about one another's expertise levels.

Emergent organizational research, too, suggests that it is worthwhile to reexamine the general assumption of shared perceptions within teams (DeRue, Hollenbeck, Ilgen, & Feltz, 2010; Jehn, Rispens, & Thatcher, forthcoming). Recent findings on perceptions of conflict (Jehn et al., 2010), team satisfaction (Dineen et al., 2007), and team learning environments (Ely, Padivic, & Thomas, under review) show that divergence of perceptions traditionally assumed to be shared at the team level has important implications for group outcomes.

Finally, most research on expertise recognition has focused on how it affects one dimension of team effectiveness—performance, as measured by indices of task quality and accuracy, speed of work, and quality of decision making—with scant attention to the other dimensions of team effectiveness, namely team viability and member development (for an exception, see Lewis et al., 2005). But some research suggests that expertise perceptions may indeed affect team viability and member development as well as team performance. For example, research on interpersonal congruence suggests that how one is perceived by one's teammates can affect one's feelings of coherence and control (Polzer, Milton, & Swann, 2002),

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which are important for learning, growth, and development (e.g. Lefcourt 1966; Ryan & Deci 2000).  Research on role ambiguity indicates that members' being inconsistently perceived predicts both group dissatisfaction and intragroup defensiveness (Smith, 1957), both of which undermine team viability.

In sum, research on expertise perception in teams calls for further theorizing and empirical investigation of (a) team tasks that are complex and interdependent enough to require consideration of multiple levels of expertise and not just the top expert, (b) the possible disparity of expertise perceptions, and (c) the likelihood that expertise perceptions affect team viability and member development as well as team performance.  To address these issues, we introduce the concept of expertise dissensus.

**EXPERTISE DISSENSUS**

At the group level, expertise dissensus is a configural team property (Chan, 1998; Kozlowski & Klein, 2000) that captures the extent to which team members hold diverging perceptions about members' levels of expertise.  The opposite of consensus, dissensus refers to differences of opinion (Merriam-Webster, 2012).  Expertise is specialized knowledge that people acquire through training and experience (Hackman, 1987), and "expertise dissensus" in teams therefore refers specifically to differences in beliefs about members' levels of specialized knowledge.  Such diverging perceptions of expertise may develop based on members' different opportunities to observe certain teammates' work or to learn about their knowledge-based reputation, or may be based on the perceivers' incoming biases about how characteristics like race or gender signal competence (Bunderson, 2003).  Team dissensus can vary from low to high, with low dissensus describing a situation in which team members have very similar perceptions about each team member's expertise and high dissensus describing a situation in which team members have very dissimilar perceptions about members' expertise levels.

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At the individual level, expertise dissensus refers to the perceptual dispersion surrounding a particular target member's level of expertise, including the target's self-views and all his teammates' views of him. For example, if Daniel is a member of a four-person team, individual expertise dissensus would capture how much Anna, Barbara, Charles, and Daniel himself collectively disagree about Daniel's expertise level. Thus, unlike the construct of interpersonal congruence, which captures differences strictly between a member's self-views versus others' views of him on a range of characteristics (Polzer et al., 2002), individual expertise dissensus captures perceptual disparity amongst all team members' perceptions of one given individual.

We acknowledge that in certain team situations, the perceptions of a particular subset of members may have greater effect on team functioning. For example, in a co-managed team where only the two leaders are responsible for assigning tasks and allocating resources, coordination will be particularly problematic if those leaders' perceptions of team members' expertise diverge. Where members are engaged in interdependent tasks, however, as is the case in many organizational teams, daily interactions rely on all members' perceptions of each other's expertise. For example, people need to decide how much to heed others' advice and who on the team might need extra help. Widespread expertise dissensus is therefore likely to interfere with teams' effective functioning and outcomes, and we therefore focus our theorizing on all team members' expertise perceptions.

**MULTI-LEVEL MODEL OF EXPERTISE DISSENSUS**

**Effects of Expertise Dissensus on Team-level Processes**

We examine the effects of expertise dissensus on three essential team processes—team coordination, task conflict, and relationship conflict—that are particularly relevant in contexts of high interdependence (Jehn, 1995; Wageman, 1995).

***Expertise Dissensus and Team Coordination***. Team coordination involves members of interdependent task groups using strategies and particular behaviors to align their actions and using knowledge and expertise to achieve their common goal (McGrath, Arrow, & Berdahl, 2000). Coordination is recognized as a distinct aspect of team activities (Gladstein, 1984) and includes behaviors such as developing shared protocols, synchronizing task components, and engaging in real-time information or task hand-offs. Coordination can take place explicitly or implicitly (Rico, Sanchez-Manzanares, Gil, & Gibson, 2008) and when it goes well, it improves team outcomes by making the best use of each member's work (Brannick & Prince, 1997).

Expertise dissensus is likely to weaken team coordination in two main ways. First, it challenges teams' ability to appropriately allocate tasks and resources to members with optimal levels of expertise. It is unrealistic for the person with most expertise to complete all tasks, and disparate views about members' expertise levels hamper optimal matching among remaining tasks and members. Further, when team members hold differing views of one another's expertise, they are likely to make different assumptions about others' task responsibilities and therefore provide inconsistent information and resources to team members.

Second, expertise dissensus diminishes teams' collective ability to weight members' contributions appropriately. When multiple members offer opinions about the same issue, team members need to decide how much to heed each contribution (Hollenbeck et al., 1995). When members disagree about each other's relative expertise, they are likely to weight each other's contributions differently and could end up following contradictory advice. For example, during a team meeting, Anna, Barbara, Charles, and Daniel may discuss how to best communicate with their client about a recurring sensitive topic, and each has a different view. Because Daniel perceives Anna as having the most expertise, followed by Barbara, Charles, and himself, Daniel would give the most weight to Anna's inputs, successively less to Barbara's, Charles's, and his

own inputs [A-B-C-D].  In contrast, however, if Charles perceives Barbara as having the most

expertise, followed by Charles, Daniel, and Anna, respectively [B-C-D-A], then he may leave the

meeting with quite a different conclusion than Daniel.  Unless teams explicitly recognize and

resolve the discrepancies, these differences may lead Daniel and Charles to interact with the

client in inconsistent and uncoordinated ways.

Expertise dissensus can be an invisible problem. Even when team members agree on the

optimal level of expertise for a particular subtask, they may still unknowingly disagree about

*who* has the necessary level of expertise, which will undermine coordination.

Hypothesis 1 (H1): *Teams with greater expertise dissensus experience lower team*

*coordination.*

***Expertise Dissensus and Task Conflict***. Task conflict arises when team members

disagree on substantive issues such as opinions, ideas, and labor distribution (Jehn, 1995).  Task

conflict can center on strategy and tactics (Parry, Song, & Spekman, 2008) and can manifest as

arguments over which way to accomplish the group's task (DeChurch & Marks, 2001).

Expertise dissensus may generate or exacerbate task conflict through disputes over roles,

deviation from expected procedures, and lack of an agreed-upon expert to resolve disputes.

First, disagreement about expertise levels may generate conflicting expectations among team

members about their own and each other's roles.  People are likely to seek out roles that best

match their self-perceived levels of expertise and will expect others to do the same (Swann,

Rentfrow, & Guinn, 2003).  Expertise dissensus precipitates task conflict when more than one

member vies for the same task, when no one sees himself or herself as the right person for a task,

or when team members expect different people to be responsible for the same task.  For example,

on a project about the cultural appropriateness of a client's product, all four team members may

agree that the routine statistical analyses should go to the two members who are least expert,

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freeing the more-expert members to interpret results and communicate with the client. However, if Anna thinks that Barbara and Charles are the two least expert members, while Barbara thinks that Charles and Daniel are the two least expert members, expectations about who actually does what job may conflict when it comes time to do the work. Differing perceptions of expertise levels and roles can also create tension about what information to include in the problem-solving process—an indicator of task conflict (Jehn, Greer, Levine, & Szulanski, 2008).

Second, expertise dissensus may generate team conflict if members' behaviors appear to deviate from task procedures. For example, even if Anna believes she has acted according to task procedures and in line with the required expertise levels by asking Daniel to communicate the team's results with their client, the rest of the members (Barbara, Charles, and Daniel) may view Anna's behaviors as inappropriate if they assess Daniel's expertise differently from Anna. If this happens often enough, Barbara, Charles, and Daniel may conclude that Anna has a different idea about how the task should be done, when in fact everyone agrees on how the task should be done but not on who is optimally qualified to do it.

Finally, a team's task conflicts can often be resolved by deferring to its most expert member (Groysberg, Polzer, & Elfenbein, 2011). But if there is disagreement about which member that is, then disputes may be longer, more disruptive, and harder to settle.

Hypothesis 2 (H2): *Teams with greater expertise dissensus will experience more task conflict.*

***Expertise Dissensus and Relationship Conflict.*** Relationship conflict typically arises from factors not directly related to the team's task—personal taste, incompatible personalities, and opposing values (Jehn, 1995)—but disagreement among team members about one another's levels of task-related expertise is likely to generate relationship conflict. Feeling that one's expertise has been underestimated is particularly likely to threaten one's ego and self-identity

(Tajfel & Turner, 1986).  Expertise dissensus can cause task assignment to seem capricious to some, setting the stage for rivalry and competition (Ravlin, Thomas, & Ilsev, 2000).

Hypothesis 3 (H3): *Teams with greater expertise dissensus will experience more relationship conflict.*

**Effects of Expertise Dissensus on Team Effectiveness**

Expertise dissensus strikes at the heart of organizational teams, which exist to integrate and coordinate individuals' expertise for collective outcomes. We predict it will affect all three of Hackman's (1987) widely used dimensions of team effectiveness: team performance, team viability, and member growth and development.

*Expertise Dissensus and Team Performance*. Team performance is high when "the productive output of the team (that is, its product, service, or decision) meets or exceeds the standards of quantity, quality, and timeliness of the team's clients—the people who receive, review, or use the output" (Hackman, 2002: 23).  Team performance depends on applying each member's knowledge to the task (Hackman, 2002), and expertise dissensus lowers the probability that teams will be able to accurately match people with the task that they are optimally equipped to handle. Further, in interdependent task groups, performance is a function not only of members' individual talents but also of their ability to work together (Wageman, 2001). Because expertise dissensus is likely to disrupt a team's collaborative process, as we argued above, it is therefore likely to weaken it performance.

Hypothesis 4a (H4a): *Teams with greater expertise dissensus will perform more poorly.*

*Expertise Dissensus and Team Viability***.** Developing a team's capacity for effective future teamwork is another necessary marker of team effectiveness (Hackman, 2002).  Effective teams increase their viability by working together in ways that build their collective capability to determine appropriate task strategies, learn from experience, and identify and exploit

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opportunities. Because expertise dissensus hinders a team's ability to effectively assign tasks to the most appropriate member, as discussed above, it will undermine the task strategy aspect of viability. Especially if expertise dissensus is latent, it prevents people from being able to diagnose the root cause of their process failures, which means that they cannot learn from their experiences. Further, members' disagreement about whom to listen to reduces open communication, which also lowers team viability (Balkundi et al., Foo et al., 2006). For example, if one team member is regularly excluded from tasks for which she has relevant knowledge, it undermines opportunities for intrateam learning.

Hypothesis 4b (H4b): *Teams with greater expertise dissensus will exhibit lower team viability.*

***Team-level Mediation by Team Process Variables.*** A great deal of research has found positive effects of coordination and negative (albeit context-dependent) effects of task conflict and relationship conflict on team performance (for reviews, see De Dreu & Weingart 2003; see also Faraj & Sproull, 2000; Kanawattanachai & Yoo, 2007). Research also suggests a similar pattern of effects by these process variables on team viability (Balkundi, Barsness, & Michael, 2009; Harris & Barnes-Farrell, 1997). We predict that expertise dissensus impinges on team performance and team viability through its effects on coordination, task conflict, and relationship conflict.

Hypothesis 5a (H5a): *Team coordination, task conflict, and relationship conflict mediate the negative effect of expertise dissensus on team performance.*

Hypothesis 5b (H5b): *Team coordination, task conflict, and relationship conflict mediate the negative effect of expertise dissensus on team viability.*

***Expertise Dissensus and Individual Member Growth and Development.*** The third criterion of team effectiveness concerns individual members. Effective teams provide experiences that

contribute positively to individual growth and development (Hackman 1987, 2002), for example, by giving members opportunities to increase or broaden their skills and to see themselves as valuable contributing members.

Expertise dissensus dampens member growth and development because the target of disparate opinions may receive confusing messages and expectations from other members, feel that one's skills are being under- or over-estimated, and can be allotted too many or too few resources. For example, if Daniel is the target of highly disparate opinions, he is more likely to need to manage conflicting expectations from his teammates about how he prioritizes his time on different tasks, to spend energy sorting through information that was incorrectly handed-off to him, to manage feelings of inadequacy for ill-assigned tasks, and to manage teammates' expectations about how much time and support he will need to complete his tasks. Each of these are likely to increase one's uncertainty and psychological distress, lower one's morale, and make one feel less support from the team for one's own growth and development.

Hypothesis 6 (H6): *Team members whose expertise levels are more disagreed about will feel less support for individual growth and development.*

**METHOD**

**Research Setting**

The professional services sector is a rich setting in which to investigate the effects of expertise dissensus. We conducted our study in one of the global Big Four accounting firms that offers both audit and advisory services. Such professional service firms are widely viewed as the archetype of knowledge-intensive firms (Greenwood, Li, Prakash, & Deephouse, 2005; Starbuck, 1992).

Knowledge is both the raw material and the finished product in such firms, yet it is often very unevenly distributed among the members of a particular client-service project team (i.e., a

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group of consultants who interact with a client).  For example, a team may include an experienced consultant and a new employee assigned to the team as a chance to learn from the master.  In such teams, members are highly interdependent and it is important to know who has what level of expertise so that the correct members are involved in subtask discussions such as interpreting project findings or discerning whom at the client firm to approach for particular issues.  To create an integrated product in this setting, close team-level coordination is particularly important.

Studying project teams in consulting and accounting firms also has the practical advantage that many of the projects only last a few months, allowing researchers to follow a team through an entire project cycle.

**Research Design**

We conducted our study in both the consulting and audit divisions of  "AuditCo," one of the global Big Four accounting and business-service firms.

*Initial fieldwork.* For the initial phase of the field study, we conducted longitudinal case studies of six consulting and audit teams in order to develop a fine-grained understanding of professional-service project teams (data not reported here).  We also conducted 35 interviews in both the audit and consulting divisions of AuditCo in order to understand the context, team processes, and relevant outcomes; 16 of these interviews included pre-tests of the survey described below.

*Data collection and sample.* We empirically tested our set of hypotheses by focusing on AuditCo so that we could examine a range of both audit and consulting project teams while controlling for organization-level factors.  We sent a survey to 110 teams at AuditCo with the aim of assessing teams with a wide range of upcoming projects.

For each of the selected teams, a staffing manager provided a roster of the team members' names and email addresses. We considered members to be part of the "core" team if they were expected to devote at least 50 percent of their working time to the focal project. Each core team member received two Web-based surveys via email. The first, Survey 1, sent within the team's first three days on the project, assessed the degree to which team members recognized teammates' general and domain-specific expertise. The second, Survey 2, administered during the team's final week on the project, assessed expertise use. In general, people responded within four days of receiving the survey. The response rate (i.e., people who answered at least one survey) was 82 percent, for a total of 592 individuals, representing 104 teams (69 audit, 35 consulting). 500 people answered both surveys. Following standard practice in teams research (e.g., Gladstein, 1984), we included a team in our study only if at least half its members responded, applying an even more rigorous cut-off for teams with fewer than five members (requiring at least three valid responses). We disqualified five teams on this basis, leaving us with 99 teams.

For these 99 teams, respondents' mean age was 30 and 66 percent were male. Auditors had an average of three to four years of work experience at AuditCo, with just a slightly higher total average of years working since university. Consultants' average tenure at AuditCo was nearly two years, with about six years of post-university work experience. For both audit and consulting teams, at the start of a project, team members had previously worked with each other for less than two months on average.

The senior partner for each team was asked to provide the name of up to three key contacts at the client organization who could evaluate the team's performance. Key contacts were defined as those the partners considered to be one of the "main" clients (e.g., CFO, finance

director, or audit committee chair for audit teams; managing director, head of strategy, or business unit vice president for consulting teams).

To measure team performance, we conducted a client survey for 70 of the 99 teams. Data for two other teams were collected as part of AuditCo's formal client-service review process, conducted by a professional agency that added the exact questions from our surveys to its standard protocol and sent us the responses. We were unable to collect performance data from the remaining 27 clients for various reasons. To check for possible bias between the 72 teams that were included and the 32 that were excluded, we ran independent sample t-tests on the following variables (all for the team-level means): team-level expertise, team performance as rated by members on Survey 2, and team performance as rated by partners. Results confirmed that there was no significant difference between the two sets of teams.

**Measures**

**Expertise Dissensus**

*Individual expertise dissensus.* Measuring how much an individual is collectively disagreed about within a team involved three steps. First, to identify each member's perception of every team members' task-relevant expertise, we adapted Austin's (2003) measure for field-based project teams. On Survey 1, team members were asked to rate themselves and each of the other team members on five dimensions of expertise: "Identifying, assessing and managing risk areas," "Identifying opportunities to improve client's business," "High impact, professional communication skills (written and oral)," "Effective and efficient project management," and "Building strong relationships with clients." Rated along a five-point scale (from very little competence to great competence), these five dimensions were initially suggested in an interview with AuditCo's head of human resources because they are the core skills necessary for effective

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client service and the firm's criteria for individual evaluations at the end of each project.[1]  These

skills have long been recognized in the accounting literature as the five core skills necessary for

incoming auditors (Johnson, 1975).  The heads of both the audit and consulting divisions

confirmed the appropriateness of these dimensions for our study at AuditCo.

A factor analysis indicated that the five items loaded onto a single factor ($\alpha$=.91), and so

we averaged these five items by rater for each team member (including each member's self-

ratings on these five items).  We then calculated the standard deviation of raters' expertise

perception by each target team member, reflecting how much each team member was disagreed

about by his or her teammates.  Our measure thus captures team-level dispersion around the

average of each member's perceived expertise level, similar to past research using standard

deviation to measure team dispersion of perceptions about team conflict (Jehn et al., 2010),

monitoring (De Jong & Dirks, 2012) or satisfaction (Dineen et al., 2007).

*Team expertise dissensus.* We then calculated team-level expertise dissensus by taking

the mean of individual members' dispersion values by team, thus capturing the collective level of

disagreement about members' expertise levels.

**Team Process Variables**

We used principal components analysis (PCA) with varimax rotation to assess scale

reliability for each of the three team processes:  coordination, task conflict, and relationship

conflict.  Items for each scale loaded onto a single factor, with Cronbach's alpha statistics

reported below.  To assess discriminant validity between the three process scales, we entered all

13 items into a single PCA; again, all items loaded onto their respective scales.  (See Table 1 for

wording of all items and for details of factor loadings.)

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[1] The five criteria are also the building blocks of modules used in AuditCo's foundational training program; wording
on our surveys reflected descriptions used in AuditCo's training materials.

*Team coordination.* Survey 2 included five items focused on team coordination from Lewis (2004); for example, "Our team works together in a well-coordinated fashion" and "We accomplish the task smoothly and efficiently." Cronbach's alpha = .94.

*Task conflict.* Task-conflict data was collected in Survey 2, using Jehn's (1995) four-item scale. A sample item is "How frequently are there conflicts about ideas in your work unit?" Cronbach's alpha = .92.

*Relationship conflict.* Survey 2 presented four questions on intra-team relationship conflict, drawn from Jehn (1995). A sample item is "How much friction is there among members in your team?" Cronbach's alpha = .90.

---------- *INSERT TABLE 1 ABOUT HERE* ----------

**Team Effectiveness**

To examine the full effects of expertise dissensus on team effectiveness, we measured the three dimensions of team effectiveness separately (Hackman, 1987): team performance, team viability, and opportunity for individual member growth and development.

*Performance.* In line with Hackman's (1987) definition that performance be judged by the standard of meeting or exceeding client expectations, we measured performance by asking each team's client to evaluate it on seven performance items, such as "As the client, we were 100% satisfied with the outcome of this audit," "Based on this project's outcome (i.e., quality, robustness, timeliness, met expectations), our organization will almost certainly engage [AuditCo] for future audits," and "Based on our satisfaction with this year's audit, we are very likely to recommend [AuditCo] to other companies." Where applicable, items were phrased in terms of "audits" for audit teams and "projects" for consulting teams. Cronbach's alpha was .77.

*Viability.* We captured team viability in Survey 2 using three scale items: "This team would perform well together in the future," "If I had the choice of working on this team again, I

would do it," and "If we were assigned to another project, I am confident that this team would work well together." Cronbach's alpha = .87.

*Member growth and development.* In Survey 2, team members were asked through open-ended questions to describe what allowed them to do their best during the project or what prevented them from doing so. The responses were then coded by two independent raters for team conditions that facilitate or inhibit personal growth and development; for example, expressed as being able to contribute to the team. Inter-rater reliability was acceptably high ($\alpha$. >80; Krippendorff, 2004); disagreements were resolved by the first author. The coded scale ranged from 1 (very negative team conditions for personal growth and development) to 8 (very positive team conditions for personal growth and development.

**Control Variables**

*Team size*. Because a team's size may affect its ability to coordinate (Moreland, Levine, & Weingart, 1996), this variable was included as a control in all analyses.

*Project duration.* Because group longevity has been shown to affect group conflict (Pelled, Eisenhardt, & Xin, 1999), we included a control for the length of the project.

*Mean level of team human capital.* We controlled for mean level of team human capital to counter the likelihood that bad process and outcomes are simply the result of an insufficiently skilled and experienced team. This measure was calculated by averaging standard human-capital measures of education, qualifications, organizational tenure, and industry tenure (Hitt, Bierman, Shimizu, & Kochhar, 2001).

**RESULTS AND ANALYSES**

Table 2 shows the descriptive statistics and pair-wise correlations for all variables.

*---------- INSERT TABLE 2 ABOUT HERE ----------*

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We tested Hypotheses 1-5b using ordinary least squares regression. Table 3 shows the results for the effects of team-level expertise dissensus on team-process variables. Hypothesis 1, which predicted a direct negative effect of greater expertise dissensus on team coordination, was supported ($\beta$ =-.98, p<.01). Hypotheses 2 and 3, which predicted direct positive effects of expertise dissensus on task conflict and relationship conflict, were also supported ($\beta$ =1.32, p<.001; $\beta$ =1.09 p<.01).

Table 3 also shows the results for the effects of team-level expertise dissensus on team performance and team viability. Hypotheses 4a and 4b predicted direct negative effects of expertise dissensus on team performance and team viability. Both hypotheses were supported ($\beta$ = -1.08, p<.05; $\beta$ = -.96, p<.01). Hypothesis 5a and 5b predicted that these effects of expertise dissensus on team performance and team viability would be mediated by the team-process variables. Given the results for Hypotheses 1-3, one additional step is required to demonstrate full mediation (Baron & Kenny, 1986): When the mediating variable (coordination, task conflict, or relationship conflict) is entered into the regression of the dependent variable (team performance or viability) on the independent variable (expertise dissensus), the relationship between the dependent variable and the independent variable will drop to nonsignificance. Our results, displayed in Table 3, show that the relationship between expertise dissensus and team performance is fully mediated by relationship conflict ($\beta$ = -.45, p<.05) but not by coordination or task conflict, offering partial support for Hypothesis 5a. The relationship between expertise dissensus and team viability is fully mediated by coordination, task conflict, and relationship conflict ($\beta$ = .53, p<.001; $\beta$ = -.46, p<.001; $\beta$ = -.52, p<.001). Because we used a conservative mediation test (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002), we also tested the indirect effects of asymmetry on team performance and viability through our team-process variables, using bootstrap estimates to construct bias-corrected confidence intervals (Preacher &

Hayes, 2008). Our 95% confidence intervals were based on 1,000 random samples with replacement from the full sample, and the test confirmed the pattern of results found using the three-step method.

To test the effect of individual-level expertise dissensus on opportunities for individual growth and development (H6), we used hierarchical linear modeling (Raudenbush & Bryk, 2002), given the two-level structure of our data in this hypothesis. We found support for H6, which predicted that individual-level expertise dissensus would be significantly associated with lower perceived opportunities for individual growth and development ($\beta = -.61$, p<.05). Results for our modified model are shown in Figure 1.

---------- *INSERT FIGURE 1 ABOUT HERE* ----------

**Robustness Checks**

We conducted two additional sets of analyses to test our model's robustness. First, to rule out same-source bias between process variables and team viability measures, which were both acquired in Survey 2, we ran our OLS analyses using the same process variables (coordination, task conflict, and relationship conflict) but measured in Survey 1. All relationships were significant (again while controlling for team size, project length, and human capital): coordination ($\beta = .54$, p<.001), task conflict ($\beta = -.41$, p<.01), and relationship conflict ($\beta = -.38$, p<.001). We use process variables measured in Survey 2 for our final analyses because it is more important for our model to eliminate same-source bias between our focal construct—expertise dissensus—and the process and outcome variables than to eliminate same-source bias between process variables and outcome variables.

**DISCUSSION**

We set out to address a core puzzle in small groups research: Why are some teams are more effective than others at using their members' expertise to achieve short-term performance

and longer term developmental benefits? Most research on expertise recognition has assumed that a team's ability to identify its most expert member is the important factor for team performance and that team members tend agree in their perceptions of each other's expertise. We challenge the relevance of these assumptions for today's knowledge-worker teams: not only is it essential for teams working on complex, interdependent tasks to be able to recognize and use the full complement of members' resources, but it is also increasingly unlikely that all members will develop a consensus about others' expertise levels. We therefore introduce the concept of expertise dissensus as a first step toward building theory about achieving team effectiveness in such scenarios.

By building on the emerging organizational behavior research that highlights the importance of examining perceptual disparity in teams, and integrating the core concepts with findings from research on team functioning and effectiveness, we developed a multi-level conceptual model that helps explain how expertise dissensus affects all three dimensions of team effectiveness.

We tested our hypotheses on a field sample of 72 audit and consulting teams from a Big Four accounting firm. As predicted, we find that teams with greater expertise dissensus suffered in all three dimensions of effectiveness—performing more poorly as rated by clients, experiencing lower team viability, and generating conditions that obstructed the individual members' growth and development. We reach a deeper understanding of the way that expertise dissensus affects teams with our findings that it decreased client-rated performance by increasing relationship conflict within the team, and decreased team viability by increasing relationship conflict and task conflict and by decreasing coordination.

**Theoretical Contributions**

By introducing and elaborating  the concept of expertise dissensus, this paper provides a novel perspective on the puzzle of why some teams are more effective than others at using their members' knowledge.  We make three specific contributions to the literature on expertise recognition and team effectiveness.

First, throughout this paper we have argued that today's teams face considerable obstacles in the path toward developing a consensus about their members' expertise levels.  For example, team members often have different opportunities for witnessing one another's expertise, idiosyncratic biases in judging and remembering displayed expertise, and different tendencies to rely on superficial expertise cues.  Acknowledging the possibility –indeed, the likelihood –of expertise dissensus in teams calls for further theorizing and empirical investigation into the ways that expertise perceptions affects team processes and outcomes, as well as individual outcomes.  We developed, and found support for, theoretical arguments that expertise dissensus affects critical team processes such as conflict and coordination.  We thus propose a novel explanation for common process losses in teams, and propose that existing theoretical accounts of these issues may be underspecified.

Second, expertise-recognition research posits that having the required resources on a team is necessary but not sufficient for a good outcome; we extend that research stream's problem space by suggesting that teams often face a more complex scenario of expertise recognition than that literature had previously assumed. Specifically, we emphasize that teams need to identify, manage and integrate degrees of expertise for all team members, rather than simply identifying and deploying the top experts, and we introduce expertise dissensus as a way to understand how well teams do so for all team members.  Even if teams identify and give proportionate influence to their top expert, those that fail to recognize and appropriately use the knowledge of their remaining team members would be wasting those potential resources.  In

reviewing prior literature on expertise perceptions in small groups, particularly research on transactive memory and expert influence, we noted the importance of redirecting scholarly attention to team tasks that are complex and interdependent enough to require consideration of multiple levels of expertise and not just the top expert. In this paper, we therefore reconceptualize the expertise-recognition challenge as recognizing "how much each member knows" rather than "who knows the most" to advance theory of why some teams are more effective than others at the vital task of using their members' expertise. By opening up consideration of perceptions about all team members, we offer a possible explanation for suboptimal team performance even when these teams have identified their top expert. Further by identifying how expertise dissensus affects the development of both individual and collective capabilities, we show that expertise recognition and use has long-term consequences that theories have previously overlooked.

Finally, we advance small groups research by developing theory to explain how expertise perceptions – specifically disparity in members' perceptions -- affect not only the team effectiveness dimension of customer satisfaction, but also the dimensions of both team viability and member growth and development. So far, most research on expertise recognition has focused on how it effects one dimension of team effectiveness—performance, as measured by indices such as task quality and accuracy, speed of work, and quality of decision making—with scant attention to the other dimensions of team effectiveness. We propose that developing a more comprehensive understanding of expertise perceptions' impact on team viability and member growth and development is essential for generating true insights about the experience and outcomes of teams, and that this perspective is especially vital for knowledge-worker teams. In particular, team viability captures the capability to determine appropriate task strategies, learn from experience, and identify and exploit opportunities; these tasks are all especially central to

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teams that are tackling complex work in uncertain or rapidly shifting environments, which are hallmark characteristics of knowledge-intensive teams. In addition, knowledge workers are highly skilled, traditionally highly autonomous workers whose power and motivation typically derives from their expertise and sense of continued learning. Such workers are especially sensitive to growth and development opportunities; teams that fall down on this dimension cannot be considered "effective", yet research so far has neither theorized nor tested the effects of on individual members when they are subjected to teammates' differing perceptions of their capabilities. By addressing the effects of expertise dissensus on all three dimensions of performance, this paper begins to build a platform for further theorizing and empirical exploration of the links between expertise dissensus and comprehensive team effectiveness.

Indeed, a reason expertise dissensus has such strong and multi-faceted effects on team effectiveness is because teams themselves are often likely unaware of expertise dissensus when it occurs. Our post-project interviews suggest, in fact, that most team members assumed that everyone on their team did agree on each other's expertise, even in teams where expertise dissensus was actually high. After hearing his team's actual expertise dissensus score, one AuditCo manager initially expressed deep surprise; two weeks later, however, he telephoned us to say that he'd been doing a "mental post-mortem" on the team's processes. "I can't stop thinking about this disagreement [that existed within our team] – it was like an insidious obstacle to performance. It was the unknown unknown that pulled us down." Because teams tend to avoid discussing assumptions, even high levels of expertise dissensus are likely to go undetected and fester. A study of the emergence of group norms found that a team member operates on the assumption that the rest of the team shares his or her interpretation of a situation and his or her scripts of appropriate behavior (Bettenhausen & Murnighan, 1985). Similarly, teams engaging in a variety of tasks resist discussing task strategies even when they have an incentive to do so

(Hackman, 2002). Given how rarely team members discuss their assumptions about directly task-relevant situations and strategies, they are even less likely to discuss each other's multiple assumptions of expertise, setting the stage for expertise dissensus to exert effects on team effectiveness with little restraint.

**Limitations and Future Directions**

There are several limitations to this study, and some point to opportunities for future research. First, although we were able to avoid same-source bias in our team-performance evaluations by using client ratings, there may still be source-bias in our measures of expertise dissensus and other dependent variables, for which we used ratings from members. We used member sources for our main expertise dissensus construct because the perceptual nature of the construct demanded it. Member sources were also used for team-process variables because the structure and constraints of our sample teams made team members the most knowledgeable and often only informants on variables-of-interest. To mitigate the possibility of same-source bias, however, we collected our expertise dissensus data at the start of the team projects and collected process and outcome variables at the end of the projects. As much as possible, we also used different methods of measurement for our member-sourced data, including calculated scores, scale rankings, and open-ended questions. Nevertheless, the possibility of bias cannot be ruled out.

Second, because our data sample was restricted to teams within a single firm in a particular service industry, the question of generalizability arises. We expect that sampling teams from both consulting and auditing streams within the firm would mitigate this concern, but future research is needed to test our model in other settings.

Third, we measured perceptions of expertise only once—as the project began. An interesting avenue for future research would be to investigate the trajectory of expertise

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dissensus over time. Based on evidence that integrating member expertise requires ongoing

mutual readjustments (Gardner et al., 2012; Kozlowski, Gully, Nason, & Smith, 1999; Zollo &

Winter, 2002), we speculate that the level of expertise dissensus will change during a project.

For example, perceptual differences grounded in racial stereotypes are resistant to change

(Berger, Cohen, & Zelditch, 1972) whereas those based simply on one's limited observations of

a teammate's expertise  is susceptible to change given more opportunities to see him demonstrate

his knowledge.  These differences point to likely advances from further theorizing on the

dynamics of expertise dissensus, specifically examining what factors affect convergence of

perceptions over time and how these changes relate to team effectiveness.

Finally, our study investigated expertise dissensus as a first step toward testing theory

about the effect of this construct on team effectiveness.  Future work could usefully explore what

kinds of configurational pattern expertise dissensus may adopt.  For example, does it matter more

if a team's highly ranked members are disagreed about than if lower-ranked members are

disagreed about?  How much expertise dissensus does it take to have negative effects on team

effectiveness? Do the majority of members have to be targets of expertise dissensus or just one?

**Conclusion**

Our findings suggest a more nuanced model of expertise perception effects within teams

than has been previously theorized and tested.  We find that expertise dissensus affects team

effectiveness at the team and individual levels even in our sample of relatively traditional and

stable teams, implying that expertise dissensus and its effects may become even more important

as teams increasingly move into less conventional forms and settings.  Although we tested our

model of expertise dissensus on a relatively traditional—that is, discrete and stable—type of

team, we still found considerable support for the existence of expertise dissensus and for its

significant influence on team effectiveness. We speculate that this phenomenon will become

increasingly prevalent as teams assume increasingly dynamic, complex, and nuanced forms, take on increasingly dynamic, complex, and nuanced tasks, and operate in increasingly dynamic, complex, and nuanced environments.

In sum, this paper initiates a dialogue that may offer both theoretical and practical implications. Bringing theoretical attention to the effects of members' disparate views about one another's expertise levels may yield important insights that cannot be predicted by existing conceptualizations of the expertise-recognition problem. On the practical side, theorizing about and examining expertise dissensus can give us a more comprehensive understanding of how expertise is identified, used, and integrated within teams. Effective expertise use in teams is essential not only for achieving short-term project performance, but also for developing the long-term capabilities of individual team members and the collective capacity for future teamwork. The study of expertise dissensus brings us closer to understanding how teams can make the most of their most essential resources.

**TABLE 1**

**Principal Components Analysis for Team Process Variables**

| Rotated Component Matrix | Component | | |
|---|---|---|---|
| | | Relationship | |
| | Coordination | Conflict | Task Conflict |
| Our team had very few misunderstandings about what to do. | **.904** | -.183 | -.080 |
| There is very little confusion about how we will accomplish the task. | **.888** | -.098 | -.214 |
| We accomplished the task smoothly and efficiently. | **.871** | -.160 | -.140 |
| Our team rarely needs to backtrack and start over. | **.864** | -.142 | -.135 |
| Our team worked together in a well-coordinated fashion. | **.827** | -.338 | -.068 |
| How much are personality conflicts evident in your team? | -.210 | **.885** | .290 |
| How much friction is there among members in your team? | -.220 | **.884** | .314 |
| How much tension is there among members in your team? | -.330 | **.832** | .331 |
| How much emotional conflict is there among members in your team? | -.148 | **.804** | .404 |
| To what extent are there differences of opinion in your work unit? | -.174 | .241 | **.874** |
| How often do people in your team disagree about opinions regarding work being done? | -.054 | .237 | **.845** |
| How frequently are there conflicts about ideas in your work unit? | -.147 | .463 | **.802** |
| How much conflict about the work you do is there in your work unit? | -.268 | .428 | **.740** |
| Eigenvalue | 7.4 | 2.6 | 1.1 |
| Variance explained (%) | 56.6 | 19.8 | 8.1 |

*Notes:* High loadings in bold (n = 72).  Principal Component Analysis using Varimax Rotation

**TABLE 2**
**Summary Statistics and Correlation Table (n=72)**

| Variable | Mean | σ | Min | Max | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Expertise Dissensus | 0.47 | 0.20 | 0.00 | 0.89 | | | | | | | | |
| 2. Team Performance | 3.70 | 0.70 | 2.29 | 4.86 | **-0.27** | | | | | | | |
| 3. Team Viability | 4.05 | 0.53 | 2.60 | 5.00 | **-0.27** | **0.24** | | | | | | |
| 4. Team Size | 7.36 | 2.52 | 2.00 | 15.00 | **0.28** | -0.18 | -0.10 | | | | | |
| 5. Project Length (months) | 2.26 | 0.95 | 1.00 | 5.00 | -0.10 | -0.19 | 0.03 | **0.34** | | | | |
| 6. Human Capital[1] | 0.03 | 0.51 | -1.18 | 1.19 | -0.15 | 0.09 | 0.00 | **-0.26** | 0.09 | | | |
| 7. Coordination | 3.83 | 0.55 | 2.33 | 5.00 | **-0.33** | **0.56** | 0.17 | -0.13 | -0.20 | -0.14 | | |
| 8. Task Conflict | 1.80 | 0.47 | 1.00 | 3.00 | **0.37** | **-0.40** | **-0.27** | 0.08 | -0.03 | 0.11 | **-0.51** | |
| 9. Relationship Conflict | 1.67 | 0.58 | 1.00 | 3.42 | **0.30** | **-0.56** | **-0.37** | 0.10 | -0.09 | -0.02 | **-0.48** | **0.69** |

Note. Bold denotes significance less than 5%.
[1] Standardized measure

**TABLE 3**
**Results of OLS Regression Analyses for Team-Level Expertise Dissensus (n=72)**

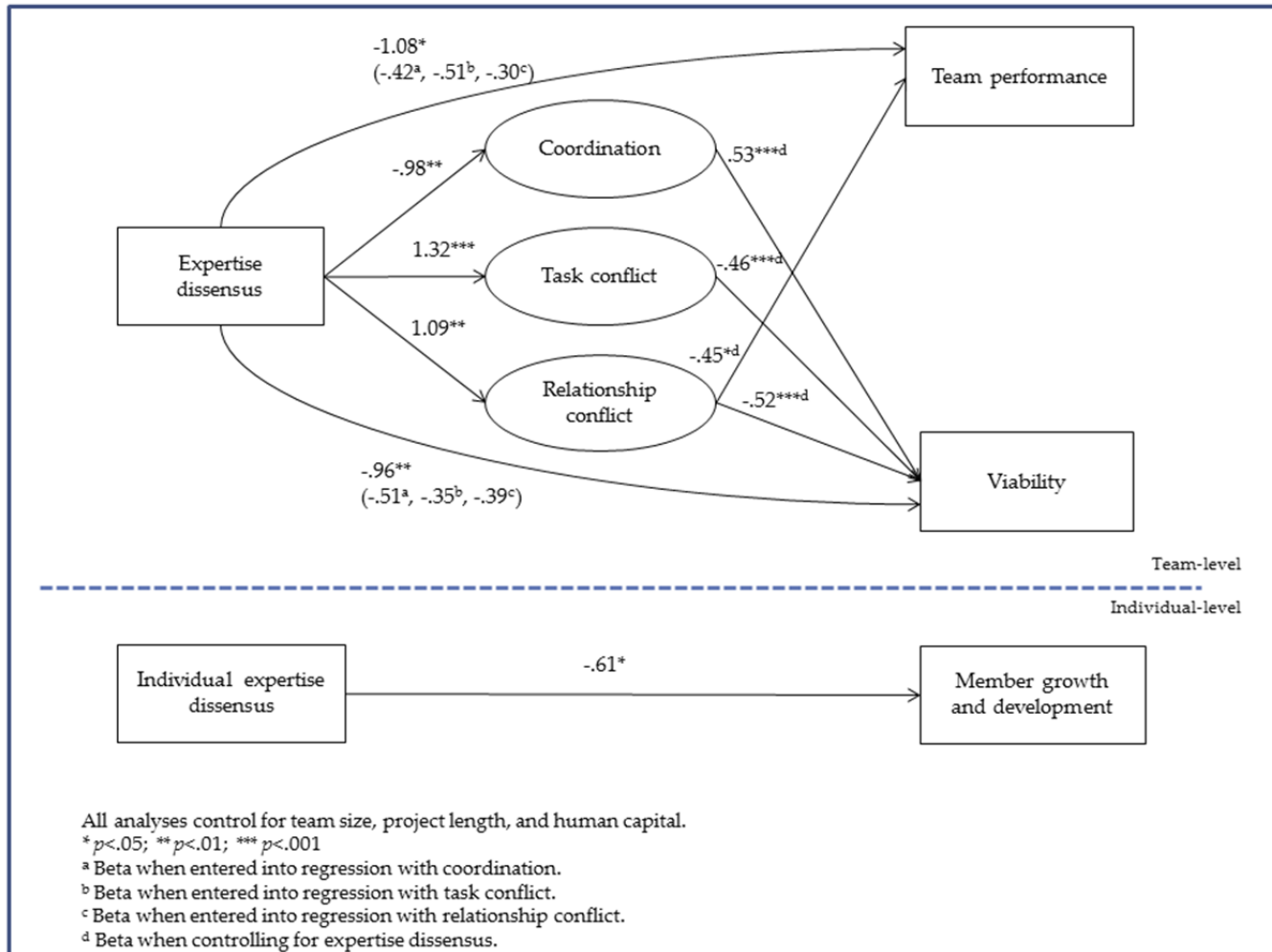| Variables | Team Processes | | | Team Effectiveness | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coordination | Task conflict | Relationship conflict | Team performance | | | | Team viability | | | |
| *Control variables* | | | | | | | | | | | |
| Team size | -0.01 | 0.00 | 0.02 | -0.05 | -0.05 | -0.06 | -0.06 | 0.00 | 0.00 | 0.00 | 0.01 |
| Project length | -0.14 * | -0.01 | -0.06 | 0.02 | 0.17 | 0.02 | 0.01 | -0.13 * | -0.02 | -0.13 * | -0.16 ** |
| Team expertise | -0.14 | 0.16 | 0.02 | 0.10 | 0.03 | 0.15 | 0.19 | 0.08 | 0.13 | 0.15 | 0.09 |
| *Explanatory variables* | | | | | | | | | | | |
| Expertise dissensus | -0.98 ** | 1.32 *** | 1.09 ** | -1.08 * | -0.42 | -0.51 | -0.30 | -0.96 ** | -0.51 | -0.35 | -0.39 |
| Coordination | | | | | 0.22 | | | | 0.53 *** | | |
| Task conflict | | | | | | -0.36 | | | | -0.46 *** | |
| Relationship conflict | | | | | | | -0.45 * | | | | -0.52 *** |
| $R^2$ | 0.16 | 0.25 | 0.13 | 0.11 | 0.12 | 0.15 | 0.20 | 0.14 | 0.37 | 0.27 | 0.43 |
| Adjusted $R^2$ | 0.12 | 0.22 | 0.09 | 0.05 | 0.04 | 0.08 | 0.14 | 0.10 | 0.33 | 0.23 | 0.40 |
| F | 3.74 ** | 7.39 *** | 3.21 * | 1.90 | 1.41 | 2.12 | 3.07 * | 3.70 ** | 9.11 *** | 6.43 *** | 13.30 *** |

\* $p < .05$
\*\* $p < .01$
\*\*\* $p < .001$

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**FIGURE 1**

**Multi-level Model Coefficients of Expertise Dissensus, Mediators and Team Effectiveness Outcomes**



All analyses control for team size, project length, and human capital.
[*] $p<.05$; [**] $p<.01$; [***] $p<.001$
[a] Beta when entered into regression with coordination.
[b] Beta when entered into regression with task conflict.
[c] Beta when entered into regression with relationship conflict.
[d] Beta when controlling for expertise dissensus.

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