

Teams developing business ideas: how member characteristics and conflict affect member-rated team effectiveness

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Abstract Team researchers have found that the diversity to effectiveness ratings are mediated by team conflict. Using a sample of 73 teams developing their business ideas, I found direct effects of diversity and conflict on member-rated team effectiveness. Here, I explain how the circumstances under which these teams operate can lead to these findings. For these teams, task conflict was found to relate negatively to member-rated team effectiveness. This finding contrasts with research on organizational teams, where task conflict usually relates positively to team effectiveness ratings. I also found that both diversity and average member experience influence member-rated effectiveness. These findings imply that diversity, conflict, and ratings of team effectiveness may differ for teams developing business ideas as compared to organizational teams. Thus, findings from organizational team research should be applied with caution to teams developing business ideas and possibly to new venture teams in general.

Keywords Business ideas · Conflict · Diversity · Ratings of team effectiveness

JEL Classifications L26 · M12 · M13

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It is important to study venture teams because high-growth ventures are usually started by a team instead of an individual entrepreneur (Friar and Meyer 2001). Researchers have argued for relationships among diversity, conflict, and ratings of team effectiveness (Milliken and Martins 1996; Pelled et al. 1999). Member diversity of a non-task nature, such as race and age, may result in non-task conflict, while member diversity of a task nature, such as work function and education, may lead to task conflict (Lankau et al. 2007; Milliken and Martins 1996; Pelled et al. 1999). Non-task conflict that distracts members from the team's task can hurt team effectiveness ratings; while task conflict that increases the information that the team considers may enhance the ratings of team effectiveness (Bantel and Jackson 1989; Pelled et al. 1999). That is, diversity to team effectiveness ratings are mediated by team conflict.

For teams developing business ideas, a type of new venture team, I examined the relationships among diversity, conflict, and member-rated team effectiveness. At the early venture stage, how members evaluate their team may be important. If members rate their team negatively, the team may dissolve before it can move to later stages of venture development. Consistent with organizational team research, I propose that diversity and conflict result in higher, member-rated team effectiveness. Departing from organizational team research, I also propose that both diversity and conflict result in direct effects on member-rated team effectiveness—that is, conflict

does not mediate the diversity to effectiveness rating relationships. Mediating effects are not expected because founding team members can often choose who they want to be on the team. Likewise, potential members, even if they come from different backgrounds or experiences, are only likely to join the team if they agree to the team's goals and expectations. Thus, diversity is unlikely to lead to team conflict.

Studies on organizational teams indicate that experience diversity, rather than the experience level, influences team effectiveness ratings (Tsui et al. 1995). Another way that this study departs from studies of organizational teams is the proposal that, for new venture teams, the members' average experience should relate positively to member-rated team effectiveness. This argument is based on the fact that members of new venture teams often have little experience, which contrasts with organizational teams where members are usually selected based on their skills, knowledge, and job experience.

Taken together, this study contributes to the entrepreneurship literature in three ways. First, the findings indicate that studies from the organizational team literature should be extrapolated with caution for teams at the early stages of venture development. Second, they also indicate direct effects of both diversity and conflict on team effectiveness ratings; significantly, conflict does not mediate the diversity and effectiveness ratings relationships. Third, the findings show that assertions by some organizational team researchers that the average experience is unimportant should perhaps be taken more tentatively for new ventures.

1 Theoretical development

1.1 Member-rated team effectiveness

Before the hypotheses are developed, I first explain the dependent variable, member-rated team effectiveness. It comprises member ratings of the number of innovations or new ideas introduced, reputation for work excellence, efficiency of team operations, and overall performance. As Foo et al. (2006) noted, for new ventures, the team is still fragile and may not survive unless the team manages to establish membership, identity, and commitment. During this phase,

objective performance measures, such as sales, cash flow, and profits, may not yet be relevant as the team is unlikely to have substantial sales when the main focus is to establish the venture. Therefore, what is important is that the team stays together and remains excited about its ideas.

Subjective measures of team effectiveness are frequently used in team studies. For organizational team research, Jehn et al. (1999) used member ratings of how well the unit was performing and the effectiveness of the work unit. Ancona and Caldwell (1992b) also used member ratings in terms of efficiency, quality, technical innovation, adherence to schedules, adherence to budgets, and work excellence. Pelled et al. (1999) used manager ratings of efficiency and number of innovations or new ideas introduced in the team. For early stage ventures, Foo et al. (2006) used member ratings of the team, including the extent to which members of the team care about it and work together to make it one of the best. Chowdhury (2005) used new venture member ratings of the team's knowledge of tasks, quality of work, quantity of work, initiative, interpersonal skills, planning and allocation, and overall performance. Ensley and Hmieleski (2005) defined team effectiveness of new ventures as the degree of collective efficacy within a group toward achieving its goals. Although these are subjective team effectiveness measures, Ancona and Caldwell (1992b) noted that objective measures may not necessarily be preferred since information is often interpreted through subjective lenses. They also noted that in organizational teams, subjective ratings often determine promotions, future job assignments, and performance evaluations. For entrepreneurship studies, Ensley and Hmieleski (2005) noted that subjective measures of team effectiveness may be related to future venture performance.

In this paper, the questions on team effectiveness follow closely team studies, both organizational and new venture teams (Ancona and Caldwell 1992b; Chowdhury 2005; Ensley and Hmieleski 2005; Pelled et al. 1999). By using measures related to past studies, researchers can compare the results of this study with those with these past studies. Importantly, in this paper, the members rated team effectiveness, not the team's business ideas. Since business ideas and venture goals may change as the venture develops, it may be more valuable that members evaluate the effectiveness of the team as a whole.

1.2 Diversity and conflict

In this section, I compare the relationships between diversity and conflict on ratings of team effectiveness proposed in organizational team research versus the relationships in new venture teams. Diversity and conflict relationships are premised on the fact that individuals tend to categorize others based on observable characteristics (Barsade et al. 2000; Tajfel 1982). The self-categorization processes lead to in-group and out-groups, with members viewing in-group members more favorably (Barsade et al. 2000; Tajfel 1982). Even trivial differences can evoke the categorization of individuals into different subgroups (Barsade et al. 2000). Members tend to be attracted to others with similar backgrounds since they tend to share similar values, attitudes, and interests. Moreover, people are motivated to maintain high self-esteem by comparing their subgroup favorably to other subgroups, leading to biases against other subgroups (Eisenhardt et al. 1998; Tajfel and Turner 1986).

Although diversity may lead to differences, not all diversity types hurt the team (for a review, see Williams and O'Reilly 1998). The literature differentiates task diversity from non-task diversity (Pelled et al. 1999). Task diversities are differences in task-related areas, such as work experience and job function (Williams and O'Reilly 1998). Such diversities can lead to work-related conflicts that may improve ratings of team effectiveness. For example, Eisenhardt et al. (1998) noted that individuals from the engineering department and those from the marketing department approach issues differently.

This divergent focus may not be pleasant for team members but can increase the team's knowledge base (Jehn et al. 1999). In contrast, non-task diversities are unrelated to the team's work (Simons and Peterson 2000). This diversity type can lead to non-task conflict that distracts the team from its task, thus hurting the team effectiveness ratings (Williams and O'Reilly 1998). The relationships among diversity, conflict, and team effectiveness ratings in the organizational team literature are shown in Fig. 1.

Although diversity and the resulting differences in perspectives can lead to conflicts, such a relationship may not hold for teams developing business ideas. Members of these teams have some choice of which members to admit, and there is little reason to expect that they will include individuals whom they view negatively. Moreover, for these teams, participation is voluntary and rewards are uncertain. In such circumstances, potential members should have some buy-in of team goals before they decide to join the team, and such team identification can counteract the negative effects of diversity on conflict (Van der Vegt and Bunderson 2005). Diversity and conflict, however, should still affect team effectiveness ratings, albeit direct effects, and not mediating effects. The rest of this section hypothesizes how conflict type, namely task or non-task, leads to positive or negative effects on member-rated team effectiveness. The section also explores how diversity increases the knowledge base available to the team, which may lead to higher member-ratings. The proposed relationships among diversity, conflict, and team effectiveness for new venture teams are shown in Fig. 2.

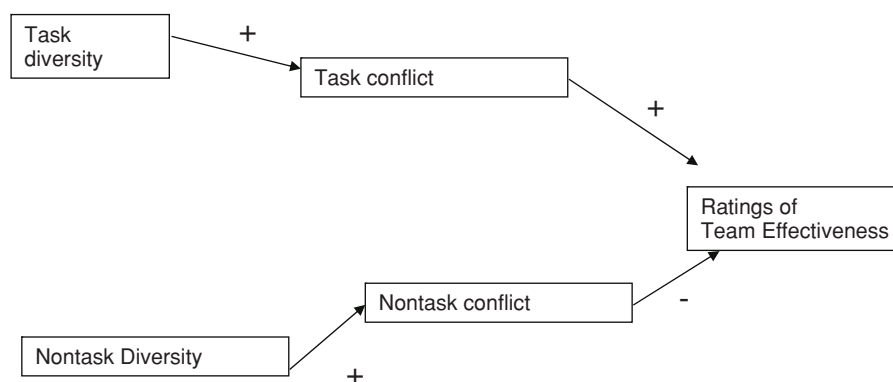
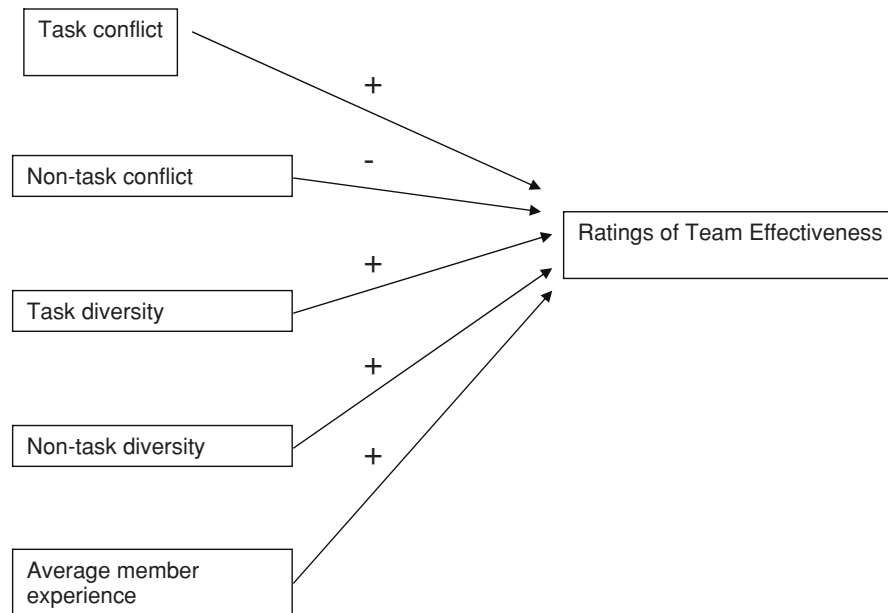


Fig. 1 Relationships among diversity, conflict and team effectiveness ratings in organizational team research

Fig. 2 Proposed relationships among diversity, conflict, and team effectiveness ratings for new venture teams



Non-task conflict can hurt team effectiveness ratings as time and energies are wasted on non-task disagreements instead of centering efforts on tasks (e.g., Pelled et al. 1999; Simons et al. 1999). Non-task conflict, by contrast, can lower member capacity to accept the ideas of other team members and restrict information exchange among members, since conflict can lead to distrust and avoidance of contact (Zenger and Lawrence 1989). Conflict can also lead to anxiety and frustration; these feelings can cause members to lose perspective and work less effectively with one another (Amason and Sapienza 1997). In contrast, task conflicts result in critical appraisals that facilitate information exchange among team members and enhance understanding of the tasks to be performed (Jehn 1995). Task conflicts can result in higher-rated teams as members search for information to resolve differences, generate a broader range of options (Eisenhardt et al. 1998), increase decision comprehensiveness (Simons et al. 1999), and reduce group-think (Jehn 1995).

H1a For teams developing business ideas, non-task conflict relates negatively to member-rated team effectiveness.

H1b For teams developing business ideas, task conflict relates positively to member-rated team effectiveness.

1.3 Diversity and member-rated team effectiveness

Let us turn to diversity and member-rated team effectiveness. Diversity of gender, age, and race are considered to be less task-related because they usually do not contribute work-related skills and knowledge (Williams and O'Reilly 1998). In contrast, functional and educational diversities are task-related because they capture experiences, information, and perspectives relevant to the team's work (Dahlin et al. 2005; Williams and O'Reilly 1998). Task diversity increases the breadth and depth of information considered (Brunninge et al. 2007; Dahlin et al. 2005) and can benefit the team since they may enable members to determine what is important, how things are done, and how to entice important contacts to assist the team. Empirical evidence supports the benefits of task diversity; for example, Bantel and Jackson (1989) found that task-diverse teams received higher managerial ratings for innovation.

H2a For teams developing business ideas, task diversity relates positively to member-rated team effectiveness.

Age and race, commonly examined non-task diversity types, are often found to be detrimental to team effectiveness ratings because they can trigger

differences in interests and perspectives unrelated to team tasks (Simons et al. 1999). In contrast, the results of research on organizational teams age and race diversities are expected to relate positively to member-rated team effectiveness. These differences can make members aware of new markets, market needs, and ways to reach the target segment. Some evidence of the benefits of race diversity for teams engaged in a novel task is provided by Watson et al. (1993), who found that racially diverse teams are able to overcome process differences and become more effective than more homogeneous teams.

H2b For teams developing business ideas, non-task diversity relates positively to member-rated team effectiveness.

Researchers have used diversity to proxy skills and information available to the team (Jehn et al. 1999). In organizational teams, the average is seldom used, probably because members are selected based on skills that they can contribute to the team. Therefore, skill diversity (rather than the average skill level) should influence team effectiveness ratings. For teams developing business ideas, the average, in addition to diversity, can represent skills available to the team. Members of these teams can be selected on factors such as the ability to work well with others, likeability, mutual enjoyment of each other's company (Bird 1989), and similarity of beliefs and interests (Kamm and Nurick 1993). These factors have little to do with task experiences. Since experience can lead to the recognition of business opportunities (Shane 2000; Shane and Venkataraman 2000; Wong et al. 2008) and is linked to the creation of high-growth ventures (Friar and Meyer 2001), it should relate positively to member-rated team effectiveness.

H3 For teams developing business ideas, the average experience relates positively to member-rated team effectiveness.

2 Methods

The sample comprises teams developing business ideas as part of a business plan competition organized by a university in the northeastern part of the United States. Such competitions may provide opportunities

for people with ideas and those involved with startups (e.g., business angels, venture capitalists, and entrepreneurs) to network, discover, and exploit business ideas (cf. Foo et al. 2005; Huffman and Quigley 2002). For this study, each team's output was a three-to-five page description of a new product or service, and the advantage(s) of the offering relative to its competitors.

Participation in the competition was voluntary and did not form part of a course assignment. Only one team member had to be a student in the university organizing the competition and there were no entry restrictions for the other team members. On average, each person in the competition spent 61 hours on the business idea during the last week of the competition. Many of the participants with whom the organizers of the competition interacted freely communicated that they participated in the competition to gain publicity for their potential ventures.

Some 82 teams comprising 310 individuals participated in the competition. Of these individuals, 77% had, or were pursuing, graduate degrees. A questionnaire was sent to every participant immediately after the competition and before the competition results were announced, so that the results would not bias the responses. Some 84% of the participants were men and 16% women. The questionnaire included questions on member characteristics, perceptions of how the team functioned, and team outcomes. The respondents were assured that their responses would not be shown to the competition judges. A total of 257 participants (83%) responded to the questionnaire. With the exception of one team, all teams turned in at least one questionnaire. In four teams, fewer than 50% of the members returned the questionnaire; these teams were omitted from the final sample. The final sample used to analyze the findings comprised 73 teams, or 94% of the teams that participated in the competition for that year.

2.1 Measures of team characteristics

The measure of non-task diversity was based on race diversity and age diversity. Race diversity was calculated using Blau's index of heterogeneity for categorical variables (Blau 1977) and calculated by $(1 - \sum p_i^2)$, where p is the proportion of group members in a category and I is the number of different categories represented on the team. This index is

frequently used to calculate heterogeneity of categorical variables, including in papers by Bantel and Jackson (1989), Barsade et al. (2000), and Richard et al. (2004). In this study, 56% were Caucasians, 5% African-American, 32% Asians, and 7% others. Race diversity was 0.40 with a standard deviation of 0.31.

2.1.1 Age diversity

The age of the individuals ranged from 18 to 56 years, with a mean of 26 years, a median of 26 years, and a standard deviation of 5. At the team level, the average age ranged from 20 to 41 years, with a mean of 27 years and a standard deviation of 4 years. Age diversity was calculated using the coefficient of variation, which is the standard deviation divided by the mean. This method is preferred to the standard deviation for measuring diversity because it is scale invariant (Allison 1978). The advantage of such a measure is that it reflects relative differences, rather than absolute differences (Allison 1978). The average age diversity score was 0.14, with a standard deviation of 0.12.

2.1.2 Task diversity

Task diversity was measured by the diversity of work specialization and calculated using Blau's index of heterogeneity for categorical variables. The work specialization categories represented were computer (39%), engineering (30%), management (15%), and others (16%). Task diversity was 0.62 with a standard deviation of 0.20.

2.1.3 Experience diversity

The work experience of individuals ranged from no experience to 26 years of experience, with a mean of 45 months and a standard deviation of 45 months. Experience diversity was calculated using the coefficient of variation, with an average of 0.79 and standard deviation of 0.46.

2.1.4 Average experience

To calculate average experience, the members' work experience was totaled and divided by team size. Average experience of the teams ranged from none to 14 years, with a mean of 45 months and standard deviation of 33 months.

2.1.5 Non-task conflict

The conflict scale developed by Jehn and associates (e.g., Jehn et al. 1999) was used to measure conflict. The non-task conflict items were: "How much personality conflict was there among team members?", "How much tension was there among team members?", and "How much emotional conflict was there among team members?"

A scale of 1–7 was used in which a higher number means higher conflict levels. Following past work on teams, internal reliability was tested using Cronbach's Alpha on the responses at the individual level (Bunderson and Sutcliffe 2002; Ensley et al. 2002). The scale was reliable with an alpha of 0.87, which is above the traditional cut-off of 0.70 (Nunally 1978).

The rwg was also calculated in order to determine the interteam level of agreement. In this study, member-ratings were collected at the individual level, but the analyses were conducted at the team level. Individual responses should not be aggregated unless team members have provided relatively similar ratings (James et al. 1984). James et al. (1984) developed such a measure of agreement among raters called the rwg, and each group gets an rwg value. Typically, rwg values of 0.70 and above are taken as evidence of agreement among raters [for recent reviews on the use of rwg, see papers by Newman and Sin (2009) and Cohen et al. (2001)]. In this study, the average level rwg was 0.90. Since this is above the cutoff of 0.7 (James et al. 1984), individual responses were aggregated to the team level. At the team level, non-task conflict ranged from 1 to 5.5, with an average of 1.92 and a standard deviation of 0.95.

2.1.6 Task conflict

The task conflict items in the scale were: "How often do people in your team disagree regarding the work being done?", "To what extent are there differences of opinion in your team?", "How much conflict was there about the work you do on your team?", and "How frequently are there conflicts about ideas in your team?"

Cronbach's Alpha was 0.80. The average rwg was 0.79, which suggests member agreement on the level of task conflict in the team. At the team level, task conflict ranged from 1 to 5.5, with a mean of 2.79 and a standard deviation of 0.97.

2.1.7 Member-rated team effectiveness

Member-rated team effectiveness was measured using four items adapted from Ancona and Caldwell (1992a). Team members responded on a 7-point scale that ranged from 1, meaning the team was deeply disappointing, to 7, meaning the team exceeded expectations. The four items were: (1) number of innovations or new ideas introduced by the team; (2) our reputation for work excellence; (3) efficiency of team operations; (4) our overall performance. The measure was reliable with an α of 0.80. The mean rwg value was 0.88. Subsequently, individual scores for all members of the team were averaged to form a team-level construct. Member-rated team effectiveness at the team level ranged from 2 to 7, with an average of 5.03 and a standard deviation of 0.81.

Since measures of conflict (task and non-task) and the outcome variable (member-rated team effectiveness) were taken from the same source, I followed the procedures outlined by Podsakoff and Organ (1986) and used by team researchers such as Ensley et al. (2002) and Amason and Sapienza (1997) to control for common method variance. For each team, half the responses were randomly assigned to one subgroup and the other half to another subgroup. For teams with odd-numbered responses, the remaining response was randomly assigned to one of the two subgroups. Responses for task conflict and non-task conflict in one subgroup were used to calculate the values of these variables (taking the mean value of task conflict and mean value of non-task conflict). The responses for member-rated team effectiveness were calculated from the mean value of this variable from the other subgroup. Since the dependent variables and the independent variables were taken from different sources, the relationships between them were free from response-response bias, such as common method variance (Podsakoff and Organ 1986).

2.2 Control variables

2.2.1 Team size

Team size was controlled for because the coefficient of variation was used to calculate age diversity and experience diversity. The magnitude of the coefficient of variation can be influenced by team size (cf. Ancona and Caldwell 1992a). Team size was

calculated using the number of participants listed on the team's entry. Size ranged from two to ten participants, in which 17 teams comprised two members; 15 teams, three members; 14 teams, four members; 15 teams, five members; four teams, six members; three teams, eight members; one team, ten members.

2.2.2 Industry

Industry was controlled for because industries have different success rates, and some sectors face more competition than others (Cooper et al. 1994). Teams that had technology-based ideas were coded as 1; all others, as 0. Some 76% of the teams did a plan on a technology-based venture. The small sample size limited the ability to include more fine-grained industry measures.

2.2.3 Entrepreneurial experience

Entrepreneurial experience was controlled for since this experience can affect how the team functions (Ucbasaran et al. 2001; Westhead and Wright 1998). For example, having a founder in a team may provoke conflict between members because the founder can claim to know how things are supposed to be done and expect other members to follow his or her opinions. Teams with at least one member with business-founding experience were coded as 1; those without were coded 0.

3 Results

The correlation statistics in Table 1 show that member-rated team effectiveness correlated negatively with both non-task conflict ($r = -0.36$, $p < 0.01$) and task conflict ($r = -0.31$, $p < 0.01$). It also correlated negatively with race diversity ($r = -0.27$, $p < 0.01$), task diversity ($r = -0.26$, $p < 0.01$) and experience diversity ($r = -0.30$, $p < 0.01$). Average experience correlated positively with member-rated team effectiveness ($r = 0.43$, $p < 0.01$). The highest correlation of 0.6 ($p < 0.01$) was between that of task conflict and non-task conflict. This was expected, since task conflict can spill over to non-task conflicts. Also, disagreements can degenerate into interpersonal disagreements,

Table 1 Pearson's correlations, means, standard deviation, and variance inflation factor

Variables	Mean	Standard deviation	VIF	1	2	3	4	5	6	7	8	9	10
Member-rated team effectiveness	5.03	0.81											
Size ^a	4.19	1.80	1.35	-0.17									
Industry ^a	0.76	0.43	1.19	-0.07	0.06								
Entrepreneurial experience ^a	0.13	0.34	1.15	-0.19	0.18	0.02							
Non-task conflict	1.92	0.95	1.86	-0.36**	0.05	-0.17	0.11						
Task conflict	2.79	0.97	1.73	-0.31**	-0.03	0.03	0.06	0.60**					
Race diversity	0.39	0.30	1.34	-0.27**	0.42**	-0.08	0.11	0.09	-0.02				
Age diversity	0.14	0.12	1.22	0.08	0.17	0.03	0.01	0.09	0.20	0.15			
Task diversity	0.62	0.20	1.82	-0.26**	0.33**	0.02	-0.16	0.13	-0.02	0.35**	0.12		
Experience diversity	0.79	0.46	1.63	-0.30**	0.21	0.20	0.03	0.19	0.05	0.26*	0.21	0.56**	
Average experience	45.36	33.46	1.50	0.43**	-0.15	-0.16	-0.04	-0.22	-0.03	-0.14	0.15	-0.42**	-0.42**

VIF, Variance inflation factor

* $p < .05$, ** $p < .01$

$n = 73$ teams; all correlations are two-tailed

^a Control variable

since no one likes to be criticized or contradicted (e.g., Ensley et al. 2002). Before doing the regressions, we checked for multicollinearity problems by examining the Variance Inflation Factor (VIF) of each independent variable. The largest VIF in our regression was less than three, suggesting that multicollinearity was unlikely to be an issue (Guo et al. 1996).

Several relationships must be shown to demonstrate mediating effects (Baron and Kenny 1986). First, the diversity factors should predict the level of conflict. Second, conflict level should predict member ratings of effectiveness. Third, when both diversity and conflict factors are included into the regressions, the β 's of the diversity measures become insignificant (suggesting full mediation) or fall (suggesting partial mediation).

The results include an intercept term. There are two advantages to reporting β coefficients: first, β coefficients can be included in meta-analysis to compare effect sizes across studies; second, β coefficients can be used to compare the relative effects of the independent variables on the dependent variables. For more details on the use of β coefficients, see Allison (1999, p. 59) and Hunter and Hamilton (2002). Models 1 and 2 tested the effects of diversity on task and non-task conflicts on member-rated team effectiveness. Neither model was significant. Since the first condition of mediation was not supported (i.e., diversity factors should predict conflict), mediation was not supported.

Models 3 through 7 tested the effects of the dependent variables on member-rated team effectiveness. Model 3, the baseline model, included the control variables of team size and industry type (1 for technology based and 0 otherwise). The results in Table 2 show that the model did not relate to member-rated team effectiveness. Models 1–3 have been retained in Table 2, even though the models did not support mediated relationships. Model 4 added the conflict variables to the baseline model. ΔR^2 of 0.13 was statistically significant at $p < 0.01$ as compared to the baseline model, showing that conflict was related to member-rated team effectiveness. However, only the coefficient for non-task conflict ($\beta = -0.27, p < 0.05$) was significant, thereby providing support for H1a.

Model 5 added the diversity variables to the baseline model. The ΔR^2 of 0.14 was statistically

significant at $p < .05$, as compared to the baseline model. Thus, diversity adds to the explanation of the level of member-rated team effectiveness. As hypothesized by H2b, age diversity related positively to member-rated team effectiveness ($\beta = 0.17, p < 0.10$). However, contrary to H2b, race diversity related negatively to member-rated team effectiveness ($\beta = -0.18, p < 0.10$). Model 6 includes the control, conflict, and diversity variables. The ΔR^2 compared to the baseline model was 0.13 ($p < 0.05$). H1b was not supported as task conflict ($\beta = -0.24, p < 0.05$) related negatively to member-rated team effectiveness. Partial support was found for H2b, as age diversity related positively to member-rated team effectiveness ($\beta = 0.23, p < 0.05$), but race diversity ($\beta = -0.19, p < 0.10$) related negatively to member-rated team effectiveness.

Taken together, although some of the variables were significant only at the $p < 0.10$ level, Model 6, which examines how conflict and diversity relate to member-rated team effectiveness, was significant at $p < 0.01$ level. This model explains 32% of the variance of the dependent variable (or 22% of the variance for adjusted R^2). A usefulness analysis carried out to determine whether conflict or diversity contributed more to the prediction of member-rated team effectiveness revealed that the conflict variables explained an additional 13% of the variance over and above the diversity variables (significant at $p < 0.01$) (Table 3) and that the diversity variables explained an additional variance of 13% over and above the conflict variables (significant at $p < 0.01$). The relative effects of diversity and conflict appear to be equally important in explaining member-rated team effectiveness. The results of Models 3–6 and the usefulness analysis indicate that conflict and diversity had separate, but direct, effects on member-rated team effectiveness.

Model 7 tested whether average experience and diversity of experience were associated with member-rated team effectiveness. The results showed that average experience ($\beta = 0.28, p < 0.05$) was related to member-rated team effectiveness but that experience diversity was not ($\beta = -0.10, n.s.$). The ΔR^2 of Model 7 (0.05), as compared to that of Model 6, was significant at $p < 0.05$. Task conflict related negatively to member-rated team effectiveness ($\beta = -0.26, p < 0.05$).

Table 2 Hierarchical regression analysis of team characteristics on conflict and member-rated team effectiveness

	Model 1 DV = Non- task conflict β	Model 2 DV = Task conflict β	Model 3 DV = Member-rated team effectiveness β	Model 4 DV = Member-rated team effectiveness β	Model 5 DV = Member-rated team effectiveness β	Model 6 DV = Member-rated team effectiveness β	Model 7 DV = Member-rated team effectiveness β
Team size ^a	-0.02	-0.07	-0.13	-0.13	0.00	-0.02	-0.01
Industry ^a	-0.20 ⁺	0.02	-0.06	-0.10	-0.04	-0.07	-0.03
Entrepreneurial experience	0.12	0.08	-0.16 ⁺	-0.13	-0.19 ⁺	-0.15 ⁺	-0.13
Non-task conflict				-0.27*		-0.16	-0.10
Task conflict				-0.14		-0.24*	-0.26*
Race diversity	-0.01	-0.03			-0.18 ⁺	-0.19 ⁺	-0.19 ⁺
Age diversity	0.05	0.21 ⁺			0.17 ⁺	0.03*	0.16 ⁺
Task diversity	0.06	-0.01			-0.14	-0.13	-0.05
Experience diversity	0.19	0.02			-0.20 ⁺	-0.16	-0.10
Average experience							0.28*
Model F statistics	0.89	0.48	1.33	2.99*	2.14 ⁺	3.12**	3.46**
R^2	0.10	0.05	0.06	0.19	0.19	0.32	0.37
Adj R^2	0	0	0.01	0.13	0.1	0.22	.026
ΔR^2				0.13**	0.14*	0.13*	0.05*
			Compared to Model 3	Compared to Model 3	Compared to Model 3	Compared to Model 4	Compared to Model 6

+ $p < 0.1$, * $p < .05$, ** $p < .01$

DV, Dependent variable

 $n = 73$ teams; all tests are 1-tailed^a Control variable

4 Discussion

This study examined the relationships among diversity, conflict, and member-rated team effectiveness. The results indicate that diversity and conflict directly influenced the member-rated team effectiveness and, as such, they differ in important ways from organizational team studies. Notably, task conflict related negatively to member-rated team effectiveness, while age diversity related positively to member-rated team effectiveness. While some researchers have used conflict as a mediator of diversity to ratings of team effectiveness (Bantel and Jackson 1989; Ensley et al. 2002; Pelled et al. 1999), my study found that conflict and diversity directly influenced member-rated team effectiveness.

I reasoned that for teams developing business ideas, the ability of members to select potential members and the ability of potential members to decide whether to join the team, together with the uncertainty of rewards, make it likely that members share goals and aspirations. Interestingly, age diversity, which is often used to proxy non-task diversity in organizational teams, was found to relate positively to member-rated team effectiveness. I reasoned that in high age diversity teams, members bring different bundles of experiences, which can lead to the discovery of business opportunities (Shane and Venkataraman 2000). Importantly, task conflict related negatively to member-rated team effectiveness. This was contrary to my expectations that such conflicts make teams consider a greater range of information to resolve differences and, subsequently, that these teams will have higher effectiveness ratings. Possibly, at the early venturing stages, teams experiencing task conflict can be overwhelmed with conflicting information.

Team researchers have used diversity as a measure of skills and information available to the team. This study found that for teams developing business ideas, the average should also be included. For these teams, it cannot be assumed that members have the required skills and knowledge to do the team's task because having this knowledge may not be a requirement to join the team. This contrasts with organizational teams, where member skills and knowledge are usually not called into question. In fact, this study found mixed effects of diversity on member-rated team effectiveness, but positive relationships of

Table 3 Alternative hierarchical regressions of diversity and conflict variables on member-rated team effectiveness (usefulness analysis)

Regressions and standardized β 's	Member-rated team effectiveness
Controls	
R^2	0.06
Diversity first, then conflict	
Step 1: Diversities of race, age, task, and experience	
R^2	0.19
Step 2: Conflicts of non-task and task	
R^2	0.32
Conflict beyond diversity	0.13**
Conflict first, then diversity	
Step 1: Conflicts of non-task and task	
R^2	0.19
Step 2: Diversities of race, age, task and experience	
R^2	0.32
Diversity beyond conflict	0.13**

* $p < .05$, ** $p < .01$

average experience on member-rated team effectiveness. Collectively, the implications of the findings described in this section are clear; that is, findings from organizational team research must be extrapolated with caution when applied to new venture teams.

4.1 Limitations and future directions

In interpreting the findings, the specific circumstances faced by the teams, i.e., developing a business idea, must be considered. Future studies can determine if team characteristics that relate to effectiveness ratings at this stage continue to be important at later stages of the entrepreneurial journey. For example, at later stages, task conflict may be needed for effective teams, since the teams could be more settled, and task conflict can ensure that the team continues to critically evaluate and improve its business proposition. Moreover, this study focused on the influence of diversity on internal team factors. Team composition also affects the extent to which team members interact with contacts outside of the venture, and such interactions can impact team success (Ancona and Caldwell 1992b).

Future studies can examine how internal factors and interactions with individuals outside of the venture affect team functioning.

A limitation of this study is the subjective measure of team effectiveness. Significantly, many of the studies reviewed in this paper were based on subjective team effectiveness measures (e.g., Ancona and Caldwell 1992b; Chowdhury 2005; Ensley and Hmieleski 2005; Foo et al. 2006; Jehn et al. 1999; Pelled et al. 1999). While it is uncertain the extent to which subjective measures reflect reality, past studies in organizational teams and in new venture teams, using measures relatively similar to this study, have shown or argued for positive relationships between subjective and objective team effectiveness measures (Ensley and Hmieleski 2005). Whether this statement holds for this study can not be determined, but Foo et al. (2006) suggested that unless members positively evaluate their teams, the teams may dissolve before members have a chance to implement their business ideas. Therefore, member-ratings are critical for new venture teams. At later stages of venture development, when the team is stable, objective performance measures, such as sales, positive cash flow, and profits, can be more relevant.

Another limitation of the study is that it was conducted in one university in the USA. In particular, a university located in a northeast region that is a hot-bed of entrepreneurship. Future studies can examine if this study's findings apply to other regions with a less developed venture community. For instance, teams may be less important for regions that do not focus on high-growth entrepreneurship. Despite this limitation, the findings may be generalized to other hot-beds of entrepreneurship, such as those in Silicon Valley in California, the North Carolina Research Triangle, Silicon Alley in New York, Hsinchu High Technology Park in Taiwan, and the high technology region in Bangalore, India.

4.2 Practical implications

Some researchers suggest promoting task conflict while limiting non-task conflict (e.g., Ensley et al. 2002; Pelled et al. 1999). One way to increase task conflict is to use a devil's advocate to promote debate. This study indicates that this advice may be misplaced for new venture teams, since task conflict can relate to lower member-rated team effectiveness.

Further, new venture teams should attract members with working experience, as these members may increase the skillsets available to the team. The findings in this study may inform entrepreneurship education. Entrepreneurship education has been the focus of substantial interest in business schools (Finkle and Deeds 2001), and students often work in teams to develop business ideas. The results in this study caution the student to be careful when extrapolating findings from the organizational team literature to new venture teams. For example, the advantages of task conflict and the mediating effects of conflict on the diversity-to-team-effectiveness relationship can operate differently for new venture teams. This study, together with other studies in entrepreneurship, enable students and instructors to have theoretically and empirically grounded prescriptions for developing effective new venture teams.

References

- Allison, P. (1978). Measures of inequality. *American Sociological Review*, 43, 865–879. doi:10.2307/2094626.
- Allison, P. (1999). *Multiple regression: A primer*. Thousand Oaks: Pine Forge Press.
- Amason, A., & Sapienza, H. (1997). The effects of top management team size and interaction norms on cognitive and affective conflict. *Journal of Management*, 23, 495–516. doi:10.1016/S0149-2063(97)90045-3.
- Ancona, D., & Caldwell, D. (1992a). Demography and design. *Organization Science*, 3, 321–341. doi:10.1287/orsc.3.3.321.
- Ancona, D., & Caldwell, D. (1992b). Bridging the boundary: External activity and performance in organizational teams. *Administrative Science Quarterly*, 37, 634–665. doi:10.2307/2393475.
- Bantel, K., & Jackson, S. (1989). Top management and innovations in banking: Does the composition of the top team make a difference? *Strategic Management Journal*, 10, 107–124. doi:10.1002/smj.4250100709.
- Baron, R., & Kenny, D. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173–1182. doi:10.1037/0022-3514.51.6.1173.
- Barsade, S., Ward, A., Turner, J., & Sonnenfeld, J. (2000). To your heart's content: A model of affective diversity in top management teams. *Administrative Science Quarterly*, 45, 802–836. doi:10.2307/2667020.
- Bird, B. (1989). *Entrepreneurial behavior*. Glenview, Illinois: Scott, Foresman.
- Blau, P. (1977). *Inequality and heterogeneity*. New York: Free Press.

- Brunninge, O., Nordqvist, M., & Wiklund, J. (2007). Corporate governance and strategic change in SMEs: The effects of ownership, board composition and top management teams. *Small Business Economics*, 29, 295–308. doi:10.1007/s11187-006-9021-2.
- Bunderson, J., & Sutcliffe, K. (2002). Comparing alternative conceptualizations of functional diversity in management teams. *Academy of Management Journal*, 45, 875–893. doi:10.2307/3069319.
- Chowdhury, S. (2005). Demographic diversity for building an effective entrepreneurial team: Is it important? *Journal of Business Venturing*, 20, 727–746. doi:10.1016/j.jbusvent.2004.07.001.
- Cohen, A., Doveh, E., & Eick, U. (2001). Statistical properties of the rwg(j) index of agreement. *Psychological Methods*, 6, 297–310. doi:10.1037/1082-989X.6.3.297.
- Cooper, A., Gimeno-Gascon, F., & Woo, C. (1994). Initial human and financial capital as predictors of new venture performance. *Journal of Business Venturing*, 9, 371–395. doi:10.1016/0883-9026(94)90013-2.
- Dahlin, K., Weingart, L., & Hinds, P. (2005). Team diversity and information use. *Academy of Management Journal*, 48, 1107–1123.
- Eisenhardt, K., Kahwajy, J., Bourgeois, L., & II, I. (1998). Conflict and strategic choice: How top management teams disagree. In D. C. Hambrick, D. A. Nadler, & M. L. Tushman (Eds.), *Navigating change* (pp. 141–169). Boston, Massachusetts: Harvard Business School Press.
- Ensley, M., & Hmieleski, K. (2005). A comparative study of new venture top management team composition, dynamics and performance between university-based and independent start-ups. *Research Policy*, 34, 1091–1105. doi:10.1016/j.respol.2005.05.008.
- Ensley, M., Pearson, A., & Amason, A. (2002). Understanding the dynamics of new venture top management teams. Cohesion, conflict, and new venture development. *Journal of Business Venturing*, 17, 365–386. doi:10.1016/S0883-9026(00)00065-3.
- Finkle, T., & Deeds, D. (2001). Trends in the market for entrepreneurship faculty, 1989–1998. *Journal of Business Venturing*, 16, 613–663. doi:10.1016/S0883-9026(99)00051-8.
- Foo, M., Sin, H., & Yiong, L. (2006). Effects of team inputs and intrateam processes on new venture team effectiveness. *Strategic Management Journal*, 27, 389–399. doi:10.1002/smj.514.
- Foo, M., Wong, P., & Ong, A. (2005). Do others think you have a viable business idea? Team diversity and judges' evaluation of ideas in a business plan competition. *Journal of Business Venturing*, 20, 385–402. doi:10.1016/j.jbusvent.2004.04.001.
- Friar, J., & Meyer, M. (2001). Entrepreneurship and start-ups in the Boston Region: Factors differentiating high-growth ventures and micro-ventures. *Small Business Economics*, 21, 145–152. doi:10.1023/A:1025045828202.
- Guo, S., Chumlea, W., & Cockram, (1996). Use of statistical methods to estimate body composition. *The American Journal of Clinical Nutrition*, 64, 428S–435S.
- Huffman, D., & Quigley, J. (2002). The role of university in attracting high-tech entrepreneurship: A Silicon Valley tale. *The Annals of Regional Science*, 36, 403–419. doi:10.1007/s001680200104.
- Hunter, J., & Hamilton, M. (2002). The advantages of using standardized scores in causal analysis. *Human Communication Research*, 28, 552–561. doi:10.1111/j.1468-2958.2002.tb00823.x.
- James, L., Demaree, R., & Wolf, G. (1984). Estimating within-group interrater reliability with and without response bias. *The Journal of Applied Psychology*, 69, 85–98. doi:10.1037/0021-9010.69.1.85.
- Jehn, K. (1995). A multimethod examination of the benefits and detriments of intragroup conflict. *Administrative Science Quarterly*, 40, 256–282. doi:10.2307/2393638.
- Jehn, K., Northcraft, G., & Neale, M. (1999). Why differences make a difference: A field study of diversity, conflict, and performance in workgroups. *Administrative Science Quarterly*, 44, 741–763. doi:10.2307/2667054.
- Kamm, J., & Nurick, A. (1993). The stages of team venture formation: A decision-making model. *Entrepreneurship: Theory and Practice*, 17, 17–28.
- Lankau, M., Ward, A., Amason, A., Ng, T., Sonnenfeld, J., & Agle, B. (2007). Examining the impact of organizational value dissimilarity in top management teams. *Journal of Managerial Issues*, 19, 11–34.
- Milliken, F., & Martins, L. (1996). Searching for common threads: Understanding the multiple effects of diversity in organizational groups. *Academy of Management Review*, 21, 402–433. doi:10.2307/258667.
- Newman, D., & Sin, H. (2009). How do missing data bias estimates of within-group agreement? Sensitivity of SD_{WG} , CV_{WG} , r , r^* , and ICC to systematic nonresponse. *Organizational Research Methods*, 12, 113–147.
- Nunnally, J. (1978). *Psychometric theory*. New York: McGraw-Hill.
- Pelled, L., Eisenhardt, K., & Xin, K. (1999). Exploring the black box: An analysis of work group diversity, conflict, and performance. *Administrative Science Quarterly*, 44, 1–28. doi:10.2307/2667029.
- Podsakoff, P., & Organ, D. (1986). Self-reports in organizational research: Problems and prospects. *Journal of Management*, 12, 531–544. doi:10.1177/014920638601200408.
- Richard, O., Barnett, T., Dwyer, S., & Chadwick, K. (2004). Cultural diversity in management, firm performance, and the moderating role of entrepreneurial orientation dimensions. *Academy of Management Journal*, 47, 255–266.
- Shane, S. (2000). Prior knowledge and the discovery of entrepreneurial opportunities. *Organization Science*, 11, 448–469. doi:10.1287/orsc.11.4.448.14602.
- Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25, 217–226. doi:10.2307/259271.
- Simons, T., Pelled, L., & Smith, K. (1999). Making use of differences: Diversity, debate, and decision comprehensiveness in top management teams. *Academy of Management Journal*, 42, 662–673. doi:10.2307/256987.
- Simons, T., & Peterson, R. (2000). Task conflict and non-task conflict in top management teams: The pivotal role of intragroup trust. *The Journal of Applied Psychology*, 85, 102–111. doi:10.1037/0021-9010.85.1.102.

- Tajfel, H. (1982). *Social identity and intergroup relations*. Cambridge: Cambridge University Press.
- Tajfel, H., & Turner, J. (1986). The social identity theory in intergroup behavior. In S. Worchel & W. G. Austin (Eds.), *Psychology of intergroup relations*. Chicago: Nelson-Hall.
- Tsui, A., Egan, T., & Xin, K. (1995). Diversity in organizations: Lessons from demography research. In M. M. Chemers, S. Oskamp, & M. A. Costanzo (Eds.), *Diversity in organizations: New perspectives for a changing workplace* (pp. 191–219). Thousand Oaks, CA: Sage Publications.
- Ucbasaran, D., Westhead, P., & Wright, M. (2001). The focus of entrepreneurial research: Contextual and process issues. *Entrepreneurship: theory & practice*, 25, 57–80.
- Van der Vegt, G., & Bunderson, J. (2005). Learning and performance in multidisciplinary teams: The importance of team identification. *Academy of Management Journal*, 48, 532–547.
- Watson, W., Kumar, K., & Michaelsen, L. (1993). Cultural diversity's impact on interaction process and performance: Comparing homogeneous and diverse task groups. *Academy of Management Journal*, 36, 590–602. doi:[10.2307/256593](https://doi.org/10.2307/256593).
- Westhead, P., & Wright, M. (1998). Novice, portfolio, and serial founders in rural and urban areas. *Entrepreneurship: Theory & Practice*, 22, 63. 10.
- Williams, K., & O'Reilly, C. (1998). Demography and diversity in organizations. In B. M. Staw & R. M. Sutton (Eds.), *Research in Organizational Behavior* (Vol. 20, pp. 77–140). Greenwich, CT: JAI Press.
- Wong, P., Lee, L., & Foo, M. (2008). Occupational choice: The influence of product vs. process innovation. *Small Business Economics*, 30, 267–281. doi:[10.1007/s11187-006-9044-8](https://doi.org/10.1007/s11187-006-9044-8).
- Zenger, T., & Lawrence, B. (1989). Organizational demography: The differential effects of age and tenure distributions on technical communication. *Academy of Management Journal*, 32, 353–376. doi:[10.2307/256366](https://doi.org/10.2307/256366).