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Getting the most out of multidisciplinary teams: A multi-sample study of team innovation in health care

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Driven by the assumption that multidisciplinarity contributes positively to team outcomes teams are often deliberately staffed such that they comprise multiple disciplines. However, the diversity literature suggests that multidisciplinarity may not always benefit a team. This study departs from the notion of a linear, positive effect of multidisciplinarity and tests its contingency on the quality of team processes. It was assumed that multidisciplinarity only contributes to team outcomes if the quality of team processes is high. This hypothesis was tested in two independent samples of health care workers ($N = 66$ and $N = 95$ teams), using team innovation as the outcome variable. Results support the hypothesis for the quality of innovation, rather than the number of innovations introduced by the teams.

In many areas of work today, tasks have reached a level of complexity that requires a wide breadth of knowledge, skills and abilities (KSA). Therefore, organizations more frequently rely on multidisciplinary teams. For example, project teams charged with automotive design are often not only staffed with engineers from research and development units and experts from the manufacturing plant, but also market researchers and purchasing managers. The adoption of multidisciplinary teams is, however, not only seen as a task-driven necessity but also used as a strategy to increase team performance. The higher the degree of multidisciplinarity, that is, the higher the number of different disciplines represented on a team, the broader the range of KSA available to the team should be. Having a more varied set of task-relevant KSAs is assumed to translate into a greater variety of perspectives, which should, in turn, increase performance in terms of quality of decision-making or innovativeness of problem-solving.

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Research in the field of diversity, however, suggests that multidisciplinarity may not always benefit a team's performance. Findings in the realm of team diversity have been inconsistent with studies reporting both positive and negative effects of diversity in task-relevant KSAs (Milliken & Martins, 1996; Williams & O'Reilly, 1998; cf. the meta-analysis by Webber & Donahue, 2001). For example, top management teams' functional diversity was found to be positively related to organizational innovation (Bantel & Jackson, 1989; Wiersema & Bantel, 1992), while functional diversity of new product teams negatively affected performance (Ancona & Caldwell, 1992).

The inconsistent results suggest that the effect of multidisciplinarity may be contingent upon other variables. Scholars from the field of diversity have suggested more strongly incorporating contextual aspects into the study of the diversity-performance relationship and adopting more complex models (Williams & O'Reilly, 1998). This proposal will be applied here to the study of multidisciplinarity. We go beyond the assumption of *direct* effects of multidisciplinarity on outcomes to test the extent to which the effect of multidisciplinarity depends on the quality of team processes.

Innovation in health care teams

The outcome variable in this study is team innovation. Innovation is defined as '. . . the intentional introduction and application within a job, work team or organization of ideas, processes, products or procedures which are new to that job, work team or organization and which are designed to benefit the job, the work team or the organization' (West & Farr, 1990, p. 9). Innovations are the result of a cyclical process, consisting of stages of idea generation and stages of testing and implementing the ideas.

This study looks at innovative outcomes from teams in the health care sector. The health care field has seen a massive knowledge advancement which has resulted in diversification into highly specialized knowledge and skills areas. To make the most use of this specialization, health care providers are often organized into multidisciplinary teams to perform complex, knowledge-intensive tasks.

For some teams, such as new product development teams, their explicit task is to be innovative. But teams, whose primary task is a different one – such as treating patients – also develop innovations. They introduce innovations for a variety of reasons; for example, to better cope with a high work load, to adapt to a changed environment or to improve the effectiveness of services.

Effects of multidisciplinarity

We define multidisciplinarity here as the number of different professional groups on a team. Two streams of research inform us about the potential effect of multidisciplinarity on innovation: first, the cognitive resource perspective on teams and second, research on social identity and social categorization. According to a cognitive resource perspective, a team's cognitive resources and abilities increase with increasing levels of multidisciplinarity due to their increased breadth of KSA and the wider social networks they can draw on (cf. Williams & O'Reilly, 1998). Therefore, multidisciplinary teams should perform better on tasks that benefit from multiple perspectives than homogeneously staffed teams. Models of brainstorming also imply that group creativity could benefit from multidisciplinarity. Brainstorming groups are often used to generate creative and novel ideas, as the group setting is believed to provoke a higher level of cognitive stimulation (Paulus, 2000). Sharing of ideas in a group should stimulate novel associations which should lead to additional ideas. Taking the notion of cognitive stimulation further, the potential for mutual inspiration should increase in multidisciplinary teams. The broader the range of KSAs that individuals bring to the task, the higher the potential for cross-fertilization (Jehn, Northcraft, & Neale, 1999). In top management teams, higher dissimilarity between team members' functional backgrounds was associated with less similarity in their beliefs, indicating a wider variety of perspectives (Chattopadhyay, Glick, Miller, & Huber, 1999). Similarly, individuals from different disciplines perform different organizational roles; having a diverse set of roles in a team allows for multiple interpretations of information and wider environmental scanning. Therefore, multidisciplinarity should benefit an innovation's idea-generation stage.

Furthermore, according to the resource perspective, multidisciplinarity should be also beneficial for the implementation phase of an innovation. First, multidisciplinarity makes available a wider breadth of KSAs relevant for implementation; second, teams with members of multiple professions are more likely to have a wider social network to access resources that can help with implementation (Keller, 2001).

Theories on social identity and self-categorization (Tajfel, 1982; Turner, 1987), however, suggest that teams could be ineffective at capitalizing on the potential benefits of their multidisciplinarity. These theories hold that human beings have a tendency to simplify and to make sense of the world by sorting each other into social categories that are relevant to their identity. Appearance, age, gender or interests are just a few examples of potential categories. To secure a positive self-image and to enhance self-esteem, people develop positive views and judgments about their own category and less favourable ones about members of other categories. The flipside of this positive bias towards the own category (the so-called in-group) is distancing from the other individuals, the so-called 'out-group'. Members of an out-group are more likely to be treated in a disparaging manner and discriminated against. Engendered self-segregation reduces communication and cooperation between the subgroups. Research showed that individuals who strongly identified with their functional background made (when in the minority) smaller contributions to team performance (Randel & Jaussi, 2003). In sum, processes associated with social categorization impair a team's functioning.

Professional identity (e.g. radiographer or surgeon) is a category sufficiently salient to elicit social categorization processes. Once these processes have been initiated, they will diminish the potential positive effects of multidisciplinarity on idea generation and implementation. For example, out-group discrimination impairs sharing of ideas and resources (Tajfel, Flament, Billig, & Bundy, 1971). Individuals are less likely to listen to or to accept ideas when they are presented by an out-group team member. This process may be exacerbated by differences in mental models. Mental models are assumptions about the functioning of systems; 'They help people to describe, explain, and predict events in their environment.' (Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000, p. 274). While the sharing of mental models benefits team performance (Mathieu *et al.*, 2000), as it ensures the common ground necessary for smooth interaction, differences can become a barrier for effective communication and understanding.

The role of team processes for multidisciplinarity

What can counteract the above described processes that hinder a team from benefiting from a high level of multidisciplinarity? We suggest that high quality team processes, characterized by the pursuit of a shared vision, high interaction frequency, trust and reflexivity, can offset the impairing processes. A shared vision implies the pursuit of goals that are appealing and felt to be worth pursuing by the team. A vision provides a superordinate value to which individuals can identify. A superordinate goal is an integrating force that helps teams to overcome social categorization (Sherif, 1958).

When team members interact frequently and voluntarily (i.e. over and above what is necessary for the task), they are more likely to share and discuss ideas, opinions and perspectives. This has been shown to directly affect innovation (Drach-Zahavy & Somech, 2001). This advances the development of shared mental models and of looking beyond the 'category' (i.e. the profession) to which each individual belongs; the value of an individual's specific KSA is more likely to become visible and usable.

While shared, superordinate goals and a high interaction frequency provide the 'glue' and help to create common ground, reflexivity and safety within a team will help members to actively use the differences. For example, a previous study on team innovation showed that teams that more often reflected on their actions, communication processes and working methods were able to make better use of ideas voiced by minority members (De Dreu, 2002). A sense of safety is also important to make use of diverse opinions and views. It is necessary that team members feel comfortable coming up with unusual ideas or raising an issue gone unnoticed by others. Uncommon or unpopular ideas, relevant for team innovation, are more likely to be voiced if there is a high level of trust (Edmondson, Bohmer, & Pisano, 2001).

To summarize, social categorization processes and differences in mental models have the potential to outweigh the benefits of a group's multidisciplinarity for team innovation. We hypothesize that the quality of team processes, in terms of holding a strong and integrating vision, working closely with each other, taking a reflexive approach to work and having a safe climate, moderate the relationship between the degree of multidisciplinarity and innovation such that the better the team processes, the more positive the relationship between multidisciplinarity and team innovation.

Method

Samples and procedure

The hypothesis was tested in two different settings of the UK's health care sector: breast care teams (BCT) and primary health care teams (PHCT). BCTs are based in hospitals and are responsible for the diagnosis and treatment of women with breast cancer. PHCTs are based in the community and provide a wide range of primary and preventative health care services to their local population.

One hundred BCTs were randomly selected from a database of all BCTs in the UK. Surveys were completed by 77 BCTs; missing data reduces the analyses to 70 teams with 539 individuals.

From databases provide by 19 health authorities in the British National Health Service, 100 PHCTs were randomly selected and invited to participate. Missing data reduces the sample analysed here to 95 teams with 1093 respondents.

Data were collected via a standardized questionnaire and a survey with open-ended questions. The response rates in both samples were around .55 (BCTs: $M = 0.57$, $SD = 0.16$; PHCTs: $M = 0.55$, $SD = 0.20$).

Measures

Team innovation

All team members were asked to write down 'the major changes the team has introduced in its work in the last 12 months'. These could relate to 'changes in working practices, innovation in healthcare, improved services for patients, changes in administrative systems or improving aspects of the premises'. One BCT, for example, changed clinic times and locations to fit with the changing workloads, another team introduced oestrogen receptor testing in all older patients and one PHCT introduced 'Well Women' and 'Well Man' clinics.

The innovation reports of a given team were pooled. This pool was then successively given to three trained raters who provided the ratings used for the analyses. Each rater first assessed the number of innovations reported by the different team members of a given team. They were instructed to carefully check whether team members reported different or matching innovations to avoid one innovation being counted twice. The raters then rated the innovations on four dimensions reflecting their quality: magnitude (the importance of the introduced innovations' consequences), radicalness (the extent to which the *status quo* changed as a result of the introduced innovations), impact (the extent to which the innovations improve the effectiveness of the organization) and novelty (the newness of the change brought about by the innovations [West & Anderson, 1996]). Innovation quality ratings were made using Likert scales with a 5-point response format (e.g. for magnitude: 1 = of no consequence at all in comparison with other changes; 5 = of very great consequence in comparison with other changes).

For each rater, an *innovation quality* scale consisting of magnitude, radicalness, impact and novelty was produced. Cronbach's alphas for the different raters ranged between .73–.91 for the BCTs and .86–.90 for the PHCTs[1]. Then, inter-rater agreement on the innovation quality scale was tested by calculating ICC2 and $r_{WG(J)}$. ICC2 and $r_{WG(J)}$ with a size of .70 or higher are desirable (Klein *et al.*, 2000). $R_{WG(J)}$ were very good in both samples (BCTs: $R_{WG(J)} = .89$; PHCTs: $R_{WG(J)} = .91$). While the ICC2 was also very good for the PHCTs, ICC2 = .84; $F(94, 188) = 6.15$, $p < .00$, it was somewhat low for the BCTs, ICC2 = .58; $F(66, 132) = 2.39$, $p < .00$. We explored the discrepancies and removed four teams with high disagreements (6% of the sample). This yielded in an ICC2 of .61, $F(62, 124) = 2.59$, $p < .00$), sufficient to justify aggregation of the innovation quality scale across raters. We then produced an *innovation quality* measure for each team in both samples by collapsing the three innovation quality scales across each rater.

The ICC2 for *number of innovations* was satisfactory in both samples: ICC2 for the PHCTs was .96, $F(90, 180) = 24.13$, $p < .00$, and .76 for the BCTs, $F(66, 132) = 4.09$, $p < .00$; the ICC2 remained the same after removing the four teams with the high discrepancies, ICC2 = .76; $F(62, 124) = 4.18$, $p < .00$. Again, we aggregated the innovation quantity item across each rater.

Team processes

The quality of team processes was measured using a reflexivity measure (West, 1996) and four scales of the Team Climate Inventory (Anderson & West, 1998). The former captures the extent to which the group reflects on their processes, strategies or objectives (e.g. 'The team often reviews its objectives', eight items). The latter includes the following scales: (1) *Vision* is the extent to which the team has goals and objectives that are worth pursuing, clear and achievable ('How worthwhile do you

[1] *A table including all Cronbach's alphas, ICCs and $r_{WG(J)}$s can be obtained from the first author on request.*

think these objectives are to the wider society?', 11 items); (2) *participation safety* is high when members of the team feel safe, for example, to voice minority views ('Everyone's view is listened to even if it is in a minority', eight items); (3) *task orientation* captures the extent to which the group is committed to a superordinate goal; in this context, high quality of performance ('Is there a real concern among team members that the team should achieve the highest standards of performance?'; seven items); (4) *interaction frequency* captures the extent to which team members keep in touch with each other ('We keep in regular contact with each other', four items). Cronbach's alphas of the scales were always higher than .80; the $r_{WG(J)}$ exceeded the recommended .70. ICC2 s indicated a significant level of agreement ($p < .01$): ICC2 for the individual scales were .58 to .67 (PHCTs) and .34 to .56 (BCTs) while the ICC2 of the team-climate, second-order scale used to test the hypothesis (see below) was adequate with .60 (BCTs) and .68 (PHCTs; cf. Klein *et al.*, 2000).

The team process measures were highly interrelated (zero-order correlations ranged from .55 to .79 for the BCTs and .63–.87 for the PHCTs). Second-order principal component analyses resulted in both BCTs and PHCTs in one-factor solutions with Eigenvalues of 4.05 and 3.97, explaining 80.96% and 79.39% of variance, respectively. Team process measures were standardized and collapsed into a second-order scale. Cronbach's alpha of the second-order scale were .94 (BCTs) and .92 (PHCTs).

Multidisciplinarity

Respondents indicated the types of professional groups that belonged to their team. Each BCT team had at least one breast surgeon, breast radiologist, breast pathologist and breast care nurse in their team; additionally, some teams also had one or more of the following professionals: clinical oncologist, medical oncologist, clinical nurse, clinical psychologist, plastic surgeon, palliative care professional and/or a psychologist. All PHCTs had at least one general practitioner; most (98%) also had one (or several) district nurse and health visitor and some also had one of the following professionals: midwife, a practice manager, pharmacist, social worker, counsellor and /or a community psychiatric nurse.

The survey gave us exact information about the different types of professions present on each team; data about the *exact number* of individuals in each profession is not available. The multidisciplinarity measure therefore counts the number of different types of professions on the team. In the BCTs, there were between 6 and 12 different professions in each team ($M = 10.17$, $SD = 1.76$); for the PHCTs, the respective numbers ranged from 4 to 11 ($M = 7.19$, $SD = 1.35$).

This count measure of multidisciplinarity is different from the diversity measures usually used in this area of research. Even though diversity has been assessed in a number of different ways (Bunderson & Sutcliffe, 2002), they typically take account of the relative proportion of categories (i.e. professions) present on a team. This implies that the measures all depend on having complete information about the number of individuals that belong to the different categories. As this was not the case in this study, we decided to use the count measure.

The count measure of multidisciplinarity is related to team size: larger teams have a higher likelihood of having a higher number of different professions on the team than smaller teams. To account for this potentially confounding effect of team size, we also tested both the direct effect of team size on innovation and its multiplicative effect with team processes.

Control variables
The group longevity (how long the team has existed), average member age and the percentage of male members could be other confounding variables and are therefore controlled in all analyses (Pelled, Eisenhart, & Xin, 1999).

Results

Table 1 presents the means, standard deviations and correlations of all study variables. The hypothesis was tested with moderated regression analyses. To avoid problems associated with multicollinearity, predictors were z-standardized before they were entered into the regression equation. In each regression analysis, the control variables and linear predictors were entered in Step One; in the second and third step, the product term of size (standardized) and the standardized team process measure and the product term of the standardized multidisciplinarity measure and the standardized team process measure were entered respectively (Table 2). Variance inflation factors were always below 10.0.

There was no support for our hypothesis when predicting innovation quantity: team processes did not significantly moderate the effect of multidisciplinarity.

Regarding the effect of team size, team processes emerged as a marginally significant moderator in the BCTs. The positive regression coefficient indicated that the team processes strengthened the effect of size on innovation quantity. The simple slope analyses showed that size was positively related to innovation quantity when team processes were good ($\beta = 0.487$, $t = 3.370$, $p < .001$); this was not the case when processes were poor ($\beta = -0.034$, $t = -.151$, $p = .880$).

In support of the hypothesis, team processes significantly moderated the effect of multidisciplinarity on innovation quality in both samples. The product term of multidisciplinarity and team processes, entered in the third step, explained an additional 7.0% and 2.7% of the variance in innovation quality in the BCTs[2] and PHCTs, respectively, above variance explained by all other variables and the product term of size and team processes. Innovation quality benefited from increasing levels of multidisciplinarity in the case of good team processes (BCTs: $\beta = 0.674$, $t = 4.111$, $p > .001$; PHCTs: $\beta = 0.374$, $t = 2.860$, $p > .01$; cf. Figure 1), while multidisciplinarity did not contribute to innovation quality when team processes were poor (BCTs: $\beta = -0.007$, $t = -.045$, $p = .965$; PHCTs: $\beta = 0.005$, $t = .034$, $p = .973$).

Additionally, team processes emerged as a significant moderator for the effect of team size only in the BCTs. The pattern of results is similar to what we found for innovation quantity: team size appeared unrelated to innovation quality when team processes were poor ($\beta = -0.335$, $t = -1.544$, $p = .128$), while size was positively related to innovation quality in the case of good team processes ($\beta = 0.457$, $t = 3.319$, $p > .01$). The size-processes interaction effect was independent from the multidisciplinarity-processes interaction. When we reversed the order with which the interaction effects were entered into the regression equation, that is, tested how much variance the size-processes interaction explains beyond the multidisciplinarity-processes interaction, the effect size of the former remained virtually identical, $\Delta R^2 = .095$; $\Delta F(1, 57) = 9.83$, $p = .003$.

[2] *Including the four teams that were removed from the sample does not change the results.*

Table 1. Means, standard deviations and correlations of all study variables[1]

		BCT ($N = 66$)		PHCT ($N = 95$)									
		M	*SD*	*M*	*SD*	1	2	3	4	5	6	7	8
1	Multidisciplinarity	10.08	1.82	7.19	1.35	–	.298**	.447**	.376**	.313*	.182	.388**	−.139
2	Team processes	0.04	0.85	0.02	0.89	.034	–	.279**	.172	.101	−.125	−.045	.027
3	Innovation quality	3.00	0.45	2.60	0.70	.394**	.273*	–	.628**	.147	.167	.522**	.045
4	Innovation quantity	10.69	4.84	12.43	6.62	.379**	.319**	.821**	–	.234*	.172	.563**	−.085
5	% Male	0.46	0.17	0.13	0.11	−.012	.212	.145	.160	–	.337**	.124	−.069
6	Team longevity[2]	66.51	22.73	76.64	33.41	.154	.042	.211	.125	−.066	–	.160	.372**
7	Team size	13.77	3.84	20.66	9.20	.320**	.355**	.416**	.478**	.068	.352**	–	−.026
8	Member age	45.65	2.73	42.81	3.73	−.192	.161	−.066	−.080	−.267*	.030	−.005	–

Note. $*p < .05$; $**p < .01$
[1]Bottom triangle: Correlations for BCTs; top triangle: Correlations for PHCTs.
[2]Months.

Table 2. Moderated regression of innovation on multidisciplinarity and team processes

		Breast care teams ($N = 66$)				Primary health care teams ($N = 95$)			
		R^2	adj R^2	ΔR^2	β	R^2	adj R^2	ΔR^2	β
	Innovation quantity								
Step 1		.331**	.263	.331**		.400**	.359	.400**	
	Team size				0.336*				0.527**
	Male %				0.093				0.126
	Age				−0.029				−0.138
	Team longevity^2				−0.035				0.083
	Multidisciplinarity				0.267*				0.046
	Team processes				0.177				0.192*
Step 2	Size × Processes	.370**	.294	.039 +	0.219 +	.400**	.352	.000	0.019
Step 3	MD[1] × Processes	.392**	.307	.022	0.158	.415**	.360	.014	0.143
	Innovation quality								
Step 1		.290**	.218	.290**		.403**	.362	.403**	
	Team size				0.226*				0.448**
	Male %				0.104				−0.025
	Age				−0.006				0.015
	Team longevity^2				0.086				0.096
	Multidisciplinarity				0.303*				0.189 +
	Team processes				0.158				0.257**
Step 2	Size × Processes	.378**	.303	.088**	0.331**	.411**	.364	.008	0.098
Step 3	MD[1] × Processes	.448**	.371	.070**	0.280**	.438**	.385	.027*	0.196*
	Innovation quality								
Step 1		.694**	.657	.694**		.509**	.469	.509**	
	Team size				−0.035				0.227*
	Male %				0.032				−0.060
	Age				0.016				0.073
	Team longevity^2				0.113				0.043
	Multidisciplinarity				0.096				0.170 +
	Team processes				0.020				0.176*

Table 2. (*Continued*)

		Breast care teams ($N = 66$)				Primary health care teams ($N = 95$)			
		R^2	adj R^2	ΔR^2	β	R^2	adj R^2	ΔR^2	β
	Innovation quantity				0.777**				0.420**
Step 2	Size × Processes	.716**	.676	.022*	0.171*	.515**	.470	.007	0.090
Step 3	MD[1] × Processes	.741**	.699	.025*	0.170*	.529**	.479	.013	0.140

Note. $^+p < .10$ $*p < .05$ $**p < .01$.
[1]MD: Multidisciplinarity.
[2]Months.

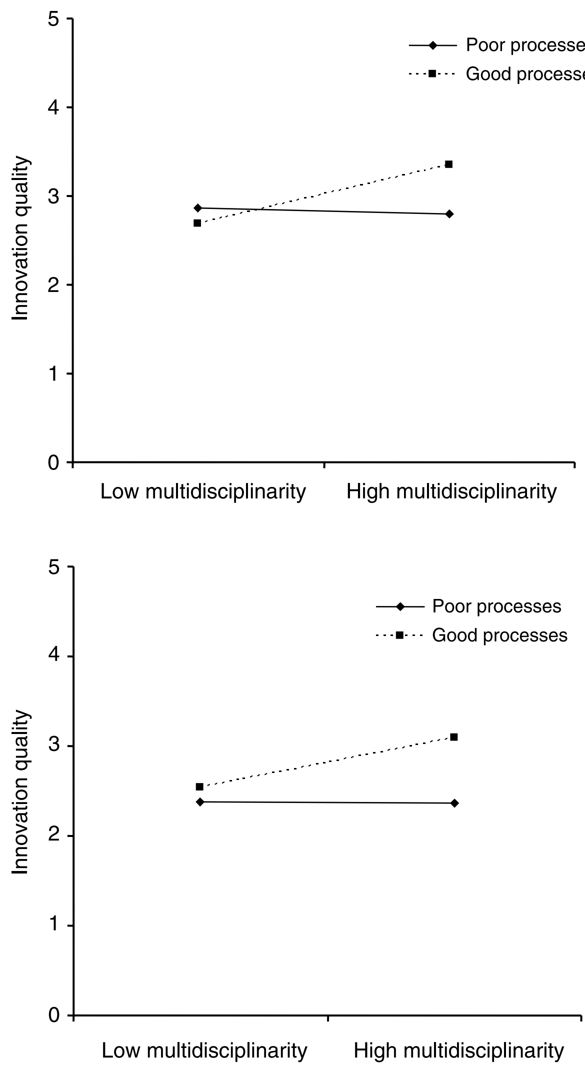

Figure 1. Interaction of multidisciplinarity and team processes for quality of innovation: BCTs at top, PHCTs at bottom.

Since innovation quality and quantity are strongly correlated, we tested the effect on innovation quality again, also controlling for innovation quantity. The magnitude of the interaction effect was reduced but the interaction term still produced a significant increment in explained variance of 2.5% in the BCTs; in the PHCTs, the interaction effect just failed to reach the significance level, $\Delta R^2 = .013$; $\Delta F(1, 85) = 2.375$, $p = .127$. This means that the moderator effect explains variance in the PHCTs that is associated with both quality and quantity of innovation.

Discussion

This study tested the moderating effect of team processes on the multidisciplinarity-innovation relationship in two independent samples of health care teams. Results show that multidisciplinarity was positively related to the quality of team innovation if teams had good team processes. There was no significant interaction when looking at the quantity of innovations as a dependent variable.

We believe that the shared vision and the high interaction frequency provide the necessary integration and 'glue'. They help to overcome the negative effects of social categorization processes and to develop shared mental models. Different professional groups have different KSAs, information and networks that are associated with their different professions and organizational roles. High levels of team reflexivity and safety are needed to present the diverse and certainly sometimes hard to communicate views to the team.

Team processes only operated as a moderator for predicting innovation quality, not quantity. For the number of innovations introduced, the interaction effect failed to reach the significance level; $\Delta R^2 = .022$, $\Delta F(1, 57) = 2.097$, $p = .158$ and $\Delta R^2 = .014$, $\Delta F(1, 86) = 2.085$, $p = .152$ for the BCTs and PHCTs, respectively. No *a priori* assumption about differential effects had been made. From a theoretical perspective, multidisciplinarity should contribute to both. For example, the multiple skills and perspectives should be beneficial to developing *better* ideas and solutions. At the same time, the wider breadth of perspectives and KSA should also increase the *number* of areas identified as potential fields for innovation. On the other hand, the number of innovations introduced may be more strongly contingent on resources available to the team, such as time or financial means (Damanpour, 1991).

Although our approach places primary emphasis on multidisciplinarity, it also appears that the size of a team plays a role. Team size was positively related to innovation quantity and quality in both samples; additionally, but in the BCTs only, the effect of size was moderated by team processes. The pattern of relationships was similar to what we found for multidisciplinarity. Size was only positively related to innovations when team processes were good. The underlying mechanism could be similar to the ones assumed for multidisciplinarity: a higher number of people are more likely to hold a more heterogeneous set of perspectives and skills that will only be utilized when the team processes are good. Since the interaction effect of size-processes was independent from the multidisciplinarity-processes interaction, the former effect could be rooted in multiple perspectives and skills based on individual difference variables rather than profession.

It is not clear, however, why the effect only appeared in the BCTs. One potential reason relates to the absolute size of the teams. On average, teams were larger in the PHCTs (cf. Table 1). To test whether this sample characteristic was responsible for the differential results, we created a subsample of PHCTs that were comparable in size to the BCTs. The size-process interaction effect, however, did still not emerge. Hence, at this stage we can only speculate whether other sample characteristics, such as the variety of personalities on the teams, are responsible for the size-process interaction. Future research with similar sized teams assessing a wider breadth of variables might be helpful in gaining deeper insight into the mechanisms.

This paper builds on the assumption that the effect of multidisciplinarity is contingent upon the quality of team processes. Our research design and the analytic strategy, however, leave scope for an alternative model that exchanges predictor and moderator: team processes could be a predictor of innovation, the magnitude of which could depend on the teams' multidisciplinarity. For example, one could theorize that teams with a high level of reflexivity are more likely to detect suboptimal working strategies. In order to improve strategies, they could innovate, provided the team possesses a broad range of KSA. Similarly, being committed to high performance (as captured by task orientation) could motivate a team to innovate to achieve this goal; this effect could be enhanced by high multidisciplinarity. Future research could try to find out which of the two model fares better.

One shortcoming of our study is its cross-sectional nature; this requires a longitudinal study to confirm the direction of causality. On the other hand, our results were robust. We replicated them in two independent samples working in the health care. We avoided the problem of common method variance as we used different types of data: factual data about the professional groups that team members belonged to in order to assess different levels of multidisciplinarity, team surveys to capture team processes and external ratings of innovation based on team reports.

This study looked at innovations introduced by health care teams. Three characteristics of this outcome measure are noteworthy to understand to what other areas the results may generalize. First, the core task of the teams is patient care, *not* to introduce innovations. Therefore, the outcome variable was the result of a self-starting action (Fay & Frese, 2001). To our knowledge this is the first study that looks at the effect of multidisciplinarity on extra-role behaviours in teams. Previous research has looked at the effect of diversity on *individuals'* behaviour. This work revealed that individuals who are in the numerical minority (e.g. White males) tend to exhibit less organizational citizenship behaviour (Chattopadhyay, 1999; Chattopadhyay & George, 2001). If dissimilar team members have a tendency to reduce their extra-role efforts, multidisciplinarity could be a threat for certain types of tasks. This raises the question of whether and how other team members compensate this reduced input. It is important to see that multidisciplinarity plays a role in extra-role behaviours and theory development could further research for this area. Second, related to the previous point, innovation is a non-routine task. Hence, our result may not generalize to routine tasks. Finally, the development and introduction of innovation is a knowledge-dependent task. Therefore, future research that seeks to establish the effect of multidisciplinarity on other outcome variables may have to look at different moderating variables. From a practical perspective, the most eminent question is how to establish team processes that help capitalize on multidisciplinarity.

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